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## **Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions**

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**Institute for the Oceans and Fisheries,  
The University of British Columbia, Canada**

# Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions

Edited by  
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## About Project Seahorse

Project Seahorse ([www.projectseahorse.org](http://www.projectseahorse.org)) is an award-winning team that has made measurable gains in marine conservation around the world. Visit our website to learn more about our efforts to endure sustainable and legal seahorse trade: <https://projectseahorse.org/regulating-trade/>.

See also our toolkit for supporting Parties in implementing CITES for seahorses, available at: <https://www.iucn-seahorse.org/cites-toolkit#ndf>.

Project Seahorse manages the IUCN<sup>1</sup> SSC<sup>2</sup> Specialist Group for Seahorses, Pipefish and Seadragons (SPS SG; [www.iucn-seahorse.org](http://www.iucn-seahorse.org)).

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<sup>1</sup> International Union for the Conservation of Nature

<sup>2</sup> Species Survival Commission

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## Table of Contents

DIRECTOR’S FOREWORD .....	7
EXECUTIVE SUMMARY .....	8
ACKNOWLEDGEMENTS .....	9
1. IMPLEMENTING TRADE CONTROLS FOR SEAHORSES IN ASIA - CHALLENGES AND OPPORTUNITIES.....	10
1.1 BACKGROUND AND RATIONALE.....	10
1.2 METHODS/STRATEGY .....	11
1.3 THE ACTORS.....	16
1.4. HISTORY OF TRADE RESEARCH AND CITES ACTIVITY.....	25
1.5 NATURE OF EXPORT BANS/SUSPENSIONS.....	31
1.6 UNDERSTANDING OF SEAHORSE FISHERIES, TRADE AND BANS/SUSPENSIONS.....	34
1.6.1 <i>What do respondents understand/know about seahorse fisheries and trade?</i> .....	34
1.6.2 <i>What is respondent awareness of, and use of, existing information and tools for seahorses?</i> .....	36
1.6.3 <i>Seahorse export/import paths</i> .....	38
1.6.4 <i>Seahorse conservation status and taxon-specific regulations</i> .....	40
1.6.5 <i>General laws and regulations of benefit to seahorses</i> .....	46
1.6.6 <i>Seahorse seizures</i> .....	51
1.7 CONCLUSIONS AND KEY RECOMMENDATIONS .....	52
1.8 REFERENCES .....	55
ANNEX 1.....	58
2. INDIA .....	68
2.1 BACKGROUND.....	68
2.2 METHODS/STRATEGY .....	69
2.3 THE ACTORS.....	70
2.4 HISTORY OF TRADE RESEARCH AND CITES ACTIVITY IN INDIA.....	77
2.5 NATURE OF EXPORT BANS/SUSPENSIONS.....	79
2.6 UNDERSTANDING OF SEAHORSE FISHERIES, TRADE AND BANS/SUSPENSIONS.....	81
2.6.1 <i>What do respondents understand/know about seahorse fisheries and trade?</i> .....	81
2.6.2 <i>What is respondent awareness and use of existing tools and information for seahorses?</i> .....	81
2.6.3 <i>Seahorse export/import paths</i> .....	83
2.6.4 <i>Seahorse conservation status and regulations</i> .....	86
2.6.5 <i>Other relevant laws and regulations</i> .....	86
2.6.6 <i>Seahorse seizures</i> .....	87
2.7 CHALLENGES AND OPPORTUNITIES .....	89
2.8 CONCLUSIONS AND RECOMMENDATIONS .....	90
2.9 KEY REFERENCES/RESOURCES.....	93
ANNEX 2.....	95
3. INDONESIA.....	97
3.1 BACKGROUND.....	97
3.2 METHODS .....	98
3.3 THE ACTORS.....	100
3.4 HISTORY OF TRADE RESEARCH AND CITES ACTIVITY IN INDONESIA .....	104
3.5 NATURE OF EXPORT BANS/SUSPENSIONS.....	106
3.6 UNDERSTANDING OF SEAHORSE FISHERIES, TRADE AND BANS/SUSPENSIONS.....	107
3.6.1 <i>What do respondents understand/know about seahorse fisheries and trade?</i> .....	107
3.6.2 <i>What is respondent awareness and use of existing tools and information for seahorses?</i> .....	108
3.6.3 <i>Seahorse export/import paths</i> .....	108
3.6.4 <i>Seahorse conservation status and regulations</i> .....	108
3.6.5 <i>Other relevant laws and regulations</i> .....	109
3.6.6 <i>Seahorse seizures</i> .....	110
3.7 CHALLENGES AND OPPORTUNITIES MANAGEMENT POLICY OF SEAHORSE IN INDONESIA .....	111
3.8 CONCLUSIONS AND RECOMMENDATIONS .....	112
3.9 KEY REFERENCES/RESOURCES.....	113

4.	MALAYSIA.....	115
4.1	BACKGROUND.....	115
4.2	METHODS .....	116
4.3	THE ACTORS.....	118
4.4	HISTORY OF TRADE RESEARCH AND CITES ACTIVITY IN MALAYSIA .....	121
4.5	NATURE OF EXPORT BANS/SUSPENSIONS.....	123
4.6	UNDERSTANDING OF SEAHORSE FISHERIES, TRADE AND BANS/SUSPENSIONS.....	124
	4.6.1. Respondents understanding of seahorse fisheries and trade .....	124
	4.6.2. Respondent awareness and use of existing tools and information .....	124
	4.6.3. Seahorse export/import paths.....	125
	4.6.4. Seahorse conservation status and regulations .....	126
	4.6.5. Other relevant laws and regulations.....	127
	4.6.6 Seahorse seizures.....	128
4.7	CHALLENGES AND OPPORTUNITIES .....	129
4.8	CONCLUSIONS AND RECOMMENDATIONS.....	131
4.9	KEY REFERENCES/RESOURCES.....	133
5.	THE PHILIPPINES .....	135
5.1	BACKGROUND.....	135
5.2	METHODS .....	137
5.3	THE ACTORS.....	139
5.4	HISTORY OF TRADE RESEARCH AND CITES ACTIVITY IN THE PHILIPPINES.....	145
5.5	NATURE OF EXPORT BANS/SUSPENSIONS.....	146
5.6	UNDERSTANDING OF SEAHORSE FISHERIES, TRADE AND BANS/SUSPENSIONS.....	149
	5.6.1 What do respondents understand/know about seahorse fisheries and trade?.....	149
	5.6.2. What is respondent awareness and use of existing tools and information for seahorses?.....	149
	5.6.3 Seahorse export/import paths.....	149
	5.6.4. Seahorse conservation status and regulations .....	150
	5.6.5 Other relevant laws and regulations.....	150
	5.6.6. Seahorse seizures .....	151
5.7	CHALLENGES AND OPPORTUNITIES .....	152
5.8	CONCLUSIONS AND RECOMMENDATIONS.....	155
5.9	KEY REFERENCES/RESOURCES.....	156
6.	THAILAND .....	159
6.1	BACKGROUND.....	159
6.2	METHODS/STRATEGY .....	159
6.3	THE ACTORS.....	160
6.4.	HISTORY OF TRADE RESEARCH AND CITES ACTIVITY IN THAILAND .....	162
6.5	NATURE OF EXPORT BANS/SUSPENSIONS.....	166
	6.6.1. What do respondents understand/know about seahorse fisheries and trade?.....	166
	6.6.2. What is respondent awareness and use of existing tools and information for seahorses?.....	167
	6.6.3. Seahorse export/import paths.....	167
	6.6.4. Seahorse conservation status and regulations .....	169
	6.6.5. Other relevant laws and regulations.....	170
	6.6.6. Seahorse seizures .....	180
6.7	CHALLENGES AND OPPORTUNITIES .....	181
6.8	CONCLUSIONS AND RECOMMENDATIONS.....	184
6.9	KEY REFERENCES/RESOURCES.....	186
7.	VIETNAM.....	188
7.1	BACKGROUND.....	188
7.2	METHODS .....	189
7.3	THE ACTORS.....	189
7.4	HISTORY OF TRADE RESEARCH AND CITES ACTIVITY IN VIETNAM .....	193
7.5	NATURE OF EXPORT BANS/SUSPENSIONS.....	195

7.6 UNDERSTANDING OF SEAHORSE FISHERIES, TRADE AND BANS/SUSPENSIONS.....	196
7.6.1 <i>What do respondents understand/know about seahorse fisheries and trade?</i> .....	196
7.6.2 <i>What is respondent awareness and use of existing tools and information for seahorses?</i> .....	199
7.6.3 <i>Seahorse export/import paths</i> .....	200
7.6.4 <i>Seahorse conservation status and regulations</i> .....	201
7.6.5 <i>Other relevant laws and regulations</i> .....	203
7.6.6 <i>Seahorse seizures</i> .....	203
7.7 CHALLENGES AND OPPORTUNITIES .....	204
7.8 CONCLUSIONS AND RECOMMENDATIONS.....	205
7.9 KEY REFERENCES/RESOURCES.....	206
ANNEX 7.....	208
8. CHINA.....	209
8.1 MAINLAND CHINA.....	209
8.1.1 BACKGROUND .....	209
8.1.2 METHODS/STRATEGY .....	210
8.1.3 THE ACTORS .....	211
8.1.4 NATURE OF EXPORT BANS/SUSPENSIONS.....	215
8.1.5 UNDERSTANDING OF SEAHORSE FISHERIES, TRADE AND BANS/SUSPENSIONS .....	216
8.1.5.1 <i>What do respondents understand/know about seahorse fisheries and trade?</i> .....	216
8.1.5.2. <i>What is respondent awareness and use of existing tools and information for seahorses</i> .....	217
8.1.5.3. <i>Seahorse export/import paths</i> .....	217
8.1.5.4. <i>Seahorse conservation status and regulations</i> .....	217
8.1.5.5. <i>Other relevant laws and regulations</i> .....	218
8.1.5.6. <i>Seahorse seizures</i> .....	219
8.1.6 CHALLENGES AND OPPORTUNITIES.....	219
8.1.7 CONCLUSIONS AND RECOMMENDATIONS .....	221
8.1.8 KEY REFERENCES/RESOURCES .....	223
ANNEX 8.1.....	224
8.2. HONG KONG SPECIAL ADMINISTRATIVE REGION OF CHINA.....	228
8.2.1 BACKGROUND .....	228
8.2.2 METHODS/STRATEGY .....	229
8.2.3 THE ACTORS .....	230
8.2.4 UNDERSTANDING OF SEAHORSE FISHERIES, TRADE AND REGULATIONS .....	241
8.2.4.1. <i>What do respondents understand/know about seahorse fisheries and trade?</i> .....	241
8.2.4.2. <i>What is respondent awareness of, and use of, existing information and tools for seahorses?</i> .....	244
8.2.4.3. <i>Seahorse export/import paths</i> .....	246
8.2.4.4. <i>Seahorse conservation status and taxon-specific regulations</i> .....	246
8.2.4.5. <i>General laws and regulations of benefit to seahorses</i> .....	249
8.2.4.6. <i>Seahorse seizures</i> .....	250
8.2.5 CHALLENGES, OPPORTUNITIES AND RECOMMENDATIONS.....	254
8.2.6 KEY REFERENCES .....	257
ANNEX 8.2.....	258
8.3. TAIWAN PROVINCE OF CHINA.....	260
8.3.1 BACKGROUND .....	260
8.3.2 METHODS .....	260
8.3.3 THE ACTORS .....	261
8.3.4 UNDERSTANDING OF SEAHORSE FISHERIES, TRADE AND BANS/SUSPENSIONS.....	267
8.3.4.1 <i>What do respondents understand/know about seahorse fisheries and trade?</i> .....	267
8.3.4.2 <i>What is respondent awareness and use of existing tools and information for seahorses?</i> .....	267
8.3.4.3 <i>Seahorse export/import paths</i> .....	268
8.3.4.4 <i>Seahorse conservation status and regulations</i> .....	271
8.3.4.5 <i>Other relevant laws and regulations</i> .....	272
8.3.4.6 <i>Seahorse seizures</i> .....	272

*Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions*

8.3.5	CHALLENGES AND OPPORTUNITIES .....	272
8.3.6	CONCLUSIONS AND RECOMMENDATIONS.....	273
8.3.7	KEY REFERENCES/RESOURCES.....	274
9.	SINGAPORE.....	275
9.1	BACKGROUND .....	275
9.2	METHODS.....	279
9.3	RESULTS OF STUDY.....	280
	9.3.1 <i>Understanding the local actors and their cooperation with national, regional and international agencies ...</i>	280
	9.3.2 <i>Current legislations relevant to trade and fisheries for seahorses.....</i>	285
	9.3.3 <i>Understanding the trade and fisheries of seahorses.....</i>	287
9.4	CHALLENGES AND OPPORTUNITIES .....	292
9.5	CONCLUSIONS .....	293
9.6	ACKNOWLEDGEMENTS .....	294
9.7	KEY REFERENCES/RESOURCES .....	294
ANNEX 9.	.....	299

## Director's Foreword

Seahorses, all 46 species in the genus *Hippocampus*, are globally traded in large volumes. They are listed on Appendix II of the Convention on International Trade in Endangered Species (CITES), requiring exports to be sustainable, legal, and monitored. This Fisheries Centre Research Report, led by the Project Seahorse team, followed through the group's long-term research and engagement to conserve seahorses through CITES. The team investigated the implementation of CITES Appendix II listing for dried seahorses, focusing on exporters with trade bans or suspension, as well as major dried seahorse importers.

Despite measures taken, most dried seahorse exports appear to have gone underground, and smuggling is now the norm. The report explores the many reasons driving this illegal trade and then identifies ways forward to increase the effectiveness of conserving seahorses through CITES, highlighting the need for fishing pressure reduction alongside trade restrictions, as well as the challenges posed by the complexity of the trade.

A key finding is that trade restrictions through CITES alone are insufficient to ensure effective conservation of seahorses. The authors emphasize the urgency for immediate action. The report calls for all Parties to CITES to make a critical choice: take decisive action against illegal trade or ensure sustainable and legal sourcing of seahorses. Eradicating illegal trade entirely presents challenges; thus, it is practical for Parties to restrict exports to levels that do not harm wild populations while focusing on reducing bottom trawling and establishing more protected areas.

The report proposes 36 recommendations, urging collaboration among all parties involved, including governments, conservation organizations, and concerned individuals, for effective seahorse conservation strategies. As the Director of the Institute for the Oceans and Fisheries, I express my gratitude to the researchers and contributors for their expertise. Together, our aim is to create a future where seahorses thrive, oceans teem with life, and people are benefiting from them in equitable and sustainable ways.

Prof. William Cheung  
Director and Professor, Institute for the Oceans and Fisheries  
The University of British Columbia



## Executive Summary

This study analyses the implementation of the CITES Appendix II listing for dried seahorses (*Hippocampus* spp.). Our focus is on (i) six jurisdictions that have long been net exporters of seahorses but have declared national bans or suspensions for such exports, and (ii) four jurisdictions that have long been key importers for dried seahorses. This study complements work on the trade in live seahorses (Foster *et al.* 2021).

As of November 2018, exports had been banned or suspended from Party/species combinations that together comprised 98% of declared legal wild seahorse exports across all species in the CITES database from 2004-2011 (Foster & Vincent 2021). Jurisdictions appear to have declared such bans/suspensions and then turned their attention away from seahorses, with no active enforcement. As a consequence, most exports appear to have gone underground and smuggling is now the norm.

Authorities in most jurisdictions felt the illegal trade is so pervasive primarily because of a lack of government prioritization. Other reasons included the fact that most seahorses are obtained as bycatch in nonselective gears, perceived benefits from trade outweigh perceived risks, the challenge of addressing the huge scale of the dried trade, a lack of communication with key stakeholders, and ongoing demand from consumer markets. In addition, most respondents knew little about the considerable resources available to support the implementation of the seahorse listing.

Respondents across jurisdictions understood that restrictions on trade alone will not achieve sustainable seahorse populations, even if fully implemented; they must be coupled with measures to reduce fishing pressure. Because most seahorses are caught in nonselective fishing gear, particularly bottom trawls, supply is actually often independent of demand. In addition, it is difficult to regulate seahorse trade: dried seahorses are small and easy to hide; seahorses are often exported in mixed shipments with other species; fishers land seahorses caught in other countries' waters; and, seahorses in trade may take very circuitous routes (e.g., West Africa to Peru to Hong Kong SAR to Vietnam).

Most jurisdictions indicated a dearth of national conservation assessments for seahorses, and poor implementation of national protective measures for seahorses. Only one Party reported tracking seahorse population trends over time. The most commonly reported general regulations that might also benefit seahorses were marine protected areas and trawl exclusion zones. Worryingly, many jurisdictions highlighted *ex situ* culture coupled with "restocking" as conservation measures for seahorses, when such ventures are actually commonly deeply problematic for wild populations (CTSG 2021).

To meet their obligations under the Convention, Parties essentially have a choice; they can end rampant illegal international trade or they can ensure that seahorses being traded are sourced sustainably and legally. If Parties choose to retain export bans or suspensions, then they must implement them with determination and vigilance. Given the real difficulties in ending seahorse trafficking, Parties might find it better to revert to the spirit of a CITES Appendix II listing and restrict exports to levels that do not damage wild populations. The challenge, then, is to rein in bottom trawling to reduce pressure on wild populations, and to ensure that seahorses in trade will be legally sourced. This can be achieved by implementing existing laws against bottom trawling in coastal areas and by establishing more protected areas, in line with existing international commitments.

## **Acknowledgements**

This is a contribution from Project Seahorse ([www.projectseahorse.org](http://www.projectseahorse.org)) and the IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group (SPS SG, [www.iucn-seahorse.org](http://www.iucn-seahorse.org)). Core funding for this analysis was provided by the U.S. NOAA National Marine Fisheries Service (NMFS), and by NMFS and the Principality of Monaco through the CITES Secretariat. Additional support was provided by the Leiden Conservation Foundation, Sidekick Foundation, and an anonymous donor.

We are grateful to the nine contracted experts for their leadership on the jurisdiction specific reports, and to Regina Bestbier for her support with editing and formatting. We are especially grateful to the respondents, particularly those from CITES Authorities, who provided information for - and comments on - the individual reports.

# 1. Implementing trade controls for seahorses in Asia - challenges and opportunities

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## 1.1 Background and rationale

Seahorses are among the most threatened marine species, partly as a consequence of international trade, with more than 30 species traded among more than 80 countries (Foster *et al.* 2016). The vast majority of seahorses in trade were sourced from the wild and then dried to supply demands for traditional Chinese medicine (TCM) (Vincent 1996, Vincent *et al.* 2011). Much smaller numbers of seahorses are sourced from the wild or tank-reared and then traded live for aquarium display (Vincent *et al.* 2011, Foster *et al.* 2021). Approximately 98% of the 5.7 million individual seahorses reported in the CITES trade database from 2004 to 2011 consisted of dried specimens, with 93% reportedly imported by China, including Hong Kong Special Administrative Region of China (hereafter Hong Kong SAR) and Taiwan Province of China (Foster *et al.* 2016). International trade patterns for both dried and live seahorses have shifted since their listing on CITES Appendix II in 2004, and particularly since their first inclusion in the CITES Review of Significant Trade (RST) in 2009 (Foster & Vincent 2021, Foster *et al.* 2021). The dried trade has become increasingly illegal in nature, now essentially occurring outside CITES processes, and is therefore not reflected in CITES data (Foster *et al.* 2019a, Foster & Vincent 2021). Indeed, a survey carried out in Hong Kong SAR in 2016-17 revealed that 95% of imports by volume had come from countries with trade bans or suspensions (Foster *et al.* 2019). For the live trade, reported volumes have decreased over time and declared sourcing has shifted from wild capture to captive breeding (Foster *et al.* 2021, Koning & Hoesksema 2021).

At CoP18 (July 2019), CITES Parties noted difficulties implementing the Appendix II CITES listing for seahorses. These included challenges with making non-detriment findings, monitoring trade, and enforcing established trade controls, *inter alia*. Parties also adopted a set of Decisions at CoP18 that would help them move toward effective implementation of the Convention for trade in seahorses (Decisions 18.228-18.233). Our study was in support of Decision 18.229(c)(i), which directed the Secretariat to “commission a study on trade in *Hippocampus* spp., including applicable regulations, to understand shifts in international trade patterns since the inclusion of seahorses in Appendix II and the Review of Significant Trade of *Hippocampus* spp., as well as the implementation challenges and possible solutions.” The study was funded by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service of the United States, and the Principality of Monaco and NOAA’s National Marine Fisheries Service through the CITES Secretariat. The findings and recommendations resulting from this study were fed into a technical workshop process conducted in March 2023 by Project Seahorse, under Decision 18.229.<sup>3</sup> The consultation aimed to address the implementation and enforcement of CITES for trade in *Hippocampus* spp., including the recommendations and outcomes from the RST process, and propose practical steps to address implementation and enforcement challenges, as outlined in paragraph (c)(ii) of that Decision. The results of this workshop were reported to the Animals Committee (at AC32), in support of newly adopted CITES Decision 19.231 (CITES 2023).

This study, carried out by Project Seahorse, as host of the IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group (SPS SG), analyses the implementation of Appendix II and CITES enforcement mechanisms. Our focus was on (i) jurisdictions (Parties and regions) in Asia that have suspended seahorse exports, and (ii) jurisdictions

<sup>3</sup> The workshop was conceived - and funding obtained/invitations sent - under CITES Decision 18.229 c (ii), but was delayed until after CoP19 due to the COVID-19 pandemic.

that are historically important importers for dried seahorses. Our objective was to generate recommendations to assist Authorities in improved implementation of the Convention for dried seahorses. This study complements focused work on the live trade in seahorses available as Foster *et al.* (2021). Most jurisdictions that historically exported large numbers of seahorses now report having suspended legal exports for this taxon, yet high levels of illegal dried trade clearly persist (Maldives, Monaco, Sri Lanka, and the United States 2018, Foster *et al.* 2019, Foster & Vincent 2021). There is an urgent need to raise awareness of, and address, such smuggling. This study, focused on Asia, documents trade bans/suspensions for seahorses, investigates how such controls are being implemented and/or enforced, and explores the roles of government agencies in implementation and/or enforcement. The study highlights strengths and challenges jurisdictions face in meeting their obligations to seahorses, with an aim of generating recommendations for improved implementation of the Convention. Though limited to Asia, our study's findings and recommendations will be of relevance to key seahorse exporters in other regions of the world, most notably those in West Africa and Latin America. Indeed, Guinea and Senegal are currently subject to CITES recommendations to suspend trade in seahorse species as a result of the RST.

To generate the information for the study, a series of national experts were contracted by Project Seahorse to elicit information from government, line agencies, non-governmental organizations, community groups and academic institutions within key exporting and importing jurisdictions of dried seahorses in Asia. The study covered ten jurisdictions across eight CITES Parties. Net exporters of dried seahorses included India, Indonesia, Malaysia, the Philippines, Thailand and Vietnam. Net importers of dried seahorses included China (Mainland China, Hong Kong SAR and Taiwan Province of China) and Singapore. Each expert synthesized information into an individual report that included key recommendations (Chapters 2 to 9).

This document summarises the findings of the ten jurisdiction reports, highlighting common challenges and opportunities, and makes overarching recommendations in support of CITES implementation for dried seahorses. It is intended to create positive momentum for improving the sustainability and legality of the dried seahorse trade, while at the same time enhancing CITES engagement with all marine taxa listed in Appendix II.

## 1.2 Methods/Strategy

### Jurisdictions

- Net exporters (jurisdictions that have been documented to export far more dried seahorses than they import) included India, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. Net importers (jurisdictions that have been documented to import far more dried seahorses than they export) included China (Mainland China, Hong Kong SAR and Taiwan Province of China) and Singapore (Vincent 1996, Vincent *et al.* 2011, Foster *et al.* 2016).
- The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the authors concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries.
- We present information for China, including Hong Kong SAR and Taiwan Province of China. Hong Kong SAR of China has its own implementing CITES Authorities that are designated by China, and submits separate annual reports to CITES (such that trade with Hong Kong SAR is recorded separately in the CITES trade database). China, as a Party to CITES, has not designated a separate Management Authority in its Taiwan Province.

### Project management

- This project was led by Project Seahorse, which hosts the IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group.
- The CITES Secretariat has drawn on Project Seahorse technical and scientific expertise since 2000, with Project Seahorse serving as Chair of the CITES Syngnathid Working Group and the CITES Seahorse Working

Group for their entire durations. Working in partnership with national CITES Authorities, Project Seahorse staff have carried out research on seahorse distribution, biology, fisheries, and trades; they developed the first guidelines for making non-detriment findings (NDFs) for any marine fish under CITES (with EC funding through the CITES Secretariat); they co-organized three workshops on making NDFs for seahorses (in the Philippines, Thailand, and Vietnam – the latter two with EC funding through the CITES Secretariat). They have also been key technical advisors on all seahorse Decisions adopted by the Parties, including those adopted at CoP18 and CoP19.

### **Data collection**

- To generate information for the study, Project Seahorse worked with experts in net exporting and importing jurisdictions for dried seahorses in Asia to document trade controls and understand how such controls are being implemented and/or enforced. The experts and their affiliations are listed in Table 1. All experts were citizens of their respective jurisdictions, spoke one or more national languages, and had extensive experience in investigating and/or managing exploitation and trade of marine species, whether seahorses or other taxa.
- The expert consultants elicited information (in person or through teleconferencing, much of it informal or narrative) from individuals based in government, line agencies, non-governmental organizations, community groups, and academic institutions. Interviews are summarised in Table 1.1. The vast majority of interviews were carried out remotely because of restrictions resulting from the COVID 19 pandemic.
- Interviews were semi-structure in nature. Expert consultants were guided in their questioning by a report outline generated by Project Seahorse in consultation with the CITES Secretariat. This synthesis is structured according to that same outline.
- Experts supplemented information from interviews with information obtained through their own experience – many had previously worked with seahorse fisheries and/or trade – and that garnered from available data and/or reports.
- Each expert synthesised all available information into a jurisdiction-specific report that included key recommendations. Our project thus generated ten reports across eight CITES Parties, one for each of China (Mainland China, Hong Kong SAR, and Taiwan Province of China), India, Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam. Each completed report averaged about 11,000 words each, and provided insights into government approaches to CITES implementation for seahorses, and other marine species, in each jurisdiction (Chapters 2-9).

**Table 1.1.** The experts contracted to carry out the jurisdiction-specific analyses of CITES implementation for seahorses, and the number of interviews they carried out within each of the CITES Management Authorities (MA), CITES Scientific Authorities (SA), CITES Enforcement Focal Points (EFP) and other relevant stakeholder groups.

Report section	Jurisdiction	Expert & affiliation	Expert biography	Number of interviews			
				MA	SA	EFP	Other
<b>NET EXPORTERS</b>							
2	India (IN)	<b>Tanvi Vaidyanathan, PhD</b> Project Seahorse, The University of British Columbia, Canada	Dr. Vaidyanathan is an Indian from Tamil Nadu, who has worked extensively on marine management and conservation in India over the past 15 years. Over nearly the last decade, her focus has been on understanding the seahorse fisheries and trade along Mainland India, with a focus on the southern state of Tamil Nadu. She earned her PhD with Project Seahorse at The University of British Columbia and is a member of the IUCN SSC Seahorse, Pipefish & Seadragon Specialist Group.	1	4	0	2 (NGO) 1 (lawyer) 2 (scientists)
3	Indonesia (ID)	<b>Yudi Herdiana</b> Independent consultant	Mr. Herdiana is an Indonesian with more than 17 years of experience working on marine and fisheries issues in Indonesia, especially on marine protected areas and sustainable fisheries management. He was involved in assisting the development of Wildlife Conservation Society Indonesia's sharks and rays program, developing conservation actions and supporting CITES management for listed species.	4	2	1	0
4	Malaysia (MY)	<b>Adam Lim Chee Ooi, PhD</b> Save our Seahorses Malaysia	Dr. Lim is a Malay national with 13 years expertise in syngnathid research and conservation. He is the Chairperson for Save Our Seahorses (SOS) Malaysia, and is a member of IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group for which he serves as the Regional Focal Point for Southeast Asia and Focal Point for <i>Hippocampus kuda</i> and <i>Hippocampus comes</i> .	8 (individuals represented both MA and SA)		0	1 (NGO)
5	Philippines (PH)	<b>Charity Mae Apale, MSc</b> Zoological Society of London – Philippines	Ms. Apale is a Filipina biologist based at the Zoological Society of London (ZSL) - Philippines. She has eight years of experience in marine and terrestrial conservation in the Philippines, including building a national network of community seahorse scientists (with Project Seahorse), supporting national implementation of CITES for seahorses, contributing to community-based marine protected area establishment, and serving as a member of the Philippines Aquatic Red List Committee. She is also a member of the IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group.	6 (one of which also represented an SA and EFP, and one of which also represented an EFP)	1	1	1 (NGO) 1 (IGO)

Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions

Report section	Jurisdiction	Expert & affiliation	Expert biography	Number of interviews			
				MA	SA	EFP	Other
6	<b>Thailand (TH)</b>	<b>Petch Manopawitr, PhD</b> Technical Advisor, Zoological Society London – Thailand; Secretary-General, Green World Foundation; Advisor, Department of Marine and Coastal Resources	Dr. Manopawitr is a Thai scientist with over 20 years of experience working in biodiversity conservation, environmental protection and sustainability with both national and international organisations in Thailand and Southeast Asia. He has worked with WCS Thailand as Deputy Director, WWF Thailand as Conservation Director, IUCN as Deputy of Southeast Asia Group and currently serves as technical advisor for ZSL Thailand, WCS Thailand, and the Department of Marine and Coastal Resources on the issue of marine protected areas and marine conservation.	4	7	0	3 (government representatives) 3 (academia)
7	<b>Vietnam (VN)</b>	<b>Nguyen Manh Ha, PhD</b> Center for Nature Conservation and Development, Hanoi, Vietnam	Dr. Ha is a Vietnamese national with extensive experience in wildlife trade and combatting wildlife crimes in the region. In the last 20 years, he has been involved in the planning and management of Vietnam's protected area system and involved in the development of Vietnam's key laws and policies on biodiversity and forestry. In last five years, he has actively worked to support the government and NGOs to improve natural resource governance, biodiversity conservation, protected areas management, and especially to counter wildlife and forest crimes. He has led more than 20 research and conservation projects focused on endangered species.	3	5	6	3 (government representatives) 2 (fisheries experts) 7 (industry representatives)
<b>NET IMPORTERS</b>							
8.1	<b>Mainland China (CN)</b>	<b>Xiong Zhang, PhD</b> Project Seahorse, The University of British Columbia, Canada	Dr. Zhang is a Chinese scientist who has conducted research on the biology and trade of seahorses and on bottom-trawl fisheries in China for more than eight years. He earned his PhD with Project Seahorse at The University of British Columbia, where he was also a postdoctoral fellow, and is a member of the IUCN SSC Seahorse, Pipefish & Seadragon Specialist Group.	1	2	4	1 (academia)
8.2	<b>Hong Kong SAR of China (HK)</b>	<b>Anita Kar Yan Wan</b> Sun Yat-sen University, Guangzhou, China	Ms. Wan is a Chinese native from Hong Kong SAR, with a background in wildlife conservation and anthropology. Over the past decade, she has conducted demand-side research of wildlife markets for the ornamental and traditional Chinese medicine trades in Southeast Asia and into/from China. She explores opportunities to encourage positive behaviour change for sustainable use. In 2017, Ms. Wan worked with Project Seahorse to conduct a market study in Hong Kong SAR, exploring the impact of export suspensions and bans on domestic supplies of dried seahorses.	3 (individuals from department that serves as the MA, SA and EFP)			2 (NGOs) 2 (foundations) 2 (academia)

Report section	Jurisdiction	Expert & affiliation	Expert biography	Number of interviews			
				MA	SA	EFP	Other
8.3	Taiwan Province of China (TW)	<b>Ting-Chun Kuo, PhD</b> Assistant Professor, Institute of Marine Affairs and Resource Management, National Taiwan Ocean University	Dr. Kuo is a fisheries scientist from Taiwan Province of China, whose research interests include bycatch issues, mixed fisheries, fisheries ecography and wildlife trade. She has conducted research on the local and international trade of seahorses. Dr. Kuo serves on the endangered marine wildlife advisory committee of Taiwan Province of China's Ocean Affairs Council and is a scientist delegate for ecologically related species in tuna-RFMOs. She earned her PhD with Project Seahorse at The University of British Columbia and is a member of the IUCN SSC Seahorse, Pipefish & Seadragon Specialist Group.	NA	NA	NA	4 (government representatives) 1 (industry representative) 1 (academia)
9	Singapore (SG)	<b>Christina Choy</b> Independent consultant  <b>Mei Lin Neo, PhD</b> Senior Research Fellow, Tropical Marine Science Institute, National University of Singapore	Ms. Choy is a Singaporean national who is passionate about sustainable, legal and equitable wildlife trade, and aspires to take an interdisciplinary approach to understand issues and inform management. Her award-winning MSc dissertation was on the trade and supply chain of wedgefishes and giant guitarfishes in Singapore. She undertook a consultancy role for shark and ray conservation at Wildlife Conservation Society Singapore and has five years of experience as a Conservation Manager with the National Parks Board.  Dr. Neo is a Singaporean marine ecologist, whose research mainly uses experimental approaches to study the interactions of marine organisms with the marine environment. She has been enamoured with the giant clams as her model species for the past decade, and remains steadfast in her mission to champion their conservation in Singapore and the region. Dr. Neo is also an avid science communicator of marine conservation issues in Singapore. Dr. Neo serves on the IUCN SSC Marine Conservation Committee.	3 (all three also represented the SA and EFP)	see MA	see MA	2 (Customs) 3 (government representatives) 3 (academia) 2 (NGOs)



## Notes about the results

- This report is focused on the trade in dried seahorses, which comprises the vast majority of the seahorse trade. Complementary work on the trade in live seahorses is available as Foster *et al.* (2021).
- We have used ISO Alpha-2 country codes throughout the results, as these are familiar in the CITES context: CN – China; ID – Indonesia; IN – India; HK – Hong Kong SAR; MY – Malaysia; PH – Philippines; SG – Singapore; TW – Taiwan Province of China; TH – Thailand; VN – Vietnam.
- Individual reports by jurisdiction are indicative rather than exhaustive in their exploration of CITES implementation for seahorses. We anticipate many challenges and opportunities that are not included in the individual reports. As a result, this summary raises issues even if they were only mentioned in one or two reports, where it was reasonable to assume that the issues might apply more widely.
- It is particularly important to note that the list of legislation specific to seahorses and the list of other relevant legislation in the tables supporting Sections 1.6.4 and 1.6.5 are not exhaustive. These lists provide a starting point for understanding the national situation in each jurisdiction, but the information needs to be expanded in further dialogue with governments.
- The recommendations in this report are intended to complement the Decisions adopted at CoP18 (Annex 1.i). We have generated a continuous list of recommendations (compiled in Annex 1.ii), responding to challenges as they arise in each section, but have highlighted a short list of priority recommendations in Section 1.7.
- Overall, the individual reports and this summary were intended to support future action by CITES on seahorses, in the form of *inter alia* Decisions to be adopted at CoP19, future capacity-building efforts, tool development and research efforts.
- The results of this study formed the basis of the “Implementing CITES for seahorses - Asia region workshop” held in March 2023 (CITES 2023). Discussions and situational analyses emerging from that workshop supported the findings of this study, and recommendations emerging from that workshop echoed 19 of the 36 recommendations contained in Annex 1.ii.

## Results

Throughout the results we provide summary comments, each section supported by direct quotes that we have extracted from the reports on the ten jurisdictions (Chapters 2-9). We have chosen not to attribute the quotes in this summary to particular jurisdictions. Our intention here is to improve implementation in general rather than to single out individual jurisdictions.

### 1.3 The Actors

#### Summary

CITES Management Authorities (MAs), Scientific Authorities (SAs), Enforcement Focal Points (EFPs), and other bodies relevant to CITES implementation are summarized by jurisdiction in Table 1.2. The table only includes those Authorities and other relevant bodies included in the jurisdiction specific reports, so the information for each jurisdiction may not be exhaustive. CITES lists national Authorities on its website at <https://cites.org/eng/parties/country-profiles/national-authorities>. **The information in this report is intended to complement, not replace, the information available on the CITES website.**

Most national CITES Authorities responsible for seahorses were positioned either within terrestrially-focused government bodies or within government bodies whose main mandate is fisheries production. Other key challenges included competing priorities within single Authorities – this was particularly true for Enforcement Focal Points (EFPs) which focused on human and drug trafficking as well as illegal wildlife trade – along with insufficient human and financial capacity, poor coordination among Authorities within a single jurisdiction, and poor coordination among Authorities and key stakeholders (fishers, traders, consumers).

## Details

### Management Authorities (MAs)

- Four jurisdictions included in this study were reported to have MAs with marine expertise: ID, MY, PH, and TH.
- The MA reported for the other four jurisdictions has its main mandate in terrestrial affairs: CN, HK, IN, SG, VN.
- Only two jurisdictions, PH and TH, were reported to have an independent MA with marine expertise.
- Reports indicated that the marine-focused MAs within ID and MY played a supporting role to the principal MA, which retains ultimate decision-making authority. In both cases, the principal MA has its main mandate in terrestrial affairs.
- All four jurisdictions with a marine-focused MA (ID, MY, PH, TH) reportedly have the MA positioned within agencies/departments where the main mandate is fisheries production and not ocean/marine species conservation. We present some extracts from the reports to highlight this point, as captured by the expert consultants:
  - “So far, seahorses have not become a priority species to be managed [in country] either through CITES mechanism or capture fisheries management because of (i) overlapping Authority in the management of seahorses between the [two management Authorities]; (ii) the large number of species that must be managed through the CITES mechanism under the [primary MA] meant that they put less priority to marine species; and (iii) limited data and information of seahorse population status and its trade.”
  - “[The MA] is responsible for all aspects of marine governance... – extraction, species protection, protected areas – each with varying priorities. Hence as a problem, it can be difficult to prioritize species protection within such capacity.”
  - “The government should reconsider placing protection-based management under an independent agency to increase efficiency and communication.”
  - “[The CITES MAs] have several mandates which mean that people working in the agencies are focused on numerous priorities simultaneously. Unless it’s a personal priority for someone working at the agency, championing seahorse conservation will not be a top priority. Thus, external factors are needed to push the conservation agenda for seahorses.”

### Scientific Authorities (SAs)

- Six jurisdictions included in this study were reported to have SAs with marine expertise: IN, MY, PH, SG, TH, and VN. Only two were documented to have more than one SA with marine expertise: MY and PH.
- Only one Party, PH, was reported to have an SA with marine expertise that is independent of government; the SA is within an academic institution.
- No Party was reported to have an SA whose main mandate lay in ocean conservation (even though such bodies exist within some jurisdictions, e.g., ID, TH). Instead, all marine-focused SAs were reported to have their main mandate in fisheries production.
- A dearth of SA capacity for marine species in general, and seahorses in particular, was highlighted as a concern in three reports:
  - “The lack of an officially established, separated marine/fisheries SA is also a limitation. Addressing this limitation may facilitate technical support for decision-making related to marine species by [the] MA.”
  - “No dedicated researcher or staff in [the SA is] working on seahorses. There is an urgent need to build capacity within the country to fulfil information gaps.”

### Enforcement Focal Points (EFPs)

- Six jurisdictions included in this study were reported to have EFPs with marine expertise.

- All six were reported to have multiple EFPs, and five reports claimed that multiple EFPs have overlapping mandates and lack coordination. This challenge was deemed especially problematic for marine species, for which extraction is policed by one set of bodies while trade is policed by another.
  - “After seahorses have entered the country, the illegal trade is managed by different authorities depending on the transportation approach (post package vs. freight) and trade mode [traditional vs. e-commerce].”
- The existence of several EFPs was declared a challenge in consolidating data on wildlife crimes (e.g., seizures) for four jurisdictions (see also Section 1.6.6).
- The issue of competing priorities within a single EFP was raised in one report. Competing priorities posed a challenge in prioritizing illegal wildlife trade (IWT) over drug trafficking, for example, and/or in prioritizing marine IWT over terrestrial IWT.
  - “Some divisions within agencies do not prioritise wildlife crime, including marine species, and do not treat it as a serious crime. As a consequence, enforcing wildlife laws is just a second priority next to enforcing laws of other commodities such as drugs or human trafficking.”
- The mandate of EFPs with marine species expertise was reportedly centred on enforcing laws around extraction (i.e., fisheries regulations; ID, MY, PH, TH, VN).
- For one Party with a legislated catch and trade ban, the fisheries agencies reportedly played no role in the enforcement of the law.
  - “The [fisheries department] has no role whatsoever with regards to the implementation of the ban. The [fisheries department] only enforces rules of the [fisheries laws] and increasing fish production. The [seahorse catch] ban is technically enforced by the [forest department].”

#### **Other CITES relevant bodies**

- Seven jurisdictional reports included information on other bodies relevant to national CITES implementation. Four of the seven included fisheries/marine resource agencies/departments: CN, HK, PH, TW.
- Four jurisdictions were reported to have coordination bodies/committees that support national CITES implementation: HK, IN, TH, VN. Marine representation was noted to be lacking in the membership for at least two of these (IN, VN).
  - For example, “The Vietnam-WEN [Wildlife Enforcement Network] serves as a coordination unit of the inter-agency network for combating wildlife trafficking in the country...Vietnam-WEN focuses on all wildlife and timber, including terrestrial and marine species, but it lacks representatives from fisheries authorities such as Vietnam Fisheries Resources Surveillance (a key force for Fisheries Resources protection), and the Coast Guard which is the key enforcement body on the sea. It is critical that these bodies be included in the WEN for it to be effective in combatting illegal trade in marine species.”
- TW has agencies that have similar roles as an MA, SA, and EFP. The management and enforcement bodies reportedly do not have marine expertise, but the scientific body does.

#### **Other relevant bodies**

- Seven jurisdictional reports included information on other bodies relevant to national CITES implementation. Six of the seven included fisheries/marine resource agencies/departments: CN, ID, IN, SG, TW, VN. One jurisdiction was reported to have a government body whose main mandate is marine conservation (TH) but highlighted that there could be greater cooperation with CITES Authorities.
- Just one jurisdictional report (HK) included NGOs as relevant to national CITES implementation, even though the contractors were explicitly asked about the role of NGOs in that respect.

- In HK, the Chinese Medicine Merchants Association collaborated with Project Seahorse to recommend voluntary standards and industry pledges to support the sustainable legal trade of dried seahorses (e.g., size restrictions).

### **Capacity**

- Human capacity within implementing Authorities was raised as a challenge in four jurisdictions. In some cases, inadequate staffing meant Authorities had to prioritize certain species and issues over others.
  - “...follow up actions for corrective measures have been slow due to limited capacity of the CITES Authorities.”
  - “[There is a] need for awareness and training programs in marine species with EFPs.”
- Financial capacity within implementing Authorities was raised as a challenge in three jurisdictions. This also meant Authorities had to prioritize certain species and issues over others.
  - “[Gaps include] human resource capacity and funding to build an effective CITES implementation under [the MA], including data collection, monitoring, surveillance, and law enforcement.”
  - Currently, there is no dedicated researcher or staff in [the CITES SA] working on seahorses. There is an urgent need to build capacity within the country to fulfil information gaps.”
  - “[The CITES MA] does not have an internal plan for seahorses. They are relying on external catalysts...to provide funding and expertise... The reliance on external funding is a roadblock for moving the [country’s] seahorse trade towards sustainability.”

### **Coordination**

- Coordination among Authorities was reported to be an issue when jurisdictions were divided into multiple regions with multiple Authorities (as in ID, IN, MY, PH). All four reports raised the question as to how these jurisdictions could reconcile national with state/provincial/municipal responsibilities, as appropriate.
  - “Given the number of agencies involved...there must be greater coordination between these agencies.”
- A lack of communication among Authorities, especially EFPs, was raised in three reports.
  - “[Authorities] work in silo.”
- A lack of communication between Authorities and other stakeholders (fishers, traders, and/or consumers) was raised in nine reports.
  - “Awareness of the conservation status of seahorses is low among [national] citizens, and policies regarding them were sometimes ambiguous with little protection and trade management occurring in local areas.”
- Coordination may have been less of a challenge in smaller jurisdictions, such as HK and SG, where one government body played multiple roles in CITES implementation. Coordination was also not raised as a challenge in TH, which has one government body serving as the MA, SA and EFP for marine species.
- In one jurisdiction, CN, coordination among Authorities used to be considered a challenge but the global COVID-19 pandemic had reportedly led to “unprecedented cooperation” among authorities to prohibit IWT.
- Coordination among CN, HK, and TW was raised as a challenge with respect to CITES implementation in each of those individual reports.
  - At present, trade from HK to CN and Macau SAR is subject to CITES regulations and licensing. HK Authorities reported that they regularly coordinate with Chinese governing bodies in both CN and Macau SAR to strengthen enforcement efforts. Joint capacity-building workshops were reported to take place in order to share insights on the latest efforts, intelligence, priorities, ways to strengthen border surveillance, and coordination between agencies for improved CITES implementation. However, respondents from outside government suggested that coordination among Authorities is not systematic but sporadic in nature.

- CN and TW were reported to manage CITES species independently. The intention is to hold annual coordination meetings but these appear not to have taken place since 2017. Seahorses have not been discussed in those meetings, according to published meeting reports.
- In CITES data, imports into TW are reported by the exporting Party, and exports out of TW are reported by the importing Party.

### **Recommendations**

1. Jurisdictions should take note of IUCN Resolution WCC-2020-Res-107 (Annex 1.iii) which calls on governments to “establish/strengthen a national ministry/department/agency with an explicit mandate for marine biodiversity conservation.” These bodies should play a central role in implementing CITES for marine species, or supporting the implementation of CITES for marine species if they are not the designated national CITES Authorities.
2. Existing national MAs and SAs with marine expertise need to have higher levels of staffing and funding to meet their obligations to the Convention.
3. EFPs that play a role in enforcing CITES should be fully trained in the identification and legal requirements applicable to marine species.
4. All jurisdictions need to improve inter-agency cooperation with respect to CITES implementation and data gathering.
5. CITES Authorities should formalize the role of species experts from civil society (academia, NGOs etc.) in implementing CITES at the national level.
6. CITES Authorities should raise awareness of the seahorse trade and its role in the conservation of the species with all stakeholders: fishers, traders, consumers, policymakers, enforcement agencies, judiciaries, etc.

**Table 1.2.** CITES Management Authorities (MAs), Scientific Authorities (SAs), Enforcement Focal Points (EFPs) and other bodies relevant to national CITES implementation, as included in expert reports for net exporting and importing jurisdictions for dried trade in seahorses. Authorities are reported in the order they appeared in the reports. **Authorities/bodies in blue were reported to have a mandate related to marine fisheries and/or ocean conservation. The information in this table is not exhaustive.** CITES lists national Authorities on its website at <https://cites.org/eng/parties/country-profiles/national-authorities>. **The information in this report is intended to complement, not replace, the information available on the CITES website.**

Jurisdiction	MAs	SAs	EFPs	Other CITES relevant bodies	Other relevant bodies
<b>NET EXPORTERS</b>					
<b>India (IN)</b>	Directorate of Wildlife Preservation, Ministry of Environment, Forests and Climate Change	<b>Central Marine Fisheries Research Institute</b> Wildlife Institute of India	Wildlife Crime Control Bureau	“CITES cell”	State Forest Departments <b>State Departments of Fisheries</b> Customs Directorate of Revenue Intelligence Central Bureau of Investigation
	Wildlife Crime Control Bureau (north, east, south and west)	Zoological Survey of India			
<b>Indonesia (ID)</b>	Directorate of Biodiversity Conservation, Ministry of Environment and Forestry (MoEF)	Secretariat for the Scientific Authority of Biodiversity, Indonesian Institute of Sciences (LIPI)	Directorate General of Environment and Forestry Law Enforcement, MoEF		Natural Resources and Conservation Agency, MoEF
	<b>Directorate of Marine Biodiversity Conservation, Ministry of Marine Affairs and Fisheries (MMAF)</b> (MA since 2020, coordinates with MoEF)		<b>MMAF (Directorate General of Marine and Fisheries Resource Surveillance, MMAF)</b> <b>Fish Quarantine Agency, MMAF</b> Agriculture Quarantine Agency, Ministry of Agriculture Directorate General of Customs		<b>Coastal and Marine Resources Management Agency, MMAF</b>
<b>Malaysia (MY)</b>	Ministry of Energy and Natural Resources (KeTSA)	KeTSA	KeTSA		<b>Fisheries Development Authority of Malaysia</b>
	<b>Department of Fisheries Malaysia (DOFM; peninsular Malaysia)</b>	<b>DOFM</b> <b>Department of Fisheries Sabah</b>	Interpol Malaysia, Royal Malaysian Police		Malaysian Quarantine & Inspection Services
	Sarawak Forestry Corporation (SFC)	<b>Fisheries Research Institute (peninsular Malaysia)</b> SFC	<b>Fishery Capture &amp; Licensing Division, DOFM</b> SFC		Royal Malaysian Customs Malaysian Maritime Enforcement Agency
	<b>Department of Fisheries Sabah</b>	<b>Fisheries Research Institute Sarawak</b>			
	Johor Biotechnology & Biodiversity	<b>Department of Fisheries Sabah</b>			

Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions

Jurisdiction	MAs	SAs	EFPs	Other CITES relevant bodies	Other relevant bodies
<b>MY cont.</b>	Perak States Park Corporation	Johor Biotechnology & Biodiversity			
		Perak States Park Corporation			
<b>Philippines (PH)</b>	Biodiversity Management Bureau, Department of Environment and Natural Resources  <b>Aquatic Wildlife Regulatory Section, Bureau of Fisheries and Aquatic Resources (BFAR), Department of Agriculture</b>  Palawan Council for Sustainable Development Staff	<b>BFAR</b>  <b>National Fisheries Research and Development Institute, Department of Agriculture</b>  <b>Marine Science Institute, University of Philippines</b>  University of Philippines Visayas  National Museum	<b>BFAR</b>  PCSDS (Palawan only)  Environmental Crime Division, Department of Justice-National Bureau of Investigation (DOJ-NBI)  Environmental Protection Unit, Department of Finance-Bureau of Customs  <b>Aquatic Wildlife Enforcement Officers</b>  <b>Aquatic Wildlife Traffic Monitoring Units</b>  Wildlife Traffic Monitoring Units (Palawan only)	<b>Regional Fisheries Inspection and Quarantine Service, BFAR – 15 regional field offices</b>  <b>Philippines Aquatic Red List Committee (PARLC)</b>	
<b>Thailand (TH)</b>	Department of National Parks (DNP), Wildlife and Plant Conservation, Ministry of Natural Resources and Environment  <b>Fisheries Resources Management and Measures Division, Department of Fisheries (DOF), Ministry of Agriculture and Cooperatives</b>	<b>Fisheries Resources Conservation and Convention Group, Fisheries Resources Management and Measures Division, DOF</b>	<b>Fish Quarantine and Inspection Division, DOF</b>  Royal Customs Department  Natural Resources and Environmental Crimes Suppression Division of the Royal Thai Police Bureau  DNP	National committee to oversee CITES implementation	Department of Marine and Coastal Resources (DMCR)
<b>Vietnam (VN)</b>	Vietnam Administration of Forestry, Ministry of Agriculture and Rural Development (MARD)	Vietnamese Academy of Forest Sciences, MARD  <b>Research Institute for Marine Fisheries (RIMF), MARD</b>  Vietnam University of Forestry, MARD	Forest Protection Department, Forestry Administration, MARD  <b>Department of Fishery Surveillance, Fisheries Administration, MARD</b>	Vietnam Wildlife Enforcement Network	<b>Fishery Administration, MARD</b>  <b>Marine Surveillance Department, Fisheries Administration, MARD</b>  Forest Protection Department, Forestry Administration, MARD

Jurisdiction	MAs	SAs	EFPs	Other CITES relevant bodies	Other relevant bodies
<b>VN cont.</b>		Institute for Ecology and Biological Resources	<p>Customs, Ministry of Finance</p> <p><b>Environment Police, Ministry of Public Security</b></p> <p>Border Guard, Ministry of National Defense</p> <p><b>Coast Guard, Ministry of National Defense</b></p> <p>Market Surveillance Department, Ministry of Industry and Trade</p>		<b>Provincial Fishery Departments</b>
<b>NET IMPORTERS</b>					
<b>China - Mainland China (CN)</b>	Endangered Species Import and Export Management Office, National Forestry and Grassland Administration	Endangered Species Scientific Commission), Institute of Zoology, Chinese Academy of Sciences	<p>Compliance and Law Enforcement Coordination of Wildlife Conservation Department of National Forestry and Grassland Administration (NFGA)</p> <p>The Anti-Smuggling Bureau of State Customs General Administration, Anti-Smuggling Division II , and the corresponding authorities in each Customs area</p>	<p><b>The Division of Fishery Resource and Environment Protection (FREP), Fishery Bureau, Ministry of Agriculture and Rural Affairs (MARA)</b></p> <p>The Judicial Expertise Centers (JECs) for wildlife identification</p> <p>Law-enforcement &amp; Inspection Bureaus of the State Administration for Market Regulation</p> <p>Police of the Ministry of Public Security (MPS)</p> <p>The People's Procuratorates (PP) of the Supreme People's Procuratorate (SPP)</p> <p>The People's Courts (PC) of the Supreme People's Court (SPC)</p>	<b>The Integrated Marine Law-Enforcement Team (IMLE), China Coast Guard (CCG) and Chinese Armed Police Force (CAPF)</b>



Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions

Jurisdiction	MAs	SAs	EFPs	Other CITES relevant bodies	Other relevant bodies
<b>China – Hong Kong SAR (HK)</b>	Endangered Species Protection Division, Agriculture, Fisheries and Conservation Department (AFCD)	Endangered Species Protection Division, AFCD	Endangered Species Protection Division, AFCD  Customs and Excise Department	Inspection & Quarantine, AFCD  <b>Fisheries Branch, AFCD</b>  Hong Kong Police Force  Hong Kong Department of Justice	Country and Marine Parks, AFCD  Endangered Species Advisory Committee (government committee for all threatened species, not just CITES)  HK Wildlife Trade Working Group (experts from civil society – NGOs and academia)  TCM associations such as the Chinese Medicine Merchants Association
<b>China – Taiwan Province of China (TW)</b>	NA	NA	NA	Bureau of Foreign Trade (management agency)  Council of Agriculture (Conservation Division, Forestry & <b>Ocean Affairs Council, Ocean Conservation Administration</b> ) (scientific agencies)  Examination Agency (enforcement agency)	Fisheries Agency  Society for Wildlife and Nature (NGO)
<b>Singapore (SG)</b>	Wildlife Trade, National Parks Board (Nparks)	National Biodiversity Centre, Nparks ( <b>has a Coastal and Marine branch</b> )	Singapore Customs  Immigration & Checkpoints Authority		Singapore Food Agency (operates two fishery ports and administers the Fisheries Act)

## 1.4. History of trade research and CITES activity

- The documented engagement of these ten jurisdictions in seahorse trade, pre-CITES and post-RST, is summarised in Table 1.3.
- All jurisdictions played a major role in the dried seahorse trade before the CITES listing, hence their inclusion in this report.
- One jurisdiction, ID, took out a reservation on the seahorse listing in 2002, although they must still meet CITES obligations except when they trade with other Parties with reservations (Japan, Norway, Palau, and South Korea) or with non-Parties.

### Net exporters

- All net exporting jurisdictions have trade bans/suspensions in place (further details in Section 1.5), but illegal exports have been detected from all six sources, as follows:
  - ID (volumes unknown)
  - IN (large volumes recently documented, also large-scale catch violations)
  - MY (volumes unknown)
  - PH (large volumes recently documented, also large-scale catch violations)
  - TH (volumes unknown)
  - VN (large volumes recently documented, also catch violations)
- In-country trade surveys have been carried out by Project Seahorse post-listing and within the last ten years, in four countries: IN (2015-2017), PH (2019), TH (2012-2014), and VN (2016-2017). Such surveys were after the national trade bans for IN and PH, and before the declared national trade suspensions for TH and VN.
- We do not have post-listing in-country trade survey data for ID or MY.
- Traders surveyed in HK in 2017 reported all six net exporters in our study as among the top ten important sources of dried seahorses in trade (Foster *et al.* 2019).
- Experts summarized the history of seahorse research, capacity building, national and CITES action, for all net exporting jurisdictions (Figure 1.1).
  - There has been prolonged intervention in most jurisdictions. Most research and capacity building has been driven by external actors.
  - The timelines support the need for updated research on seahorse fisheries and trade in ID, in particular.

### Net importers

- Illegal imports have been detected into CN (volumes unknown) and HK (large volumes recently documented).
- The recent role of SG and TW in the dried seahorse trade is unknown, as there has been no local trade research carried out since 2000.

### Recommendations

7. Given the unreliability of formal data, jurisdictions should ensure access to up-to-date trade research in collaboration with species experts. The following jurisdictions need new trade field surveys: CN, HK, ID, MY, SG, and TW. Sufficient baseline information exists in the other jurisdictions on which to base adaptive management plans in support of CITES implementation.

**Table 1.3.** Engagement of net exporting and importing jurisdictions in the **dried** seahorse trade just before the genus was listed on CITES Appendix II, and the most recent understanding. \*Details of trade suspensions/bans in Table 1.4.

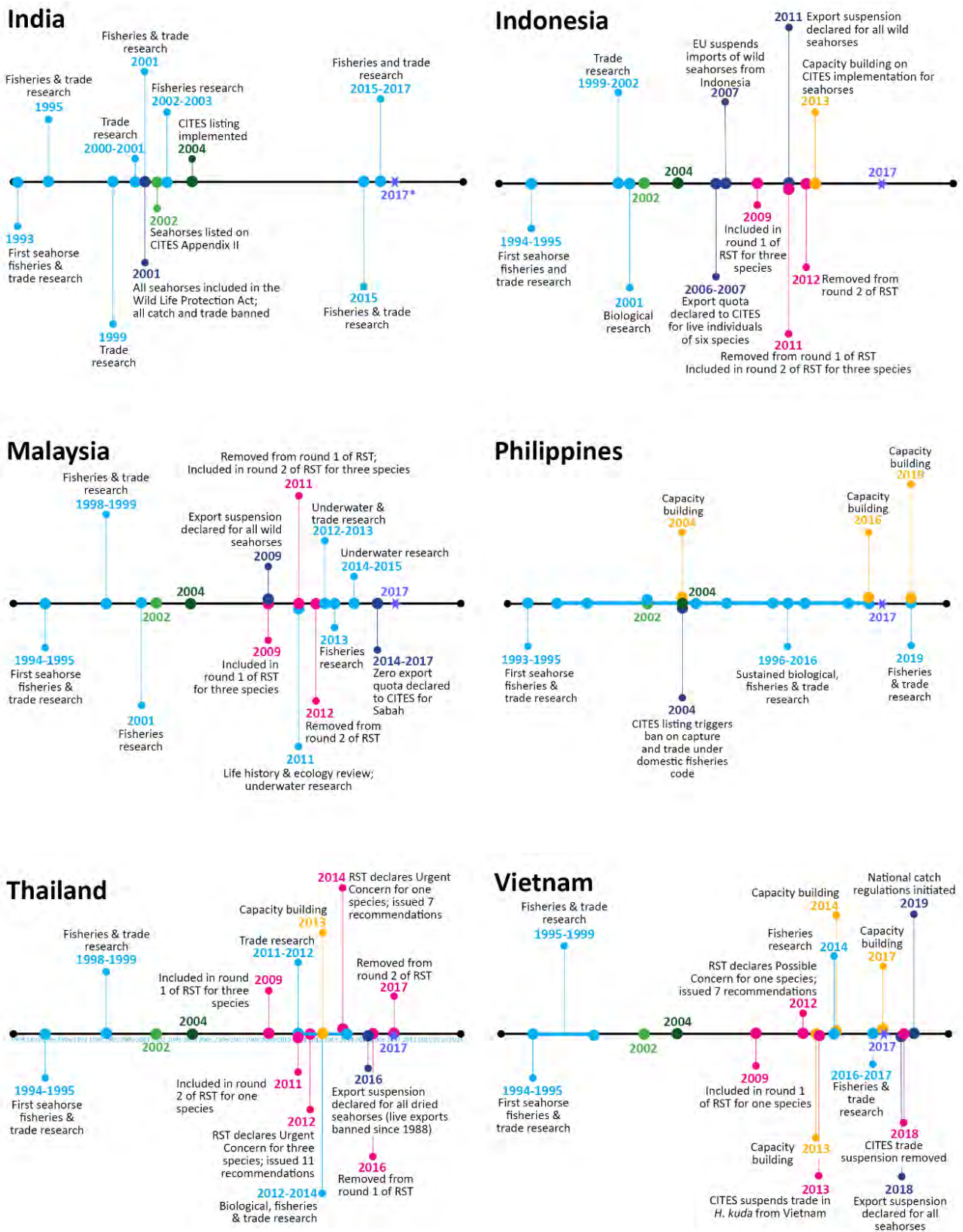
Jurisdiction	Pre-CITES	Most recent understanding
<b>NET EXPORTERS</b>		
<b>India (IN)</b>  Catch and trade banned since 2002*	Pre-CITES, India was amongst the top four exporters of seahorses in international trade, most of them derived from non-selective fishing gears operating in Tamil Nadu state, particularly in the Palk Bay and Gulf of Mannar regions. Dried seahorse exports were estimated to be as high as 12 t (~3.1 million individuals) in 1999-2000 (Perry <i>et al.</i> 2020) and 9.75 t (~2.5 million individuals) in 2001-2002 (Salin <i>et al.</i> 2005). Across all time periods, most seahorses in India were exported, with few consumed domestically.	Studies carried out between 2015 and 2017 revealed that seahorse extraction continued in large numbers after the CITES App II listing. Estimates placed national seahorse catches at 13 million seahorses annually at that time, almost all from non-selective fishing gears (Vaidyanathan <i>et al.</i> 2021a). Catch and trade was largest in the state of Tamil Nadu, primarily in the Palk Bay region with around 10 million seahorses caught annually, between 2015 and 2017, from that state alone. While tracking the trade is challenging because it is illegal, trader interviews suggested at least 1.6 t (~740,000 individuals) and as much as 11- 30 t (~3.4 to 9.2 million individuals) were exported from India each year in 2015-2017 (Vinod <i>et al.</i> 2020, Vaidyanathan <i>et al.</i> 2021b).  Hong Kong SAR Customs data report dried seahorse imports from India as recently as 2012. Traders surveyed in Hong Kong SAR in 2017 reported India among the top ten most important sources of dried seahorses in trade (Foster <i>et al.</i> 2019a).
<b>Indonesia (ID)</b>  Exports suspended in 2009*	The pre-CITES seahorse trade was large and complex, both domestically and for export. In-country surveys were used to assess the seahorse trade in Indonesia from 1999 to 2001 (Perry <i>et al.</i> 2005). Indonesia was a significant consumer of dried seahorses, using an estimated 21.9 tonnes annually for traditional medicines (~8 million individuals), mostly for traditional Indonesian Jamu medicine, but also for traditional Chinese medicine (TCM). Seahorses were caught by fishers throughout Indonesia, in both target and incidental fisheries. Dried seahorses were exported to Hong Kong SAR, South Korea and likely Malaysia and Singapore, with additional exports of seahorse-based Jamu medicines to the latter two countries. Hong Kong SAR Customs data reported importing a total of ~280,000 dried seahorses from Indonesia during 2000-2002, Taiwan Province of China Customs data reported importing a total of ~390,000 dried seahorses from 1988-2003, and China Customs data indicate total imports of ~760,000 dried seahorses and pipefish from 1993-1999.	Hong Kong SAR Customs data reported total imports from Indonesia of ~275,000 dried individuals across three years (2004, 2007 and 2009) and Taiwan Province of China Customs data reported importing a total of ~300,000 dried seahorses from 2004-2007.  Traders surveyed in Hong Kong SAR in 2017 reported Indonesia as the third most important source of dried seahorses in trade (Foster <i>et al.</i> 2019a).
<b>Malaysia (MY)</b>  Exports suspended in 2009*	In 1998, exports of dried seahorses from peninsular Malaysia primarily went to Thailand while exports from Sabah were destined for China (including Hong Kong SAR and Taiwan Province of China) and Singapore (Perry <i>et al.</i> 2010). While the survey could not estimate the overall export volume of seahorses from Malaysia, Customs statistics from Hong Kong SAR and Taiwan Province of China suggested Malaysia's importance as a source of dried seahorses: Hong Kong SAR data indicated imports of 40 kg (~12,500 individuals) of dried seahorses from Malaysia in 2003 and 985 kg (~310,000 individuals) in 2004; Taiwan Province of China reported importing 64 kg (~20,000 individuals) of dried seahorses in 1997 and 302 kg (~95,000 individuals) in 1998. In addition to being a notable exporter of seahorses in 1998, Malaysia was reported to consume approximately 3000 kg of seahorses in TCM (~960,000 individuals). All seahorses captured in Malaysia were obtained as bycatch in non-selective and destructive fishing gears (Choo & Liew 2005, Perry <i>et al.</i> 2010).	Hong Kong SAR Customs data report dried seahorse imports from Malaysia as recently as 2018. Traders surveyed in Hong Kong SAR in 2017 reported Malaysia as among the top ten most important sources of dried seahorses in trade (Foster <i>et al.</i> 2019a).

Jurisdiction	Pre-CITES	Most recent understanding
<p><b>Philippines (PH)</b></p> <p>Catch and trade banned since 2004*</p>	<p>Fisheries and trade surveys were carried out across the Philippines in the early 2000s (Pajaro &amp; Vincent 2015). Fishers in the survey areas were estimated to land 5 million seahorses (2 – 8 million) annually. The vast majority of seahorses (~4.2 million individuals) were caught by small-scale fishers targeting seahorses, collecting them by hand while free diving or compressor diving, or in scoop or push nets. An estimated 800,000 seahorses were also caught each year in non-selective gears, especially bottom trawls. Annual exports of dried seahorses were estimated at 4 million seahorses (2 – 6 million). Hong Kong SAR Customs data reported average annual imports of 3.1 million dried seahorses (range 1.5-6.2 million) from the Philippines between 1998-2004. Dried seahorses were most commonly exported from the Philippines for TCM, usually to China (including Hong Kong SAR and Taiwan Province of China) and Singapore.</p>	<p>A survey of seahorse fisheries and trades carried out in 2019 estimated a total national catch of ~1.7 million individual seahorses per year across the surveyed gear type/province combinations (Foster <i>et al.</i> 2019b). The study found compressor diving – an illegal form of fishing in the Philippines – to be the primary source of seahorse landings in the Philippines, landing 54% of the total estimated catch. This was more than micro-trawls (also illegal, ~260,000 individuals), push nets (217,000 individuals) and spear/skin divers (~214,000 individuals) combined. Most landed seahorses were thought to be exported. Hong Kong SAR Customs data reported imports from the Philippines in 2006 (56,000 individuals) and 2010 (14,000 individuals; Foster <i>et al.</i> 2019b).</p> <p>Hong Kong SAR Customs data report dried seahorse imports from the Philippines as recently as 2015. Traders surveyed in Hong Kong SAR in 2017 reported the Philippines as the second most important source of dried seahorses in trade (Foster <i>et al.</i> 2019a).</p>
<p><b>Thailand (TH)</b></p> <p>Exports suspended in 2016*</p>	<p>Seahorse fisheries and trades were documented in Thailand in 1998-1999 (Perry <i>et al.</i> 2010). Seahorses were found to be landed primarily as trawl bycatch. Thailand's estimated catch of 6,600 kg year<sup>-1</sup> (~ 2.5 million individuals) apparently far exceeded domestic consumption (~520 kg year<sup>-1</sup> = 190,000 individuals). Thailand imported seahorses from and exported to other Asian nations. Trade surveys indicated that Thailand exported at least 5,000 kg annually (similar to the estimation of catch), but national Customs records reported 10,500 kg per year in exports (~1.9 million individuals), supported by official import records from Hong Kong SAR and Taiwan Province of China which indicated that Thailand was the source of up to 11,400 kg year per year (4.2 million individuals).</p>	<p>In-country surveys carried out in 2012-2014 estimated that annual catches were more than threefold larger than previously documented, approximating 29 million individuals from all gears (Aylesworth <i>et al.</i> 2017). Three fishing gears – two commercial (otter and pair trawl) and one small-scale (gillnet) – caught the most individuals. Even though most seahorses were incidentally caught, dried seahorses were estimated to be worth US\$26.5 million per year for Thai fishers (Kuo <i>et al.</i> 2018). While official data showed the export volume decreased after the implementation of CITES listing in 2005, stakeholders did not report a similar trend. The prices of seahorses were reported to be increasing.</p> <p>Traders surveyed in Hong Kong SAR in 2017 reported Thailand as the most important source of dried seahorses in trade (Foster <i>et al.</i> 2019a).</p>
<p><b>Vietnam (VN)</b></p> <p>Exports suspended in 2018*</p>	<p>Catch monitoring and surveys were used to assess the seahorse trade in Vietnam from 1995-1999 (Lourie <i>et al.</i> 1999, Giles <i>et al.</i> 2006, Meeuwig <i>et al.</i> 2006). Despite low daily catch rates, potentially 6.5 t of dried seahorses (~2.2 million seahorses) were taken annually as bycatch by trawlers operating out of five coastal provinces of Vietnam. Individual seahorse catches were collated by a few local buyers, who supplied wholesalers in three major markets: Ho Chi Minh City, Hai Phong City and Da Nang. Domestic consumption was small and most seahorses were exported, generally through unofficial and unregulated channels across the northern border into Guangxi province of China. Overall, the seahorse trade was of low economic value to Vietnam, but may have constituted an important source of income to upper level buyers and exporters.</p>	<p>Fisheries and trade surveys were conducted across eight coastal provinces from November 2016-January 2017 (Foster <i>et al.</i> 2017). Fishers reported catching seahorses from seven different types of fishing gear. Some divers and single trawls reported targeting seahorses directly, but most catch was incidental. Total national catch was estimated at ~16.7 million individual seahorses per annum with 85% from the southernmost province, Kien Giang. Pair trawls were estimated to land approximately 75% of Vietnam's total catch. Landed seahorses entered a complex trade, with large domestic consumption of seahorses in Vietnam for seahorse wine and tonics and considerable export.</p> <p>Traders surveyed in Hong Kong SAR in 2017 reported Vietnam as among the top ten most important sources of dried seahorses in trade (Foster <i>et al.</i> 2019a).</p>

Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions

Jurisdiction	Pre-CITES	Most recent understanding
<b>NET IMPORTERS</b> <b>China – Mainland China (CN)</b>	Surveys carried out from 1999-2000 indicated that Mainland China was the largest consumer of seahorses, predominantly for use in traditional Chinese medicine (TCM; Kwan & Vincent 2006). Most seahorses were imported, and annual consumption of dried seahorses was estimated at 20-30 t (~7.4-11.1 million individuals). In the past, most seahorse imports reportedly passed through Hong Kong SAR, but by 2000 the importance of Hong Kong SAR as an entrepôt had diminished: supplies were increasingly received directly from source countries and particularly through cross-border trade with Vietnam. Export volumes were small compared to imports, varying from 0-2 t (0-~740,000 individuals) annually.	As there have been no on-the-ground trade surveys carried out since the CITES listing, information on China’s trade in seahorses post-listing can only be deduced from the CITES trade database. According to CITES Trade Database for 2004-2011, Mainland China was among the top consumers of dried seahorses (together with Hong Kong SAR and Taiwan Province of China), with an annual reported import of 280,000 – 1.3 million individual dried seahorses (Foster <i>et al.</i> 2016). Although the top sources of seahorses imported into the region have been Asian countries (e.g., Thailand, Malaysia, Vietnam), a growing volume of seahorses ( <i>H. algiricus</i> ) were being imported from West Africa (Guinea, Senegal) to China, as Chinese commercial interests increased in the region. However, CITES data only reflect legal trade that is reported to CITES by Parties in their annual reports (UNEP WCMC 2013), which makes the true figure for China’s seahorse consumption uncertain but likely much higher than the above estimation.
<b>China – Hong Kong SAR (HK)</b>	Surveys carried out from 1999-2000 indicated that Hong Kong SAR was a major entrepôt for ingredients of TCM, including seahorses. Hong Kong Customs began recording seahorse imports and exports in 1998. Local seahorses were apparently not targeted but obtained as bycatch and sold into the TCM market. Most seahorses for sale in Hong Kong SAR, however, were imported. According to Customs records, the territory imported 25 t (~9.3 million individuals) annually of dried seahorses from a variety of source countries between 2000 and 2004. Surveys suggest the official data provided a reasonable estimate of annual import volume, although most re-exports were not recorded. The vast majority of seahorses apparently came from Thailand and the Philippines, although a number of sources were cited in surveys and recorded in official data. A survey conducted in 2000 estimated annual domestic consumption of dried seahorses to be 6-7 t (~2.2-2.6 million individuals). The majority of imported seahorses were reportedly re-exported to Mainland China.	Hong Kong SAR, is the largest known reported importer of dried seahorses (Foster <i>et al.</i> 2016). Hong Kong SAR is reported to have imported an annual mean of 6.2 million dried seahorses (range = 2.5 – 5.2 million) across 2004-2011 (Foster <i>et al.</i> 2019a).  Hong Kong traders reported 22 countries as sources of dried seahorses in 2016–17; of these, traders most frequently reported Thailand as a source (Foster <i>et al.</i> 2019a). The Philippines, Australia, China (including Taiwan Province of China), Indonesia, Vietnam, India, Malaysia and “Africa” [sic] rounded out the top ten most reported sources of dried seahorses.

Jurisdiction	Pre-CITES	Most recent understanding
<b>NET IMPORTERS cont.</b>		
<b>China – Taiwan Province of China (TW)</b>	<p>Taiwan Province of China is a historically important consumer of dried seahorses, predominantly for use in traditional Chinese medicine (TCM). Project Seahorse trade research carried out in 2000 documented that although some consumed seahorses were obtained locally as bycatch, the majority were imported, primarily from Southeast Asia and Mainland China (Kwan &amp; Vincent 2006). Volume estimates obtained from traders suggested that annual domestic consumption may have exceeded 10 tonnes (~37,000 individuals). Taiwan Province of China's own Customs records analysed at that time suggested that between 1983 and 1987, 4-6 tonnes of dried seahorses were imported annually (~15,000 – 22,000 individuals). Recorded annual imports then increased to 7-12 tonnes between 1988 and 1998 (~26,000 – 45,000 individuals). Recorded exports were much lower, indicating that most imported seahorses were consumed locally.</p>	<p>As there have been no on-the-ground trade surveys carried out since the CITES listing, information on Taiwan Province of China's trade in seahorses post-listing can only be deduced from the CITES trade database and Taiwan Province of China's own Customs data. After seahorses were listed on CITES, Parties began to report their trade with Taiwan Province of China – and the CITES trade data from 2004-2011 suggested much higher imports of dried seahorses into Taiwan Province of China than documented in the 1980s and 90s. Indeed, Taiwan Province of China ranked the second-largest importer of dried seahorses based on the declared trade volume in CITES trade database – supposedly importing between 179,000 and 1.8 million individual per year across the eight-year period (Foster <i>et al.</i> 2016).</p> <p>In contrast, Taiwan Province of China's own Customs data, analysed in support of this study, report that the weight of declared seahorse imports has decreased dramatically since 2006, from about 7734 kg (~2.9 million individuals) per year before then to a mean of 483 kg (~180,000 individuals) per year from 2008-2018 (Chapter 8.3). Thailand was recorded as the biggest source country of seahorses imported to Taiwan Province of China, followed by the Philippines and Hong Kong SAR (presumably from re-exports). It is probable that the real trade volumes are higher than those in official datasets as seahorses are easily smuggled. However, TCM retailers reported that more recent import volumes are indeed much lower than in the past.</p>
<b>Singapore (SG)</b>	<p>Singapore was a major trade hub for seahorses, according to data from a trade study carried out by Project Seahorse in 1998 and 2000 (Perry <i>et al.</i> 2006). Singapore had a pivotal position as a distribution centre where dried seahorses may undergo re-packing before exiting the country. The study reported that Singapore imported dried whole seahorses from India, Indonesia and the Philippines, although one trader reported selling seahorses sourced from Singapore itself. According to the trade surveys, local businesses were also found to purchase dried seahorses from independent agents who had possibly hand-carried small quantities (about 1-2 kg) across borders from Indonesia to supply the retail stores and wholesale businesses in Singapore as often as every few months. Only a small proportion of the dried seahorses imported into Singapore were estimated to support domestic consumption (e.g., between 1,300 and 3,500 kg) while the remainder were reportedly re-exported to other jurisdictions such as China (including Hong Kong SAR and Taiwan Province of China), and the United States.</p>	<p>As there have been no on-the-ground trade surveys carried out since 2000, information on Singapore's trade in seahorses post-listing can only be deduced from the CITES trade database (which were analysed in support of this study, Chapter 9). On the trade data regarding seahorses, Singapore has submitted its annual reports to CITES for all years through to 2019, comprising data between 2004 and 2018. Compared to earlier information, CITES recent data suggest that the country's importance as a seahorse trade hub has greatly diminished; for instance, there were no trade records for direct imports of dried seahorses between 2015 and 2018. Between 2016 and 2018, dried seahorses were reportedly not imported and there was only one documented re-export for commercial purposes.</p>



**Figure 1.1.** The history of seahorse activities and actions for all net exporting jurisdictions of dried seahorses. Light blue = research; dark blue = country interventions; pink = CITES interventions/decisions; yellow = capacity building; green = related to CITES listing; purple \* = jurisdiction reported to be among top ten sources of dried seahorses into Hong Kong SAR (Foster *et al.* 2019).

## 1.5 Nature of export bans/suspensions

### Summary

For each jurisdiction, we have compiled a partial list of rules relating to seahorse exports, their scope, and the reasons they were put in place (Table 1.4). Importing jurisdictions should find it valuable to consult these lists – which are not otherwise available – when deciding whether to accept shipments of seahorses. All net exporting jurisdictions included in this report have either banned (by law) or suspended (by declaration) seahorse exports.

- Two jurisdictions, IN and PH, have regulations banning both exploitation and trade of seahorses (all species, and all forms of catch and trade).
- One Party, TH, has a regulation banning export of live, wild seahorses (all species). TH also has a suspension on dried seahorse exports (all species).
- Three jurisdictions, ID, MY, and VN, have declared export suspensions. For ID, export of wild live and all dried seahorses is suspended, but export of cultured live seahorses is allowed – although it is not clear if this includes CITES source codes F and C (F1 and F2+ generation, respectively), or just source code C. For MY and VN, the suspension applies to all seahorse species in all forms. All national suspensions were declared in response to the Party's inclusion in the CITES RST.

No jurisdiction was reported to be actively enforcing rules around seahorse fishing or trade. Indeed, jurisdictions appear to have declared the bans/suspensions and then turned their attention away from seahorses. Consequently, the main impact of the bans/suspensions has been on the legal trade, whereas illegal trade continued or increased (see also Section 1.4).

**Table 1.4.** Seahorse export bans/suspensions in effect for net exporting jurisdictions. For the purposes of this study a ban is by law, whereas a suspension is by declaration.

Jurisdiction	Rules	Date	Scope	Supporting regulations	Comments
<b>SOURCES</b>					
<b>India (IN)</b>	Export ban <i>Exploitation (all forms) and trade (all forms) banned</i>	2001	All species, dried and live, wild and cultured	Wild Life Protection Act (WLPA), 1972 – seahorses are listed on Schedule I, Part II(a) (marine fishes)	Seahorses added to the WLPA in response to early discussions of a CITES listing for seahorses.
<b>Indonesia (ID)</b>	Export suspension <i>Exports suspended until further notice</i>	2009	All species, dried and wild live	None	Suspension declared in response to Party's inclusion in the CITES Review of Significant Trade.
<b>Malaysia (MY)</b>	Export suspension <i>Exports suspended until further notice</i>	2009	All species, dried and live, wild and cultured	None	Suspension declared in response to Party's inclusion in the CITES Review of Significant Trade.
<b>Philippines (PH)</b>	Export ban <i>Exploitation (all forms) and trade (all forms) banned</i>	2004	All species, dried and live, wild and cultured	Republic Act 8850 Section 97: 2004-2015 Republic Act 10654 Section 102b: 2015-present	Republic Act (RA) 8550 banned exploitation and trade in all CITES listed species, irrespective of the Appendix. It was revised in 2015 as RA10654, which restores the potential to legalize fisheries and trade if scientific assessment shows such activities to be sustainable and a legal framework is put in place.
<b>Thailand (TH)</b>	Export ban  Export suspension <i>Exports suspended until further notice</i>	1988  2016	All species, live, wild  All species, dried	Thai Goods Export and Import Act B.E. 2522 None	Act bans export of all wild live marine fishes and sea snakes.  Suspension eventually declared in response to Party's inclusion in the CITES Review of Significant Trade after its initial efforts to meet recommendations.
<b>Vietnam (VN)</b>	Export and import suspension <i>Exports and imports suspended until further notice</i>	2018	All species, dried and live, wild and cultured	None	Suspension declared in response to Party's process in the CITES Review of Significant Trade after CITES recommended a trade suspension of one species ( <i>H. kuda</i> ) in 2013.



## **Details**

### **Export bans**

- In 2001, IN added seahorses to Schedule I Part II(a) of its Wild Life Protection Act (WLPA) 1972. The inclusion of seahorses under Schedule I of the WLPA came at a time CITES was actively considering including seahorses under Appendix II, and while IN was part of the CITES Syngnathid Working Group during 2000-2002. Removing the current catch and trade bans would require removing seahorses from Schedule I of the WLPA. According to the IN report, this has only been done once before; edible-nest swiftlets were down listed from Schedule I with the objective of allowing local communities, whose livelihoods were dependent on the collection of these nests, to harvest the nests commercially, thereby preventing the poaching of the nests which often resulted in the death of the fledglings therein. The local collectors were employed by the government to monitor and protect nests from poachers until the end of the breeding season. Nests from protected caves could be harvested only after fledgling of at least one brood, in contrast to the multiple times they were harvested before the ban was lifted.
- When seahorses were listed on CITES Appendix II, the PH Fisheries Code (RA 8550) banned exploitation and trade in all CITES listed species – irrespective of Appendix. Thus, this law took effect for seahorses as soon as the CITES listing was implemented, in May 2004. In 2015, PH updated its fisheries law to include provisions for legalizing catch and trade of Appendix II listed CITES species if scientific assessments can show they are sustainable, and a legal framework is put in place. At the time of writing, this had not yet been done for seahorses... and catch and trade remained illegal.
- The export of live, wild seahorses has been banned in TH since 1988. Research in support of this study suggested this is in line with the Thai Goods Export and Import Act B.E. 2522, which – according to a legal officer within the Thai CITES Management Authority – prevents the live export of all wild-caught marine fishes and snakes.

### **Export suspensions**

- All four jurisdictions with suspensions (ID, MY, TH, VN) put them in place in response to the Party's inclusion in the CITES RST.
- Respondents interviewed for this study reported that the rationale for all suspensions was the jurisdictions' inability to make NDFs, due to a lack of information and capacity, but also because the NDF framework for seahorses was considered too onerous.
  - “This policy was taken due to limited data on population, trade, and mechanisms for seahorse trade surveillance at that time.”
  - “During interviews, [CITES MA] respondents reported that the key challenge they face in implementing CITES for seahorses lies in the limited capacity of the CITES Management and Scientific Authorities to conduct a detailed study of seahorse populations, which [the MA] sees as an important baseline for NDF to allow sustainable trade.”
  - “There was some discussion between CITES MA and [fisheries authorities] on implementing an NDF for seahorse – but there is no concrete plan [to collect information on seahorse catch and trade] and there is no funding available for NDF implementation.”
- In all cases the suspension could be lifted by the jurisdiction's own CITES MA without that Party re-entering RST, although both TH and VN must obtain agreement from the Secretariat and AC Chair for any proposed change in its export suspension, providing a justification, as per Resolution Conf. 12.8 (Rev. Cop17) paragraph 1(k)(i): “in the case where a species/country combination was removed from the review process on the basis of the establishment of an interim precautionary export quota (including a zero export quota) in the place of implementing the recommendations, any change to this quota should be communicated to the Secretariat and Chair of the relevant Committee along with a justification, for their agreement.”

## Other findings

- Respondents interviewed from four jurisdictions, ID, PH, TH, and VN, expressed an interest in lifting the export bans/suspensions. However, this position wasn't shared across all Authorities or bodies within each jurisdiction.
- No jurisdiction was reported to be putting an explicit focus on enforcing rules around seahorse fishing or trade. Instead, for all jurisdictions, enforcement was reported to be opportunistic or happenstance.
- No jurisdiction was reported to be monitoring trade to ensure the ban/suspensions were being implemented to good effect.
- Only one jurisdiction, TH, was reported to be monitoring seahorse populations (through fisheries dependent and independent means), though results of the monitoring program have not been made available, and perhaps not even analysed.
- Jurisdictions appear to have declared the bans/suspensions and then turned their attention away from seahorses. As such the main impact of the bans/suspensions was on the legal trade, whereas illegal trade continued or increased (as has been recently documented for four net exporting jurisdictions, see Section 1.4).
- The bans/suspensions were reported to have led jurisdictions to set aside responsibilities for seahorse conservation, relying too heavily on the supposed benefits from a presumed end to trade:
  - “[The trade ban] has given a false sense of security to the conservation of these threatened marine fishes. In spite of widespread violations of the [regulations] for seahorse, three of the respondents interviewed stated that seahorses were afforded the strongest protection under [the regulations], which has stringent provisions, and therefore there was no need for any other measures.”
  - “The ban is a double-edged sword, in which the illegal dried seahorse trade still occurs due to limited capacities of surveillance and law enforcement agencies, and the absence of specific regulation for seahorses.”
  - “The ban has simply driven the trade from above ground to underground. In this way, the ban creates more confusion and makes seahorse populations more vulnerable because of unreported and unregulated trade that continues unrestricted because of poor enforcement.”

Although we focused this section on net exporters, CN was also invited to respond to two rounds of the CITES RST for four seahorse species. In response to that review, CN declared an end to wild exports of all seahorse species starting in 2011 (UNEP WCMC 2012). It does not appear this suspension was implemented, however, with both CITES data ([www.trade.cites.org](http://www.trade.cites.org)) and on the ground trade surveys (Foster *et al.* 2019) indicating that CN continues as a source of dried seahorses in international trade.

## Recommendations

8. Parties should inform the Secretariat of any national management measures that regulate or restrict international trade in seahorses; and how they are implementing and enforcing such measures for seahorses (in support of Decision 18.230a). The Secretariat should make a list of national measures available on the CITES website (in support of Decision 18.229b).
9. Jurisdictions should actively enforce any seahorse trade bans/suspensions they declare.
10. CITES should promote meaningful export regulation by scrutinizing and tracking all declarations of export suspensions made during the RST process, and imposing sanctions for failures to enforce these suspensions.
11. Parties should share copies of their NDFs for seahorse exports with the Secretariat for posting on the CITES website to assist other CITES Parties (in support of CITES Decision 18.230).
12. Parties should ideally share copies of their LAFs for seahorse exports with the Secretariat for posting on the CITES website to assist other CITES Parties.

## **1.6 Understanding of seahorse fisheries, trade and bans/suspensions**

### **1.6.1 What do respondents understand/know about seahorse fisheries and trade?**

#### **Summary**

We wanted to find out what respondents knew about seahorse fisheries and trade in their respective jurisdictions. This would help us understand whether Authorities had actually encountered and absorbed information, while also guiding us on what more was needed to help implement CITES effectively for seahorses. In our experience this understanding can be limited, as seahorses are neither considered a priority for CITES implementation among CITES Authorities, nor a fish of national importance among fisheries authorities.

National understanding about seahorse fisheries and trade seemed limited, even in jurisdictions where Project Seahorse had recently partnered with the CITES Authorities on research and planning (PH, TH and VN). Nonetheless, Authorities in most jurisdictions acknowledged the challenge of the illegal trade in dried seahorses, and provided insight into why it is so pervasive. The most commonly reported reason was a lack of government prioritization. Other reasons included the fact that most seahorses are obtained as bycatch, assumed benefits from trade outweigh perceived risks, the challenge of addressing the huge scale of the dried trade (in terms of volumes and traders), a lack of consultation/communication with key stakeholders (especially fishers/traders and enforcement bodies), and ongoing demand from consumer markets. It seemed that the bans/suspensions might not affect seahorse exporters either because they continued exports as usual or because they could export many other species to Chinese markets, like sea cucumbers and geckos.

#### **Details**

- CITES Authorities interviewed for eight jurisdiction reports recognized the challenge of the illegal trade in dried seahorses (CN, HK, ID, IN, MY, PH, TH, and VN).
- SG CITES Authorities and TW trade authorities considered that their roles as a transit hub and net importer of seahorses, respectively, had diminished over time.
- Trade surveys for HK, IN, PH, TH, and VN had been carried out in the last ten years, providing data in addition to formal trade records (see also Section 1.4).
- Trade survey for CN, ID, MY, SG, and TW were last conducted before seahorses were listed on CITES, so that Authorities had to rely on official data and anecdotal understanding.
- Authorities in HK were aware of the trade suspension in TH specifically – as TH had always been the main source of seahorses into HK.
- Respondents for the jurisdiction reports provided insight into why the illegal trade in dried seahorses is so pervasive (more on this topic in Section 1.6.3):
  - Lack of government prioritization (n = 7 jurisdictions).
    - Because seahorses are “bycatch species and don’t contribute significant income for the community or value for the fishery sector, so the government has paid very little attention and dedicated very few resources for this group of fishes.”
    - “Much of the discussed wildlife crimes tend to center on the high-profile wildlife such as elephant ivory and pangolin scales but there has been lesser attention on CITES-listed marine species (with the exception of sharks and rays). It is important that [the country] continues to enhance capabilities of detecting other smuggled wildlife.”
    - “Enforcement authorities seemed more concern about the protected sea cucumbers than seahorses, and he could often fly under the radar.”
    - “[Seahorses were of] low enforcement priority at a species level, due to the backlog of work needed for other endangered marine fish species.”
  - Most seahorses are obtained as bycatch (n = 3 jurisdictions). The vast majority of seahorses in dried trade are obtained as bycatch in nonselective fishing practices such as bottom trawls and gillnets. Indeed, target fisheries are the main threat in only one of the six net exporters (PH).

- “[According to fishers,] seahorses were normally caught incidentally in their fishing gear, and were often dead by the time they pulled their net up, and therefore they did not see the point of throwing seahorses back.”
- Benefits from engaging in illegal trade outweigh risks (n = 3 jurisdictions; see also Section 1.6.6).
  - “Poverty is main driver for continued catch and trade in spite of ban – [the money earned from] 1 kg dried seahorses [is] worth 75 kg [of] food fish; 6 sacks of rice.”
  - “Trade was highly lucrative, and in the few years he had been part of the trade there had been a drastic increase in the export value of seahorses.”
  - “Seahorse sales provided quite a sizeable supplemental income, particularly when target [species] catches were low, and therefore fishers were not willing to throw seahorses back despite the ban.”
- Large scale trade is hard to manage (n = 1 jurisdictions).
  - “Illegal trade happens without the permits because local authorities are outnumbered by traders engaged in the business.”
- Lack of consultation/communication with key stakeholders, especially fishers/traders and enforcement bodies (n = 4 jurisdictions).
  - “[Fishers] questioned legitimacy because... they had not been consulted prior to the imposition of a ban.”
  - “Export suspension [has] never been publicly announced; fishers and local fishery departments [were] not made aware of the decision to suspend trade...; fisheries experts did not know about the suspension – only CITES Authorities.”
- Ongoing demand from consumer markets (n = 5 jurisdictions).
  - “Trade ban might only be effective if China and other East Asia Markets also move to strengthen their enforcement to stop the illegal trade.”
  - “Demand reduction campaign for seahorse consumption should be implemented at the consuming countries....to help reduce demand from source countries.”
  - “Local enforcement forces are often outnumbered by illegal traders and thus the ‘black market’ will most certainly persist and may indeed grow. Such a problem could largely be addressed through raising awareness of consumers.”
- In two jurisdictions, respondents commented on the consequences of the export bans/suspensions for fishers and/or traders.
  - Respondents in one jurisdiction commented that the export suspension had not affected exporters as they continued to export many other species to Chinese markets, like sea cucumbers and geckos.
  - Respondents in another jurisdiction reported the suspension had no consequences for exporters of dried seahorses who continued business as usual – the main impact was on seahorse culturists who exported live seahorses for the aquarium trade.

## Recommendations

13. CITES Authorities should address their responsibilities to seahorses as for other taxa listed on the Appendices.
14. To address the management challenges associated with seahorse bycatch that largely drives illegal trade, jurisdictions should: enforce existing laws around nonselective fishing gears; establish, expand and strengthen national inshore exclusion zones in which bottom trawling is prohibited; constrain non-selective gears in MPAs to ensure vulnerable habitats and ecosystems are effectively protected and recovered; end harmful subsidies for bottom trawling; and, limit expansion of bottom trawling.

## 1.6.2 What is respondent awareness of, and use of, existing information and tools for seahorses?

### Summary

Respondents across ten jurisdictions knew little about the information, tools and expertise available to support implementation, despite the considerable array of materials that have been produced since the CITES listing and, especially, in response to the RST process (Foster & Vincent 2021). For seahorses, the road map is there, the tools are in place and the available protocols should allow good progress in CITES implementation for most Parties. Trade survey data have been published for both pre- and post-CITES periods for a number of jurisdictions. However, CITES Authorities still expressed a need to carry out their own studies on which to base NDFs, and some respondents commented that existing research on seahorse biology, fisheries and trade was anecdotal, out of date, or irrelevant because it had not been generated by the government.

All products that fill information gaps and help build capacity are available for Parties on the SPS SG website ([www.iucn-seahorse.org/cites-toolkit](http://www.iucn-seahorse.org/cites-toolkit)). A step-by-step framework for the development of adaptive management programs and making sound NDFs for seahorses was developed by Project Seahorse in consultation with CITES Authorities, government agencies, and national experts in ID, PH, TH, and VN (Foster & Vincent 2016). Protocols have been developed that allow Parties to deduce seahorse population trends (underwater – Loh *et al.* 2014; in fisheries – Foster *et al.* 2014), and regional identification guides – bifurcating keys – have been produced and translated into six national languages. In addition, a community science website, [iSeahorse.org](http://iSeahorse.org), collects valuable information on seahorse distribution around the world. Moreover, members of the SPS SG serve as its regional, thematic, and species focal points who can support Parties as needed (<https://www.iucn-seahorse.org/who-we-are>).

### Details

- Respondents' awareness of the information and tools available to support national CITES implementation for seahorses (research, NDF guidelines, identification materials, etc.) was generally low across all ten jurisdictions.
  - For one Party, "Only one respondent was aware of the existing trade and fisheries studies for seahorses and the identification guides, but they were not aware of the NDF framework. All other respondents were unaware of these tools and information for seahorses."
- Awareness of information and tools was greatest within two jurisdictions that have had recent support from external catalysts on CITES and seahorse issues (research, capacity building, etc. – see Figure 1.1), though the same awareness appeared to be less enduring among Authorities in one other Party that had received similar support. However, in all three jurisdictions where external collaborations had led to robust, recent, baseline information on seahorse exploitation and trade, CITES Authorities still expressed a need to carry out their own studies on which to base NDFs.
- Four jurisdiction reports documented a lack of information/research a main impediment to implementing CITES for seahorses.
  - "[Authorities] have to desire to review the possibility of lifting the export ban on wild and dried seahorses by implementing sustainable management through the CITES mechanisms. However, [Authorities] realizes that currently there are still any gaps that must be filled in order to implement this, namely: (i) research on the status of seahorse population, (ii) research on domestic utilization and trade patterns."
- With respect to existing information (research on seahorse biology, fisheries, trades), respondents felt the information available was anecdotal (n = 2 jurisdictions), out of date (n = 1 jurisdictions), or irrelevant as not generated by the government (n = 1 jurisdictions).
  - "Although [collaboration] has generated a great deal of information on seahorse fisheries and trade, often in partnership with government [e.g., CITES SA], the government [CITES MA] requires its own studies and information before it is willing to take action on improving CITES implementation for seahorses."

- Three jurisdiction reports mentioned a lack of in-country funding as the main impediment to research on seahorses.
- One report mentioned that seahorses' protected status in that jurisdiction made it hard to obtain permission to study seahorses.
- CITES Authorities partnering with civil society (NGOs, academia) was proposed as one way to increase national research capacity in five reports.
  - “The CITES Management Authority for fishes is currently open to potential partnership with NGOs and research institutions, to support the assessments of seahorse population status and strengthen their capacities in CITES implementation.”
- With respect to existing tools available to support CITES implementation for seahorses:
  - The identification guides were the most mentioned tools among the ten jurisdictions – they were mentioned by respondents in six jurisdictions.
  - The existing NDF framework for seahorses was considered irrelevant by two jurisdictions' Authorities because they don't allow export, and “too onerous” by another – too challenging to complete in a data poor environment.
  - Authorities interviewed in one jurisdiction said they are not using existing tools because they are not available in their national language.
- The CITES website ([www.cites.org](http://www.cites.org)) and the Checklist of CITES Species ([www.checklist.cites.org](http://www.checklist.cites.org)) were reported to be Authorities' main source of information for all CITES issues in two jurisdictions.
  - Respondents in two jurisdictions mentioned the lack of clear information on rules around seahorse trade as a major challenge to implementing CITES for seahorses.
- Seven jurisdiction reports mentioned a lack of national seahorse specific expertise, and only one mentioned seahorse expertise (related to seahorse aquaculture) within a CITES Authority. Reported expertise was specific to seahorse aquaculture in three jurisdictions.

## Recommendations

15. The Secretariat should create and publicize a repository on its website that includes a wide range of materials to support CITES implementation for seahorses, similar to that provided for sharks ([cites.org/eng/prog/shark](http://cites.org/eng/prog/shark)), for example (in support of Decision 18.228).
16. Governments should engage in-country taxon experts to support CITES implementation, as a way of amplifying capacity by deploying complementary skills and expertise. The corollary is that taxon experts need to partner with government to advance conservation agendas.
17. CITES and its Parties should work with Project Seahorse, host of the IUCN SSC SPS SG, to revise the NDF framework for seahorses to ensure it is applicable in data- and capacity-poor situations. This recommendation could be considered in the context of CITES Decisions 18.132 to 18.134 on NDFs.
18. CITES needs to increase Party awareness of the potential for advice from the IUCN SSC SPS SG, which has a global membership, with regional and thematic focal points. Likewise, jurisdictions should take note of IUCN Resolution WCC-2020-Res-095 (Annex 1.iv) which calls on governments to “take note that the Species Survival Commission (SSC) Seahorse, Pipefish and Seadragon Specialist Group can provide assistance on how to conserve syngnathids.”

### 1.6.3 Seahorse export/import paths

#### Summary

Our study found that respondents reported bycatch as the greatest threat to seahorses in five of six net exporting jurisdictions (ID, IN, MY, TH, and VN), particularly from bottom trawls. Only a few seahorses are caught at a time but the sheer volume of boats/fishers means cumulative catches are high (Lawson *et al.* 2016). They considered the non-selective nature of seahorse fisheries limited options for management, and meant trade would be ongoing in spite of trade controls. Because most seahorses are caught in extensive nonselective fishing practices, supply is often independent of demand, in contrast with other wildlife trade. Respondents further understood that restrictions on trade alone will not achieve sustainable seahorse populations, even if fully implemented; they must be coupled with measures to reduce fishing pressure.

Target fishing – commonly using illegal methods – was reported as the main pressure on seahorses in PH. This should allow for more targeted fishing management measures – such as the use of minimum size limits and quotas.

Respondents largely appreciated and reinforced understandings of trade routes that had been documented for all of the jurisdictions included in this report. Dried seahorses are sold to/collected by first level buyers, who tend to be local to the fishing communities. They are subsequently collected by middle-traders who travel around visiting first level buyers, and then sold to exporters who often have close ties to the importing jurisdictions. Middle traders/exporters tend to stockpile dried seahorses until they have enough for export. Respondents raised complex issues in regulating seahorse trade: dried seahorses, are small, easy to stockpile and easy to hide while in transit; seahorses are often exported in mixed shipments with other dried seafoods and/or other regulated species (marine and terrestrial); fishers land seahorses caught in other countries' waters; it is difficult to enforce trade regulations across long national borders (particularly for jurisdictions that shared a border with a main consumer market); and seahorses in trade may take very circuitous routes.

#### Details

Reports had some common threads that offer important considerations as jurisdictions ramp up implementation of CITES for seahorses, while also differing in reporting/describing some issues.

- Bycatch was reported as the greatest threat to seahorses in five of six net exporting jurisdictions (IN, ID, MY, TH, and VN), particularly from bottom trawls. Respondents in these jurisdictions considered the non-selective nature of seahorse fisheries limited options for management, and meant trade would be ongoing in spite of trade controls. However, one jurisdiction report suggested seahorses could be used as a flagship species to raise national awareness of – and drive solutions for – the wider challenge of nonselective fishing.
  - “Bycatch is a serious problem and a major obstacle to transform [the country’s] fisheries to become more sustainable. Given the single most serious threat to seahorses is bycatch from trawling, seahorses could be a flagship species for [the government] to address larger sustainability issues of [the country’s] fisheries sector.”
- Target fishing was reported as the main pressure on seahorses in PH. This should allow for more targeted fishing management measures – such as the use of minimum size limits and quotas. However, most seahorses are obtained using illegal fishing methods (such as compressor diving), and so any fishing controls on legal gears would need to be coupled with enforcement with respect to illegal gears.
- Respondents in three net exporting jurisdictions suggested that fishers are landing seahorses caught in other countries' waters. This challenge was also mentioned in the report for one net importing jurisdiction.
  - “Most catch [is] from large trawling effort by big vessels that fish offshore and from international waters; it was repeatedly reported that many dried seahorses landed in [country] came from other SE Asian countries – collected at sea from other fishers – [it was] suggested by CITES MA that this contributes a great deal to the trade.”

- Seahorses were reportedly smuggled through a variety of means (n = 4 jurisdictions), including personal luggage, post, air cargo, land cargo, sea cargo, and transshipment between fishing boats at marine borders (in no particular order).
  - “The respondents expressed the difficulties in finding smuggled dried seahorses, as they could be carried in the pockets or suitcase easily.”
  - “Enforcement of the bans is very challenging because dried seahorses are easy to be smuggled through various means.”
- Dried seahorses were reported to be smuggled in mixed shipments (n = 2 jurisdictions), along with other regulated species (n = 5 jurisdictions), including shark fins, sea cucumbers, fish maws, marine turtle scutes, pangolin scales, and donkey skins (in no particular order).
- The large volumes of trade and long national borders were reported as key challenges in implementing CITES for seahorses (n = 4 jurisdictions), especially if they shared a border with a main consumer market for seahorses (n = 2 jurisdictions).
  - “The major challenges include: 1) large numbers of traders and fishers involved in the ‘black market’ vs. short-handed enforcement force; and 2) large numbers of locations along the coast where smuggling could happen.”
  - “Illegal trade still remains due to [the] vast area to cover by law enforcement agencies and multiple exit points for smuggling.”
  - “Enforcement team lacks human resources, technical expertise, and financial resources to enforce the huge area under its jurisdiction.”
- Seahorses can be traded along very circuitous routes to reach their destination (n = 3 reports).
  - One example is a seizure that took place in VN of a shipment of ~300,000 individual dried seahorses coming from Peru via HK. The species was identified to be *H. algericus* which is only found in West Africa. The seahorses were hidden within wet donkey skins (which are also often sourced in Africa). Thus, the trade route for these dried seahorses appears to have been from West Africa → Peru → Hong Kong SAR → Vietnam. VN Authorities expected that the seahorses were then moved across the land border into CN.
- Two jurisdiction reports suggested that understanding trade paths is useful for understanding potential for monitoring efforts as well as enforcement.
  - “The pathways indicated that local fishery retailers play an important role in facilitating the trade as they purchased seahorse from different sources then sold them to other traders [inter-province and international traders] ... The fishing port authority is also very important as they monitor vessels coming and going. Both these stakeholders could be engaged in monitoring the actual seahorse landing and actual seahorse trade volume in each locality. However, there should be a tool [app] to support them to do the monitoring ... Data from the app could then link directly to a [government] database to support management and reporting or enforcement efforts.”
  - “Specific catch recording and monitoring system for seahorse should also be developed since most of the catch will not be landed in official fishing ports” ... “Given the very long coastline of [the country], it is not very common for small-scale fishers to land their catch in official fishing ports. They often landed their catch at their village. Commonly there is at least one fish collector [buyer] in each village who then sells the fish into the supply chain.”

## Recommendations

19. To address the main drivers of illegal trade, governments need to constrain the operations of both traditional and mechanized non-selective fishing gear to reduce the impacts on seahorses, and to constrain illegal target methods of fishing seahorses.
20. CITES needs to conduct research on the convergence of seahorse IWT with that of other CITES listed species, with the aim of understanding potential for synergies with respect to improving CITES implementation at national and global levels.



21. Jurisdictions should take note of IUCN Resolution WCC-2020-Res-095 which calls on governments to “ensure that initiatives to combat Illegal Wildlife Trade (including e-commerce) include syngnathids, as appropriate” and “meet all CITES obligations for seahorses.”
22. CITES should collaborate with the TCM industry to provide purchasing guidelines that will advance implementation of the Convention for seahorses.
23. Governments should explore novel techniques for detecting seahorses in trade, such as eDNA or detector dogs.

#### **1.6.4 Seahorse conservation status and taxon-specific regulations**

##### **Summary**

The jurisdiction specific reports prepared for this study provided useful information on national conservation assessments (Table 1.5) and seahorse-specific legislation (Table 1.6), which complements existing analyses of such tools (Stanton *et al.* 2021). All seahorse species native to the exporting jurisdictions included in this report have global assessments (Annex 1.v), but reports indicate that most jurisdictions still need to complete even the first national conservation assessments for seahorses. Reports further showed that while four of the jurisdictions had developed protective measures for seahorses, there is no evidence of implementation. Only one jurisdiction was reported to be tracking population trends over time in order to determine the effectiveness of their interventions but results were not available.

The reports contained information on seahorse specific initiatives within some jurisdictions to control catch and/or trade of seahorses. Seahorse specific management measures can include catch quotas, size limits (min, max, slot), leaving pregnant males, and export quotas (*inter alia*; Foster & Vincent 2016), most of which had been considered in at least some places. However, we are concerned that poorly planned and executed releases of captive bred seahorses were often mistakenly cited as a tool for conservation or management of wild populations.

**Table 1.5.** National conservation assessments for seahorses in net exporting and importing jurisdictions for dried trade in seahorses. Jurisdictions marked with a \* have a process for national conservation assessments, but have not yet assessed seahorses. Thailand, Vietnam, China, and Singapore are reported to use IUCN criteria in their assessments (Stanton *et al.* 2021). EN = Endangered; VU = Vulnerable.

Jurisdiction	National Red List or equivalent
<b>NET EXPORTERS</b>	
<b>India (IN)</b>	None*
<b>Indonesia (ID)</b>	None
<b>Malaysia (MY)</b>	None*
<b>Philippines (PH)</b>	None* (but assessments planned)
<b>Thailand (TH)</b>	<i>H. comes</i> – VU (to remain VU in 2022) <i>H. histrix</i> – VU (to remain VU in 2022) <i>H. kelloggi</i> – VU (to remain VU in 2022) <i>H. kuda</i> – VU (to be updated to EN in 2022) <i>H. mohnikei</i> – VU (to remain VU in 2022) <i>H. spinosissimus</i> – VU (to be updated to EN in 2022) <i>H. trimaculatus</i> – VU (to be updated to EN in 2022) (From 2005 in Vidthayanon, 2005, 2022 information from Vidthayanon, pers comm to P. Manopawitr in Chapter 6)
<b>Vietnam (VN)</b>	<i>H. histrix</i> - VU <i>H. kelloggi</i> - EN <i>H. kuda</i> - EN <i>H. mohnikei</i> (listed under synonym <i>H. japonicus</i> ) - EN <i>H. trimaculatus</i> – EN (From Vietnam Red Data Book 2007, MSTE2007)
<b>NET IMPORTERS</b>	
<b>China – Mainland China (CN)</b>	<i>H. histrix</i> (Threatened) <i>H. kelloggi</i> (Threatened) <i>H. kuda</i> (Threatened) <i>H. mohnikei</i> (Threatened) <i>H. spinosissimus</i> (Threatened) <i>H. trimaculatus</i> (Threatened) (From Wang & Xie, 2004)
<b>China – Hong Kong SAR (HK)</b>	None*
<b>China – Taiwan Province of China (TW)</b>	None*
<b>Singapore (SG)</b>	<i>H. comes</i> (VU) <i>H. kuda</i> (VU) (From Singapore Red Data Book 2008 in Davison <i>et al.</i> 2008)

## Details

Reports indicate that most jurisdictions still need to complete even the first national conservation assessments for seahorses (Table 1.5):

- Four of the ten jurisdictions included in this study (CN, SG, TH, and VN) have national conservation assessments of seahorse species (details in Stanton *et al.* 2021), though assessments in all cases were from 2005-2008 and in need of updating.
- Only TH had a plan to update its assessments in 2022.
- Five of the six jurisdictions without seahorse specific assessments (HK, ID, MY, PH, and TW) have a process for conducting national assessments, but had not yet included seahorses.
- PH reported plans to assess seahorses in the near future, as a first step in assessing the possibility of legalizing fisheries and trades.

Reports showed that half the jurisdictions had developed protective measures for seahorses, albeit with poor implementation (Table 1.6):

- Of the ten jurisdictions included in this study, four had legislation specific to seahorses (aside from the obligatory national legislation that implements CITES): CN, IN, PH, and VN.
- Two jurisdictions have legislation banning catch and trade (IN since 2001, PH since 2004 – see also Section 1.5, Table 1.4).
- VN law prohibits catch of one species (*H. mohnikei*) and ostensibly regulates catches of *H. histrix*, *H. kelloggi*, *H. kuda*, and *H. trimaculatus* with minimum size limits and fishing seasons.
- In CN, everything associated with seahorses, from catches to domestic trade to import and export, requires permits. So, for example, fishing boats (of all sizes and gear types) would need a special permit to catch and sell seahorses, merchants need a special permit to be selling seahorses within CN, and traders need a special permit to import seahorses into CN.
- There was no evidence provided to indicate the laws in CN, IN, PH, and VN are being implemented on the ground.

Three jurisdiction reports mentioned seahorse specific initiatives (that were not legislated) to control catch and/or trade of seahorses.

- ID developed a national plan of action for seahorses for the years 2016-2020, but it was not implemented due to “internal political and priority changes in the ministry” and “absence of partners with capacity and experience in working with seahorse issue.” Seahorses were further listed as priority species by the ID CITES MA for marine species. Priority actions for 2020-2024 were reported to include data collection, population monitoring, restocking and management. Finally, ID implemented a quota for wild catch from 2015-2020 to support breeding operations, for three species, ranging from 200-8,000 individuals per year.
- In MY, an MA/SA has reportedly planned activities for seahorses including population assessments in areas outside current MPAs, restocking, and development of breeding technology for commercial purposes.
- TH reportedly implemented an export quota (when exports were legal), did some outreach about a 10 cm size limit for fishers and traders, and throwing back pregnant males for fisheries. The CITES MA also announced a ban on target fishing to the media, but it was not implemented.

It is notable that three reports cited seahorse *ex situ* culture coupled with “restocking” as measures that would support national implementation of CITES restrictions, when such ventures are commonly deeply problematic (CTSG 2021). In these jurisdictions, respondents from CITES MA, SA and seahorse experts indicated that culturing and releases would support seahorse conservation and management. However, increasing the supply of cultured seahorses does not usually lead to a decrease in illegal trade sourced from fisheries unless it is very carefully planned to do just that, and is coupled with very tight enforcement of fishing regulations. Further, “restocking”/supplementation poses risks to wild populations (disease and genetic issues) with few likely benefits. The IUCN Guidelines for Reintroductions and Other Conservation Translocations (CTSG 2021) recommend against the releases of captive animals except under very specific conditions that are not met in most seahorse ventures. Casual or misguided releases may well threaten wild populations.

Only one jurisdiction reported systematic plans for seahorse monitoring, even though such tracking is vital to implement CITES restrictions meaningfully.

- Only TH was reported to be monitoring seahorses – through fisheries dependent and independent means – but results were not available and so effectiveness of the monitoring program is unknown. No other jurisdiction was reported to know if the measures are benefiting seahorses.
- “Fisheries improvement measures...have been undoubtedly beneficial to seahorse conservation, but its direct effectiveness is largely unknown due to the lack of an effective seahorse-specific monitoring program.”

- Some jurisdictions reported on the use of existing national tools and initiatives that could be adapted to monitor seahorses. For example, the National Stock Assessment Program in PH, and VNFishBase and Tuna Fishing Database in VN. It was suggested in the reports that these programs could be adapted to integrate data collection on threatened marine species including seahorses.

## **Recommendations**

24. Jurisdictions should take note of IUCN Resolution WCC-2020-Res-095 which calls on governments to:
  - a. “by 2022, ensure the status of all syngnathids is assessed and included in national/regional Red Lists as warranted;” and “support the work of the Seahorse, Pipefish and Seadragon Specialist Group in keeping the assessments of all syngnathids up to date”;
  - b. “by 2021, restrict syngnathid culture to operations that have been subject to an appropriate/careful risk analysis prior to proceeding, and where results have concluded that it is reasonable/safe to continue;” and
  - c. “by 2021, for any release, apply SSC guidelines for reintroductions and translocations.”
25. CITES should work with the IUCN SSC Conservation Translocation Specialist Group (CTSG, [www.iucn-ctsg.org](http://www.iucn-ctsg.org)) to establish guidance on the risks of aquaculture and releases to wild populations of CITES listed species. Guidance within CITES Resolution Conf. 17.8 under Option 2 of Annex 1 provides a good starting point for such an effort.
26. Jurisdictions should collaborate with key stakeholders and species experts to develop national plans of action to advance CITES implementation for seahorses; these could relate to both enforcement and sustainability.
27. Jurisdictions should develop monitoring programmes for seahorses in their national waters to understand effectiveness of their trade rules and any other relevant implementation and enforcement actions for seahorse conservation and management; and share the design and initial results of these programmes to assist other CITES Parties (in support of Decision 18.231b and c).

**Table 1.6.** Seahorse specific regulations in net exporting and importing jurisdictions for dried trade in seahorses. **The information in this table is not exhaustive.** \*Restocking is very seldom an appropriate response to declines in wild populations and most such ventures need to be reconsidered. See text for further information.

Jurisdiction	Seahorse specific regulations	Date of implementation	Regulation details	Notes	Formal catch or trade monitoring in place?
<b>NET EXPORTERS</b>					
<b>India (IN)</b>	Wildlife Protection Act 1972	2001	All seahorses included on Schedule I, part II(a)	All forms of catch and trade banned, all species	No
<b>Indonesia (ID)</b>	None	NA	NA	National Plan of Action for seahorses developed in 2015, for the years 2016-2020 – but not implemented.  Seahorses listed as priority species by MMAF (CITES MA) – priority actions for 2020-2024 include data collection, population monitoring, restocking* and management.  Catch quota in place from 2015-2020 to support breeding operations, for three species ranging from 200-8,000 individuals per year.	No
<b>Malaysia (MY)</b>	None	Not reported	Not reported	DOFM (CITES SA) planned activities for seahorses included: <ul style="list-style-type: none"> <li>Population assessments in areas outside MPAs</li> <li>Restocking*</li> <li>Development of breeding technology for commercial purposes</li> </ul> J-Biotech (CITES SA) – studying seahorse genomics	No
<b>Philippines (PH)</b>	<i>(Seahorse specific regulation derives from a blanket policy that inadvertently embraced seahorses)</i>  Catch and trade prohibited until regulations can be put in place to ensure sustainability	2004	Republic Act 8850 Section 97: 2004-2015  Republic Act 10654 Section 102b: 2015 to present	Republic Act (RA) 8550 banned exploitation and trade in all species listed on any CITES Appendix. It was revised in 2015 as RA10654, which restores the potential to legalize fisheries and trade if scientific assessments show such activities to be sustainable and legislation is put in place.	No
<b>Thailand (TH)</b>	None	NA	NA	When exports were permitted (before 2016), CITES Authorities explored the use of an export quota, a 10 cm minimum size limit (MSL) for fishers and traders, and the return of pregnant males to the sea. The quotas were reportedly implemented. The MSL/pregnant male measures were reportedly not implemented.	Reportedly for catch (fisheries independent and dependent monitoring though results not made available)

Jurisdiction	Seahorse specific regulations	Date of implementation	Regulation details	Notes	Formal catch or trade monitoring in place?
<b>Vietnam (VN)</b>	Catch of <i>H. mohnikei</i> is prohibited at all times. Catches of <i>H. histrix</i> , <i>H. kelloggi</i> , <i>H. kuda</i> and <i>H. trimaculatus</i> are regulated with minimum size limits and fishing seasons.	2019	Decree 26/2019/NĐ-CP	The law is not yet implemented on the ground.	No
<b>NET IMPORTERS</b>					
<b>China – Mainland China (CN)</b>	All seahorse species are listed as national second class protected animals of China. This means their exploitation and trade (domestic / international) are regulated with permits.	1998 ( <i>H. kelloggi</i> ); 2002 (all species)	Regulations of the People's Republic of China on Concession for Utilization of Aquatic Wild Animals (1999, revised in 2017)	<p>It is forbidden to catch or kill seahorses except for “special circumstances” (such as research, teaching, artificial breeding, exhibition, donation, monitoring, pharmaceutical production, etc).</p> <p>Breeding seahorses for the purpose of commercial trade is allowed but subject to a permit regulation.</p> <p>Domestic trade of seahorses for TCM is allowed but only with special permissions.</p> <p>Import (as well as export) of seahorses requires permits.</p>	No
<b>China – Hong Kong SAR (HK)</b>	None	NA	NA	In 2003 the Hong Kong Chinese Medicine Merchants Association (CMMA) facilitated a voluntary pledge among merchants (members) to comply with the CITES recommended MSL of 10 cm (Decision 12.54). It unknown if this pledge is still in place.	No
<b>China – Taiwan Province of China (TW)</b>	None	NA	NA		No
<b>Singapore (SG)</b>	None	NA	NA		No

### 1.6.5 General laws and regulations of benefit to seahorses

#### Summary

All jurisdictions had general regulations that, if enforced, would benefit seahorse conservation (Table 1.7), but information on both enforcement and effectiveness were missing. It is important to note that our list is neither complete nor exhaustive, and depends entirely on what respondents chose to mention and report authors chose to highlight. The most commonly reported regulations were spatial management measures (MPAs and trawl exclusion zones). That said, the MPA coverage in these reports for all net exporting jurisdictions was well below even the Aichi Biodiversity Target 11 for 2020 (10% of coastal and marine areas). Moreover, all six jurisdictions highlighted challenges with enforcement of trawl exclusion zones and other spatial measures. Other fishing gear regulations were reported for some net exporting jurisdictions. Of note, one net exporting jurisdiction and two net importing jurisdictions had trade rules that went beyond the requirements for CITES Appendix II. CN was reported to have the most stringent rules around wildlife trade of the four net importing jurisdictions included in this study while HK traders operate in an environment where wildlife crime is taken seriously.

#### Details

Net exporting jurisdictions were reported to have a number of spatial management measures (MPAs and trawl exclusion zones) that were relevant for seahorses, along with a few other gear restrictions, but faced great challenges in implementation.

- All net exporting jurisdictions have MPAs, though only three jurisdictions provided some evidence that seahorses can be found in at least some MPAs.
  - “Seagrass habitats, where large numbers of seahorses are found, remain largely unprotected, [where non-selective gears] continue to operate, catching these seahorses in large numbers.”
- The MPA coverage noted in these reports for all net exporting jurisdictions was well below the Aichi Biodiversity Target 11 for 2020 (10% of coastal and marine areas), never mind the emerging commitments to 30% by 2030.
- Two jurisdiction reports mentioned creation of spatial measures focused on other species that could serve seahorses: a proposed dugong conservation area in IN, and proposed protection zones for sea cucumbers in MY.
- All net exporting jurisdictions exclude bottom trawling from some or all of their national waters. These would offer considerable benefit to some seahorse species if implemented. However, they should not be assumed to serve all species. For example, in TH the known distribution of *H. trimaculatus* is largely outside the zone closed to bottom trawlers.
- Only the PH report mentioned restrictions on other gears that catch seahorses.
- The reports for IN and TH mentioned seasonal gear closures.
- Challenges with enforcement of general measures that could help seahorses were highlighted for all six jurisdictions.
  - “Regulations such as trawl exclusions zones are poorly implemented, and trawlers continue operating in these waters. Furthermore, illegal fishing methods such as the destructive pair-trawling continue, damaging seahorse habitats, and catching seahorses, despite regulations under [fisheries legislation] banning such methods.”

One region of one net exporting jurisdiction had trade rules that went beyond the requirements for CITES Appendix II:

- Sarawak, MY, requires permits for all dealings with seahorses, including import and possession.

For net importing jurisdictions, the most relevant restrictions will be those affecting wildlife trade since domestic MPAs and trawl closures have no influence on wildlife populations sourced internationally.

- CN was reported to have the most stringent rules around wildlife trade of the four net importing jurisdictions included in this study. CN reportedly enhanced its law enforcement in combating illegal wildlife trade in response to the COVID 19 pandemic. Among the related initiatives are the approval of

The Decision on Completely Prohibiting the Illegal Wildlife Trade, Putting an End to the Abuse of Wild Animals and Effectively Safeguarding the Life, Health and Safety of the People by The Standing Committee of the National People's Congress of People's Republic of China (since February 2020; NPC, 2020). This legislation reportedly established a ban on wildlife trade as a long-term policy and added a ban on eating wildlife (all kinds) except 'aquatic products.' Protected aquatic animals such as seahorses are considered wildlife and not aquatic products. However, the law does say that 'the non-edible use of wildlife for scientific research, medicine, exhibition and other special purposes should follow existing national laws and under strict examination and quarantine inspection' (NPC, 2020), implying that seahorse can be still traded (through legal processes) as it is commonly used in TCM.

- In HK, traders must comply with domestic measures from AFCD for **live** specimens of CITES listed animals (all Appendices). This includes applying for an additional import permit for review before entry, and a license to possess for commercial purposes and trade within HK. In addition, HK applies a policy amended in August 2021. Recognizing the significance of HK as a prime hub for illegal trafficking of high value wildlife into SE Asian countries, and a key location with links to organized crime networks in the region, wildlife crime has been listed under Cap 455 Organized & Serious Crimes Ordinance. This allows authorities from the HK police force to apply their investigative powers tackling wildlife trade, and increase the resources placed on criminal investigation against wildlife syndicates.

### **Recommendations**

28. Jurisdictions should build on the list of seahorse relevant regulations in Table 1.7 to inform enforcement efforts and provide the basis for making LAFs should they re-open trade.
29. Jurisdictions should take note of IUCN Resolution WCC-2020-Res-095 which calls on governments to "enforce regulations on fisheries, area-based management, habitat protection, wildlife trade and other measures that affect syngnathids".
30. Jurisdictions should take note of IUCN Resolution WCC-2016-Res-050 which calls on governments to "work towards designating and effectively implementing at least 30% of their national waters as MPAs and other effective area-based conservation measures, ..., by 2030". In that context, jurisdictions should also take note of IUCN Resolution WCC-2020-Res-095 which calls on governments to "protect and restore freshwater, transitional and coastal habitats that are important for syngnathid species, using best practices."



**Table 1.7.** Existing general regulations that, if implemented, could benefit seahorse management and conservation. **The information in this table is not exhaustive** and came from the individual jurisdiction reports unless otherwise specified. We added further information for spatial management that we could glean from published literature, but did not have the capacity to document other regulations; the additional information we added is in *italics* and the source cited.

Jurisdiction	MPAs	Trawl exclusion zones	Other fishing gear regulations	Wildlife trade regulations	Notes
<b>NET EXPORTERS</b>					
<b>India (IN)</b>	In 2021: 25 MPAs along the mainland = ~6850 km <sup>2</sup> ; 104 MPAs in the two island chains = 3500 km <sup>2</sup> ; <1% implemented & fully/highly protected from fishing (MPAtlas 2021)	Bottom trawling is prohibited within 5-10 km of the coastline depending the State, as far as 19 km in West Bengal; pair trawling prohibited in Tamil Nadu	Annual monsoon trawl closure for 61 days, from 15 April-15 June on the east coast and 31 May-1 July on the west coast	(see Table 1.6)	Violations of trawl exclusion zones common  Monsoon trawl closure strictly enforced  MPAs poorly enforced – fishing activities, even trawling, continue unchecked
<b>Indonesia (ID)</b>	<i>In 2021, Indonesia had 197 MPAs, centred primarily on coral reefs and mangrove forests, covering 3% of its total marine area, ; &lt;0.1% are fully / highly protected areas (White et al. 2021)</i>	Bottom otter trawl nets banned in national waters	Not reported	Not reported	
<b>Malaysia (MY)</b>	<i>In 2019, Malaysia had 90 MPAs, primarily coral islands, covering 2.04% of its total marine area (Masud 2019); &lt;1% implemented &amp; fully/highly protected from fishing (MPAtlas 2021)</i>	Bottom trawling is prohibited within 9.3 km of the coastline. A process is underway to move this to 22.2 km	Not reported	In Sarawak, a permit is required for all dealings with species listed on CITES Appendix I and II, including possession (Wildlife Protection Ordinance 1998)	
<b>Philippines (PH)</b>	In 2014 = 1,800 MPAs of which 1,620 are community based; in 2010, coverage = 0.5% of municipal waters; <1% implemented & fully/highly protected from fishing (MPAtlas 2021)	Otters trawls are prohibited in municipal waters, within 15 km of the coastline	Three other gears that catch seahorses are illegal (compressor diving, floating gill nets and seine nets)	(see Table 1.6)	Illegal fishing occurs in municipal waters – insufficient enforcement

Jurisdiction	MPAs	Trawl exclusion zones	Other fishing gear regulations	Wildlife trade regulations	Notes
<b>Thailand (TH)</b>	18,136 km <sup>2</sup> or 5.6% total marine area in MPAs – but many allow fishing activity; 1.7% are strictly no-take (national parks); <i>1.7% implemented &amp; fully/highly protected from fishing (MPAtlas 2021)</i>	Bottom trawling is prohibited within 5.4 km of the coastline	Seasonal closures in Phang-nga Bay, Andaman Sea from 1 April to 30 June for all fishing activity  Seasonal closures in the upper GoT, from 1 July to 30 August for commercial fishing  Seasonal closure in Chumphon and Prachuap Khiri Khan from 15 Feb to 15 May for commercial fishing	Not reported	No fishing in national parks but small-scale fishing does occur and is overlooked  Artificial reefs are used to protect habitat from trawlers and may enhance habitat for seahorses
<b>Vietnam (VN)</b>	10 MPAs established that cover 1.8 km <sup>2</sup> ; <i>&lt;1% implemented &amp; fully/highly protected from fishing (MPAtlas 2021)</i>	Bottom trawling is prohibited within <11.1 km of the coastline, fishing vessels >15 m only allowed >22.2 km from coastline	Not reported	Not reported	MPAs are reportedly not well implemented – only two MPAs have their own management board  Trawling continues and is a common fishery violation
<b>NET IMPORTERS</b>					
<b>China – Mainland China (CN)</b>	<i>In 2020, China (including Hong Kong SAR) had 271 MPAs, covering 4.1% of its total marine area, 85% of which are in the nearshore area (Hu et al. 2020); &lt;1% implemented &amp; fully/highly protected from fishing (MPAtlas 2021)</i>	<i>Bottom trawls are banned from specific areas e.g., Bohai Sea; pair trawlers are generally prohibited (Zhang and Vincent 2020).</i>	Summer moratorium (on fisheries using all gears except hook and line; last ~ 4 - 5 months, May to September)	China has seven pieces of legislation that are relevant wildlife trade: 1. Law of The PRC on The Protection of Wildlife (since 1989) 2. Criminal Law of The PRC (since 1997) 3. Regulations of the People's Republic of China on Concession for Utilization of Aquatic Wild Animals (since 1999) 4. Measures for Value Evaluation of Aquatic Wild Animals and Their Products (since 2019) 5. Announcement about the Ban on Wildlife Trade (since Jan. 2020) 6. Notice on Joint Enforcement Actions Against Illegal Wildlife Trade (since Feb. 2020) 7. Decision on Completely Prohibit the Illegal Wildlife Trade, Putting an End to the Abuse of Wild Animals and Effectively Safeguarding the Life, Health and Safety of the People (since Feb. 2020)	

Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions

Jurisdiction	MPAs	Trawl exclusion zones	Other fishing gear regulations	Wildlife trade regulations	Notes
<b>China – Hong Kong SAR (HK)</b>	<i>In 2021, Hong Kong SAR had 7 MPAs, covering &lt;3% of its total marine area, one of which is fully / highly protected areas (Kay 2021)</i>	Bottom trawling (including pair, stern, shrimp and hang trawling) is banned from all Hong Kong SAR domestic waters	Not reported	For live specimens of CITES listed animals (all Appendices) traders must apply for an import permit and a license to possess for commercial purposes within Hong Kong SAR (Cap. 586 Protection of Endangered Species of Animals and Plants Ordinance)	
<b>China – Taiwan Province of China (TW)</b>	<i>In 2021, Taiwan Province of China, had 45 MPAs, covering &lt;8.16% of its total marine area; most of these MPAs (29) were established for fishery resources conservation in the 1970s (Hung et al. 2021); &lt;1% implemented &amp; fully/highly protected from fishing (MPAtlas 2021)</i>	All bottom trawling is prohibited within 5.5 km of the coastline	Regulation of gillnets varies among counties – can include closed seasons, closed areas, and the prohibition of using multi-layer gillnets	Not reported	
<b>Singapore (SG)</b>	<i>In 2019, Singapore had 2 MPAs, covering &lt;1% of its total marine area (Masud 2019)</i>	Use of trawl nets prohibited in national waters except for five local trawlers that have been granted an exemption	Not reported	Endangered Species Act – sets terms for implementing CITES but further makes it an offense to possess or have in control, sell, offer, advertise for sale, and display to public specimens that have been obtained in violation of CITES rules  Wildlife Act – protects Singapore’s wildlife – “intentional killing, trapping, taking and keeping of any wildlife prohibited unless with written approval from the DG”	

### 1.6.6 Seahorse seizures

#### Summary

Most jurisdiction reports included only anecdotal/sporadic information on seizures, with almost all noting at least one seizure. Information for some jurisdictions came from government respondents, but for others information was only available from media reports. Respondents reported seizures to be opportunistic, with no specific efforts to find smuggled seahorses. Finally, challenges with moving data from regional to national authorities, and then out to CITES, were highlighted for several jurisdictions, as were challenges with enforcing laws when seizures do happen. Project Seahorse and Oceans Asia are currently working on an analysis of media reports of seahorse seizures which will be made available in 2023.

#### Details

- Reports from eight jurisdictions included anecdotal/sporadic information on seizures, one jurisdiction provided government records on dried seahorse seizures and one jurisdiction reported no seizures. All seizures were of dried seahorses.
- In three jurisdictions, information on seizures – where available – was gleaned from media, rather than government data or from information shared by government respondents. However, one report noted that media attention was “given only to higher profile species like pangolin, elephant, rhino”.
- Seizures were reportedly opportunistic – jurisdictions were not explicitly looking for smuggled seahorses – as the species were not priorities for enforcement at borders.
  - “As seahorses are not a common fishery species and they were not protected by [national] regulations until very recently, very little attention has been paid to the species, especially among the enforcement bodies, therefore their trade almost went unnoted.”
- Respondents in five jurisdictions commented on challenges in passing seizures data from the local/regional enforcement bodies up to central Authorities. As three examples:
  - In one jurisdiction there is no regulation/requirement by which law enforcement institutions need to report wildlife seizures to the CITES MA.
  - In another jurisdiction, regional offices collect seizure data but it is not regularly transmitted to a central office as there is no centralized database to collect seizure information.
  - In yet another, there was some information on seizures of seahorses by local enforcement bodies, but they were never properly recorded.
- Three jurisdictions reportedly do not report seahorse seizures in their CITES IWT reports. In two cases this was supposedly because the MA does not receive the information from enforcement teams, and in another because “MAs are not held accountable and there are no penalties imposed by CITES for non-complying Parties.”
- Authorities in four jurisdictions shared that the genus level listing of seahorses was helpful because they could easily recognize seahorses but had trouble with individual species ID – but when they see one, they know it is regulated regardless of the species. However, this also meant they did not do species ID on seizures, in spite of species information offering important insights into trade routes.
- Seized specimens of seahorses in at least two jurisdictions were reportedly destroyed when no longer needed for law enforcement.
- Seized specimens of seahorses in one jurisdiction were reportedly donated for scientific research, education, enforcement and training. Disposal was the last resort, if no other options were available.

- Four jurisdiction reports contained information with respect to challenges with enforcing laws even when seizures do happen. One report suggested that successful convictions would act as a deterrent, but there are currently no indications that such convictions will take place.
  - “Finally, even where seahorses are seized and violators arrested, the penalties are negligible compared to profits to be made, and obtaining a conviction remains challenging. Fines associated with the [law] range from about USD 135-340, whereas even lower-level traders reported making at least USD 300 for a kilogram of the smallest seahorses [~600-700 individuals].”
  - “The existing judicial system of the country is a main challenge in combatting wildlife crime in [country].”
  - “Even when IWT is seized enforcement actions tend to stop at the point of seizure and not continue through the judicial process.”

## **Recommendations**

31. CITES needs to work with its Parties to improve data collection on and from seahorse seizures, particularly with respect to species identification, shipment routes and other wildlife in the shipment, as such data provide important information about trade. Specimens and/or data should be shared with species experts, including the IUCN SSC SPS SG, for analysis.
32. Parties should report seahorse seizures in their CITES IWT reports.
33. CITES should make identification guides for dried seahorses available in multiple languages. These can be based on existing identification tools for seahorses (<https://projectseahorse.org/resource-tag/id-guide/>).
34. CITES should explore use of DNA forensics and technology for seahorse species identification and monitoring trade flow.
35. CITES needs to work with its Parties to develop toolkits for training enforcement bodies (including frontline officers), prosecutors, judges, etc. in detecting and prosecuting IWT for the oft overlooked marine taxa such as seahorses.
36. Importing Parties should implement the Convention fully by requesting information on NDFs and LAFs when there are concerns about the validity of export permits.

## **1.7 Conclusions and key recommendations**

To meet their obligations under the Convention, Parties have two options. If Parties wish to keep trade bans/suspensions in place, they should focus on ending the large illegal trade in seahorses. Alternatively, they should work to ensure that the seahorses being traded are sourced sustainably and legally. Currently, the exporting Parties included in this study (all historically important) have banned or suspended exports of dried seahorses of their own volition. However, exports persist. Those exports represent illegal trade, with the majority of these illegal exports being consumed by importing jurisdictions that have always been dominant. Exporters and importers should end such illegal trade, and should ensure the fisheries that supply the international trade are not detrimental to wild populations of seahorses. Parties are not meeting their CITES obligations when they have export bans or suspensions in place, but fail to enforce such closures or adequately manage wild populations. Any level of continued international trade of seahorses is a conservation concern of CITES.

All six of the net exporter Parties we investigate in this report (ID, IN, MY, PH, TH, and VN) have exported notable numbers of seahorses both before and after the CITES listing, despite the fact that such trade is now officially banned or suspended. The ban in India pre-dated the CITES Appendix II listing by one year but arose from the listing process and the ban in the Philippines resulted from a blanket policy in the national Fisheries Code (banning even capture of any CITES-listed species). Indonesia and Malaysia decided on their suspensions early in the RST process while the suspensions in Thailand and Vietnam emerged as a result of the RST process. These bans and suspensions have not been effective. As long as nonselective fisheries persist, seahorses will be

caught and available for trade. Without meaningful enforcement and management of these bans/suspensions, seahorses are being exploited without oversight, monitoring, or management, leaving us unable to understand the status of wild populations. The current situation of ongoing illegal export is not effective in conserving seahorses in the wild.

If Parties choose to retain export bans or suspensions, it is imperative that exporting and importing Parties implement these measures properly. To constrain smuggling, Parties will need to be vigilant and effective in enforcement along supply chains and at national borders, with data properly curated and made available to CITES. Such enforcement will not be easy. Many factors will contribute to the difficulty of enforcement: financial benefits to participants commonly far outweigh the low risks of being caught fishing or trading illegally; dried seahorses can be kept and stockpiled for long periods; dried seahorses can be hidden in shipments, often mixed with other wildlife; dried seahorses are exported by the same merchants who export many other marine products; and, global demand for dried seahorses remains high. The high levels of illegal trade in dried seahorses have demonstrated that there is not adequate coordination or effort among Parties to enforce bans or suspensions sufficiently.

Given the real difficulty in ending seahorse trafficking, Parties might find it better to revert to the spirit of a CITES Appendix II listing and manage exports at levels that do not damage wild populations. That will mean addressing the nature and intensity of extraction of seahorses in fisheries, both those targeting seahorses and (predominantly) those catching seahorses in nonselective gear. In the Philippines, this means primarily constraining illegal capture by compressor diving, an illegal method. In most countries, however, seahorses are obtained primarily in bottom trawls and seine nets, along with a great many other species, including some that are listed on CITES Appendices. Bottom trawling, in particular, is increasingly less discriminate, to the point where some such fisheries have no target species and seek merely to extract life itself for use in feed for farmed fish, chickens and other animals. Such catches are commonly supported by subsidies and will continue until Parties address the extraordinary threat to marine biodiversity posed by these gears.

In the context of the CITES Appendix II listing for seahorses, the challenge is to ensure that seahorses are sustainably caught and that seahorses in trade are legally sourced. The most effective measure for advancing sustainable trade would be to reduce unintentional seahorse capture in bottom trawls. This would best be achieved by eliminating trawling from large areas, through enforcement of existing policies and growth of trawl exclusion zones. As we show in this report, all Parties have already designated no trawl zones for at least some trawl gear in coastal areas, commonly to support small-scale targeted fisheries. All Parties we cover in this report (i) rely on marine protected areas as general conservation and management policy, (ii) have already committed to protecting 10% of the ocean by 2020 under the Convention on Biological Diversity (CBD) Aichi Targets, and, will (iii) be directing efforts towards protecting 30% by 2030 under new CBD Global Biodiversity Targets. Eliminating bottom trawling from large areas would help the Parties meet these obligations to protection, which none of the Parties in our report has yet fulfilled.

Given the two possible routes towards compliance with CITES – and in light of the challenges with enforcing trade bans/suspensions – Parties may want to consider lifting their export bans/suspensions restrictions and implement the inclusion of seahorses in Appendix II of CITES for an enduring sustainable, legal and regulated trade. For seahorses, the road map is there, the tools are in place and the available protocols should allow good progress. Such a transition would involve making preliminary conditional NDFs and then strengthening them as information improves, with good monitoring/feedback systems in place. Parties would also benefit from the production of legal acquisition guidance for seahorses – the information obtained for this study provides a good starting point. Ensuring a sustainable and legal trade would still require monitoring and enforcement, but such efforts may be more feasible when they can be done in collaboration with stakeholders and trade activity is

“above ground”. As one jurisdiction report said: “Legalizing fisheries/catch could create an environment that incentivizes compliance with fisheries laws – where legal fishers put pressure on illegal fishers who would be threatening their, now, legal livelihoods.”

For seahorses – as with most species included in CITES Appendix II – jurisdictions will need management plans in order to grant an export permit, ensuring that the proposed export of the seahorses will not harm wild populations. Such plans need to be adaptive, consulting stakeholders and responding to new information as it emerges. Jurisdictions will also need to make sure seahorses are not obtained in contravention of national laws. Finally, jurisdictions will need to establish robust monitoring plans – to ensure seahorses are faring well under current management regimes, or whether more or different management is required.

The unsustainable and illegal trade in dried seahorses is a global problem and one that must be addressed in support of seahorse conservation worldwide. Although this study focused on Asia, its findings are relevant to global challenges in implementing CITES for seahorses – as have been documented in West Africa and Latin America, for just two examples (Cisneros-Montemayor *et al.* 2015, Globo.com 2016, HK Customs 2014). Our study has generated many recommendations for helping improve national CITES implementation for dried seahorses, compiled in Annex 1.ii, but we here include the top eleven which we consider immediate priorities for attention.

### **Overall**

1. CITES Authorities need to meet their responsibilities to seahorses as they would to other taxa listed in the Appendices.

### **Actors**

2. Parties should take note of IUCN Resolution WCC-2020-Res-107 (Annex 1.iii) which calls on governments to “establish/strengthen a national ministry/department/agency with an explicit mandate for marine biodiversity conservation.” These bodies should play a central role in implementing CITES for marine species.

### **Bans/suspensions**

3. Parties should inform the Secretariat of any national management measures that regulate or restrict international trade in seahorses; and how they are implementing and enforcing such measures for seahorses (in support of Decision 18.230a). The Secretariat should make a list of national measures available on the CITES website (in support of Decision 18.229b).

4. CITES should promote meaningful export regulation by scrutinizing and tracking all declarations of export suspensions made during the RST process, imposing sanctions for failures to enforce these suspensions.

### **Capacity**

5. The Secretariat should create and publicize a repository on its website that includes a wide range of materials to support CITES implementation for seahorses, similar to that provided for sharks, for example (in support of Decision 18.228).

6. CITES and its Parties should work with Project Seahorse, host of the IUCN SSC SPS SG, to revise the NDF framework for seahorses to ensure it is applicable in data- and capacity-poor situations.

7. CITES needs to work with its Parties to develop toolkits for training enforcement bodies (including frontline officers), prosecutors, judges, etc. in detecting and prosecuting IWT for the oft overlooked marine taxa such as seahorses.

## Illegal trade

8. To address the main drivers of illegal trade, governments need to constrain the operations of both traditional and mechanized non-selective fishing gear to reduce the impacts on seahorses, and to constrain illegal target methods of fishing seahorses.

9. CITES needs to work with its Parties to improve data collection on and from seahorse seizures, particularly with respect to species identification, shipment routes and other wildlife in the shipment, as such data provide important information about trade. Specimens and/or data should be shared with species experts, including the IUCN SSC SPS SG, for analysis.

## Management

10. Parties should take note of IUCN Resolution WCC-2020-Res-095 (Annex 1.iv) which calls on governments to:

- a. “by 2022, ensure the status of all syngnathids is assessed and included in national/regional Red Lists as warranted;” and “support the work of the Seahorse, Pipefish and Seadragon Specialist Group in keeping the assessments of all syngnathids up to date”;
- b. “by 2021, restrict syngnathid culture to operations that have been subject to an appropriate/careful risk analysis prior to proceeding, and where results have concluded that it is reasonable/safe to continue;”
- c. “by 2021, for any release, apply SSC guidelines for reintroductions and translocations;” and
- d. “enforce regulations on fisheries, area-based management, habitat protection, wildlife trade and other measures that affect syngnathids.”

11. Parties should develop monitoring programmes for seahorses in their national waters to understand effectiveness of their trade rules and any other relevant implementation and enforcement actions for seahorse conservation and management; and share the design and initial results of these programmes to assist other CITES Parties (in support of Decision 18.231b and c).

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## Annex 1

### Annex 1.i. Seahorse Decisions adopted at CoP18

#### Decisions 18.228 - 18.233 Seahorses (*Hippocampus* spp.)

<https://cites.org/eng/dec/index.php/42088>

18.228

Decision directed to: Secretariat

The Secretariat shall include available materials to support CITES implementation for seahorses (non-detriment findings guidance, identification materials, etc.) on the CITES website.

18.229

Decision directed to: Secretariat

The Secretariat shall:

- a) issue a Notification to the Parties inviting them to inform the Secretariat of any national management measures that regulate or restrict international trade in seahorses, and on how they are implementing and enforcing such measures for seahorses;
- b) compile the responses received to the Notification issued as per paragraph a) of the present Decision and communicate them to CITES Authorities through a Notification to the Parties and through its website; and
- c) subject to external funding:
  - i. commission a study on trade in *Hippocampus* spp., including applicable regulations, to understand shifts in international trade patterns since the inclusion of seahorses in Appendix II and the Review of Significant Trade of *Hippocampus* spp., as well as the implementation challenges and possible solutions; and
  - ii. organize an expert workshop to discuss the implementation and enforcement of CITES for trade in *Hippocampus* spp., including the recommendations and outcomes from the Review of Significant Trade process, and propose practical steps to address implementation and enforcement challenges; and
- d) report on the implementation of paragraphs a) through c) of the present Decision to the Animals and Standing Committee, as appropriate.

18.230

Decision directed to: Parties

To support the effective implementation of Appendix II of CITES for seahorses, Parties are invited to:

- a) inform the Secretariat of any national management measures that regulate or restrict international trade in seahorses; and how they are implementing and enforcing such measures for seahorses;
- b) share copies of their non-detriment findings with the Secretariat for posting on the CITES website to assist other CITES Parties; and
- c) inform seahorse traders within their jurisdiction of any quotas, including any zero quotas, and any trade suspensions for seahorses to further facilitate General compliance and enforcement by all participants in the trade.

18.231

Decision directed to: Parties

Parties are encouraged to:

- a) use existing tools for effective CITES implementation and enforcement that are relevant to seahorses;
- b) where quotas, trade suspensions, or both are in place, develop monitoring programmes for seahorses in their national waters to understand effectiveness of these actions and any other relevant implementation and enforcement actions for seahorse conservation and management; and
- c) share the design and initial results of these programmes with the Secretariat to report to the 19th meeting of the Conference of the Parties.

18.232

Decision directed to: Animals Committee

The Animals Committee shall analyze and review the results of any activities under Decision 18.229 and other relevant information available to the Animals Committee, and develop recommendations as appropriate to ensure sustainable and legal trade in seahorses.

18.233

Decision directed to: Standing Committee

The Standing Committee shall analyze and review the results of any activities under Decision 18.229 and develop recommendations as appropriate to strengthen CITES implementation and enforcement for trade in seahorses.

### **Annex 1.ii. Continuous list of recommendations**

1. Jurisdictions should take note of IUCN Resolution WCC-2020-Res-107 (Annex 1.iii) which calls on governments to “establish/strengthen a national ministry/department/agency with an explicit mandate for marine biodiversity conservation.” These bodies should play a central role in implementing CITES for marine species, or supporting the implementation of CITES for marine species if they are not the designated national CITES Authorities.
2. Existing national MAs and SAs with marine expertise need to have higher levels of staffing and funding to meet their obligations to the Convention.
3. EFPs that play a role in enforcing CITES should be fully trained in the identification and legal requirements applicable to marine species.
4. All jurisdictions need to improve inter-agency cooperation with respect to CITES implementation and data gathering.
5. CITES Authorities should formalize the role of species experts from civil society (academia, NGOs etc.) in implementing CITES at the national level.
6. CITES Authorities should raise awareness of seahorse trade and its role in conservation of the species with all stakeholders: fishers, traders, consumers, policy makers, enforcement agencies, judiciaries etc.
7. Given the unreliability of formal data, jurisdictions should ensure access to up-to-date trade research in collaboration with species experts. The following jurisdictions need new trade field surveys: CN, HK, ID, MY, SG and TW. Sufficient baseline information exists in the other jurisdictions on which to base adaptive management plans in support of CITES implementation.
8. Parties should inform the Secretariat of any national management measures that regulate or restrict international trade in seahorses; and how they are implementing and enforcing such measures for seahorses (in support of Decision 18.230a). The Secretariat should make a list of national measures available on the CITES website (in support of Decision 18.229b).
9. Jurisdictions should actively enforce any seahorse trade bans/suspensions they declare.
10. CITES should promote meaningful export regulation by scrutinizing and tracking all declarations of export suspensions made during the RST process, imposing sanctions for failures to enforce these suspensions.
11. Parties should share copies of their NDFs for seahorse exports with the Secretariat for posting on the CITES website to assist other CITES Parties (in support of CITES Decision 18.230).
12. Parties should ideally share copies of their LAFs for seahorse exports with the Secretariat for posting on the CITES website to assist other CITES Parties.
13. CITES Authorities should address their responsibilities to seahorses as for other taxa listed on the Appendices.
14. To address the management challenges associated with seahorse bycatch that largely drives illegal trade, jurisdictions should: enforce existing laws around nonselective fishing gears; establish, expand and strengthen national inshore exclusion zones in which bottom trawling is prohibited; constrain non-selective gears in MPAs to ensure vulnerable habitats and ecosystems are effectively protected and recovered; end harmful subsidies for bottom trawling; and limit expansion of bottom trawling.
15. The Secretariat should create and publicize a repository on its website that includes a wide range of materials to support CITES implementation for seahorses, similar to that provided for sharks ([cites.org/eng/prog/shark](https://cites.org/eng/prog/shark)), for example (in support of Decision 18.228).
16. Governments should engage in-country taxon experts to support CITES implementation, as a way of amplifying capacity by deploying complementary skills and expertise. The corollary is that taxon experts need to partner with government to advance conservation agendas.
17. CITES and its Parties should work with Project Seahorse, host of the IUCN SSC SPS SG, to revise the NDF framework for seahorses to ensure it is applicable in data- and capacity-poor situations. This recommendation could be considered in the context of CITES Decisions 18.132 to 18.134 on NDFs.

18. CITES needs to increase Party awareness of the potential for advice from the IUCN SSC SPS SG, which has a global membership, with regional and thematic focal points. Likewise, jurisdictions should take note of IUCN Resolution WCC-2020-Res-095 (Annex 1.iv) which calls on governments to “take note that the Species Survival Commission (SSC) Seahorse, Pipefish and Seadragon Specialist Group can provide assistance on how to conserve syngnathids.”
19. To address the main drivers of illegal trade, governments need to constrain the operations of both traditional and mechanized non-selective fishing gear to reduce the impacts on seahorses, and to constrain illegal target methods of fishing seahorses.
20. CITES needs to conduct research on the convergence of seahorse IWT with that of other CITES listed species, with the aim of understanding potential for synergies with respect to improving CITES implementation at national and global levels.
21. Jurisdictions should take note of IUCN Resolution WCC-2020-Res-095 which calls on governments to “ensure that initiatives to combat Illegal Wildlife Trade (including e-commerce) include syngnathids, as appropriate” and “meet all CITES obligations for seahorses.”
22. CITES should collaborate with the TCM industry to provide purchasing guidelines that will advance implementation of the Convention for seahorses.
23. Governments should explore novel techniques for detecting seahorses in trade, such as eDNA or detector dogs.
24. Jurisdictions should take note of IUCN Resolution WCC-2020-Res-095 which calls on governments to:
  - a. “by 2022, ensure the status of all syngnathids is assessed and included in national/regional Red Lists as warranted;” and “support the work of the Seahorse, Pipefish and Seadragon Specialist Group in keeping the assessments of all syngnathids up to date”;
  - b. “by 2021, restrict syngnathid culture to operations that have been subject to an appropriate/careful risk analysis prior to proceeding, and where results have concluded that it is reasonable/safe to continue;” and
  - c. “by 2021, for any release, apply SSC guidelines for reintroductions and translocations.”
25. CITES should work with the IUCN SSC Conservation Translocation Specialist Group (CTSG, [www.iucn-ctsg.org](http://www.iucn-ctsg.org)) to establish guidance on the risks of aquaculture and releases to wild populations of CITES listed species. Guidance within CITES Resolution Conf. 17.8 (under Option 2 of Annex 1) provides a good starting point for such an effort.
26. Jurisdictions should collaborate with key stakeholders and species experts to develop national plans of action to advance CITES implementation for seahorses; these could relate to both enforcement and sustainability.
27. Jurisdictions should develop monitoring programmes for seahorses in their national waters to understand effectiveness of their trade rules and any other relevant implementation and enforcement actions for seahorse conservation and management; and share the design and initial results of these programmes to assist other CITES Parties (in support of Decision 18.231b and c).
28. Jurisdictions should build on the list of seahorse relevant regulations in Table 1.7 to inform enforcement efforts and provide the basis for making LAFs should they re-open trade.
29. Jurisdictions should take note of IUCN Resolution WCC-2020-Res-095 which calls on governments to “enforce regulations on fisheries, area-based management, habitat protection, wildlife trade and other measures that affect syngnathids”.
30. Jurisdictions should take note of IUCN Resolution WCC-2016-Res-050 which calls on governments to “work towards designating and effectively implementing at least 30% of their national waters as MPAs and other effective area-based conservation measures, ..., by 2030”. In that context, jurisdictions should also take note of IUCN Resolution WCC-2020-Res-095 which calls on governments to “protect and restore freshwater, transitional and coastal habitats that are important for syngnathid species, using best practices.”

31. CITES needs to work with its Parties to improve data collection on and from seahorse seizures, particularly with respect to species identification, shipment routes and other wildlife in the shipment, as such data provide important information about trade. Specimens and/or data should be shared with species experts, including the IUCN SSC SPS SG, for analysis.
32. Parties should report seahorse seizures in their CITES IWT reports.
33. CITES should make identification guides for dried seahorses available in multiple languages. These can be based on existing identification tools for seahorses (<https://projectseahorse.org/resource-tag/id-guide/>).
34. CITES should explore use of DNA forensics and technology for seahorse species identification and monitoring trade flow.
35. CITES needs to work with its Parties to develop toolkits for training enforcement bodies (including frontline officers), prosecutors, judges, etc. in detecting and prosecuting IWT for the oft overlooked marine taxa such as seahorses.
36. Importing Parties should implement the Convention fully by requesting information on NDFs and LAFs when there are concerns about the validity of export permits.

**Annex 1.iii. IUCN Resolution WCC-2020-Res-107**

**Reducing the impact of fisheries on marine biodiversity**

(also available in French and Spanish at <https://portals.iucn.org/library/node/49246>)

CONSCIOUS that ocean health depends on thriving biodiversity;

MINDFUL that Sustainable Development Goal (SDG) 14 recognises the importance of ocean conservation and sustainable use;

EMPHASISING that fisheries can exert significant, growing proximate pressure on biodiversity;

DEEPLY CONCERNED about the high incidence of inadequate fisheries management, over-fishing, destructive fishing, catch of non-target marine life and illegal, unreported and unregulated fishing, contravening Article 61 of the United Nations Convention on the Law of the Sea (UNCLOS);

NOTING that negative impacts can extend far beyond those on fish and biodiversity, into social and economic spheres;

MINDFUL that the effects of fisheries on biodiversity are linked to realities such as livelihoods and culture, and exacerbated by corruption, human-rights violations, global markets and perverse incentives;

DEEPLY CONCERNED that Aichi Biodiversity Target 6 has been largely unsuccessful in stemming the adverse impacts of fisheries on biodiversity or in achieving recovery of depleted species;

ACKNOWLEDGING work by the United Nations Food and Agriculture Organization (FAO) and other organisations – such as regional fisheries management bodies (RFBs), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on Migratory Species (CMS) – to promote sustainable, responsible fisheries;

CONCERNED about the increasing number of imperiled marine species on the IUCN Red List of Threatened Species, potentially requiring action from CITES and CMS;

ACKNOWLEDGING that applying Resolution 6.021 Monitoring and management of unselective, unsustainable and unmonitored (UUU) fisheries (Hawai'i, 2016) is an important part of curbing fisheries impacts;

CONCERNED that ecosystem-based management of fisheries, as recognised by Recommendation 5.169 Ecosystem Approach to Fisheries (EAF) (Jeju, 2012), is rarely applied;

AWARE that fishing affects thousands of species that are caught in a targeted or incidental manner, many with poor scientific information and without precise regulation and control;

NOTING that applying Resolution 6.050 Increasing marine protected area coverage for effective marine biodiversity conservation (Hawai'i, 2016) to protect the ocean would significantly limit fisheries impacts;

CONCERNED that reconciling fisheries and conservation requires a comprehensive integrated approach, including consideration of small-scale fisheries, artisanal fisheries, women's fisheries, indiscriminate fisheries, habitat destructive fishing (e.g., bottom trawling, dynamite), non-fish fisheries (e.g., fisheries for invertebrates,



reptiles), extraction for non-food purposes (e.g., aquarium, medicinal), fisheries flawed by perverse incentives, and distant-water fisheries; and

RECOGNISING that marine biodiversity is also influenced by many other factors, both anthropogenic and natural, that are not directly linked to fishing;

**The IUCN World Conservation Congress 2020, at its session in Marseille, France:**

1. REQUESTS the Director General and Commission Chairs to:

- a. establish, in 2021, a Task Force to reconcile fisheries and conservation that:
  - i. involves all IUCN Commissions and all IUCN Regions;
  - ii. takes account of Antarctica and the Southern Ocean; and
  - iii. draws on relevant reports from peer organisations (e.g., IPCC Special Report on the Oceans and Cryosphere in a Changing Climate);
- b. produce, by 2022, a scientific and technical Situational Analysis on the effects of fisheries on biodiversity, involving a Consultative Workshop, and taking an inclusive approach, to cover:
  - i. diverse fisheries (e.g., small-scale, artisanal, women's, indigenous, non-selective, invertebrate, distant-water); and
  - ii. diverse issues (e.g., spatial management, efficacy of legal instruments, perverse incentives, economic dependencies, human well-being and rights, climate change impacts); and
- c. convene, in 2023, a second Consultative Workshop to consider the findings of the Situational Analysis and to propose policy to IUCN and implementing parties; and

2. ENTREATS all IUCN State and Government Agency Members and other competent authorities to:

- a. establish/strengthen a national ministry/department/agency with an explicit mandate for marine biodiversity conservation;
- b. ensure that national Red List assessments and national, regional, or global biodiversity reports include marine fishes and invertebrates;
- c. ensure that all fisheries management, including distant-water permitting, is compatible with conservation of threatened marine species (across entire ranges), vulnerable habitats and human well-being;
- d. constrain destructive and non-selective fisheries practices, respecting Resolution 6.021;
- e. ensure, when implementing Resolution 6.050, that marine protected areas help avoid and mitigate the negative impacts of fisheries on biodiversity; and
- f. remove perverse incentives for fisheries, including harmful subsidies.

#### **Annex 1.iv. IUCN Resolution WCC-2020-Res-095**

##### **Conservation of seahorses, pipefishes and seadragons (family Syngnathidae)**

(also available in French and Spanish at <https://portals.iucn.org/library/node/49234>)

DELIGHTED that seahorses, pipefishes and seadragons (more than 300 species in the family Syngnathidae) exhibit remarkable life histories, including paternal care through to full male pregnancies;

AWARE that syngnathids occur from tropical to subarctic regions in freshwater, transitional/estuarine waters and coastal seas;

MINDFUL that syngnathids are iconic flagship species, help structure communities, are ascribed medicinal and cultural value, and can be economically important for fishers and traders;

WORRIED that human activity and climate change are causing widespread degradation and destruction of syngnathids' freshwater, transitional and coastal habitats (e.g., estuaries, coral reefs, mangroves, seagrass beds);

CONSCIOUS that about 80 countries have exported tens of millions of syngnathids annually for traditional medicines, dried seafood, aquarium display and curiosities;

DISTURBED that syngnathids are extracted by bottom trawls and other non-selective gear at unsustainable levels, particularly during biomass fishing;

DISMAYED about large declines in catch per unit effort for syngnathids in industrial and small-scale fisheries;

NOTING that the IUCN Red List of Threatened Species includes 113 syngnathid species as Threatened, Near Threatened or Data Deficient, with special concerns for seahorses (*Hippocampus* spp.), freshwater pipefishes and estuarine species;

APPRECIATIVE that the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listed seahorses on its Appendix II and approved Decisions at the 18th Meeting of the Conference of Parties (CITES COP18, Geneva, 2019) to strengthen support for this genus;

CONCERNED that many CITES Parties face difficulties in implementation, with vast illegal exports of dried seahorses;

NOTING that bans on capture and export of syngnathids must be accompanied by constraints on non-selective fishing gear;

TROUBLED that aquaculture ventures for syngnathids often add to pressures on their wild populations; and

CONCERNED that syngnathids are released from captive populations or translocated haphazardly, without plans or monitoring;

**The IUCN World Conservation Congress 2020, at its session in Marseille, France:**

1. ENCOURAGES IUCN to:
  - a. use iconic syngnathids to promote action on broad ocean issues, including climate change; and
  - b. contribute to public databases on syngnathids, particularly iNaturalist and iSeahorse;
2. CALLS ON all Members, especially State and Government Agency Members, to:
  - a. take note that the Species Survival Commission (SSC) Seahorse, Pipefish and Seadragon Specialist Group can provide assistance on how to conserve syngnathids;
  - b. by 2022, ensure the status of all syngnathids is assessed and included in national/regional Red Lists as warranted;
  - c. support the work of the Seahorse, Pipefish and Seadragon Specialist Group in keeping the assessments of all syngnathids up to date;
  - d. ensure that initiatives to combat Illegal Wildlife Trade (including e-commerce) include syngnathids, as appropriate;
  - e. by 2021, for any release, apply SSC guidelines for reintroductions and translocations; and
  - f. protect and restore freshwater, transitional and coastal habitats that are important for syngnathid species, using best practices; and
3. URGES all IUCN State and Government Agency Members to:
  - a. enforce regulations on fisheries, area-based management, habitat protection, wildlife trade and other measures that affect syngnathids;
  - b. meet all CITES obligations for seahorses;
  - c. respecting Resolution 6.021 Monitoring and management of unselective, unsustainable and unmonitored (UUU) fisheries (Hawai'i, 2016), measurably reduce impacts of non-selective fisheries on syngnathids;
  - d. support implementation of Resolution 6.050 Increasing marine protected area coverage for effective marine biodiversity conservation (Hawai'i, 2016), to improve protection for syngnathid populations nationally;
  - e. ensure that fisheries programmes and subsidies do not threaten syngnathid populations; and
  - f. by 2021, restrict syngnathid culture to operations that have been subject to an appropriate/careful risk analysis prior to proceeding, and where results have concluded that it is reasonable/safe to continue.

**Annex 1.v. Global IUCN Red List Assessments for seahorse species occurring in the national waters of jurisdictions included in this report.**

<b><i>Hippocampus</i> species</b>	<b>Net exporter range States included in this report</b>	<b>Net importer range States included in this report</b>	<b>Global IUCN Red List status</b>
<i>H. barbouri</i>	ID, MY, PH		VU (Vulnerable)
<i>H. bargibanti</i>	ID, MY, PH		DD (Data Deficient)
<i>H. comes</i>	ID, IN, MY, PH, TH, VN	SG	VU
<i>H. denise</i>	ID, MY, PH		DD
<i>H. histrix</i>	ID, IN, MY, PH, TH, VN	CN, SG, TW	VU
<i>H. kelloggi</i>	ID, IN, MY, PH, TH, VN	CN, HK, TW	VU
<i>H. kuda</i>	ID, IN, MY, PH, TH, VN	CN, HK, SG, TW	VU
<i>H. mohnikei</i>	ID, MY, TH, VN,	CN, HK, SG, TW	VU
<i>H. pontohi</i>	ID, PH		LC (Least Concern)
<i>H. satomiae</i>	ID, MY		DD
<i>H. spinosissimus</i>	ID, IN, MY, PH, TH, VN	CN, HK, SG, TW	VU
<i>H. trimaculatus</i>	ID, IN, MY, PH, TH, VN	CN, HK, SG, TW	VU
<i>H. waleananus</i>	ID		NE (Not Evaluated)

## 2. India

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### 2.1 Background

All seahorses (*Hippocampus* spp.) are protected under Indian law which bans both fishing and trade. India is home to at least seven seahorse species (*Hippocampus camelopardalis*, *H. histrix*, *H. kelloggi*, *H. kuda*, *H. mohnikae*, *H. spinosissimus*, *H. trimaculatus*), of which four are frequently found in international trade (*H. kelloggi*, *H. kuda*, *H. spinosissimus*, *H. trimaculatus*; Perry et al. 2020, Vaidyanathan et al. 2021). In 2001, due to the burgeoning fisheries and international trade, all seahorses and their relatives (family Syngnathidae) were included under Schedule I, part II(a) (marine fishes) of India's Wild Life Protection Act, 1972 (WLPA, 1972; amended in 2002 and 2006; Ministry of Environment and Forests, 2001; see also Sreepada et al. 2002), which prevents all kinds of seahorse catch (targeted and incidental) and trade (domestic and international). India's national ban on seahorse extraction and trade was introduced while CITES was actively considering how to support seahorses under the Convention. A year after India's ban, in 2002, CITES included seahorses under Appendix II of the Convention (though the listing came into force in May 2004), which means that all 183-member governments (at the time of writing) need to ensure ongoing exports are sustainable, legal and monitored. India's national ban is therefore more restrictive than the CITES Appendix II listing, or for that matter, even more constraining than a CITES Appendix I listing (which bans export but does not directly reference extraction).

Prior to the ban, India was among the top four exporters of seahorses in international trade, with most seahorses from India derived from Tamil Nadu state, particularly from the Palk Bay and Gulf of Mannar regions (Perry et al. 2020, Salin et al. 2005). Seahorse fisheries and trade in this region originally emerged as an alternate fishery to the declining sea cucumber resources (*Holothuria* spp.; Marichamy et al. 1993). Dried seahorse exports increased over time – from an estimated 3.7-4.2 tonnes (t) in 1993 (~925,000 – 1.05 million individuals) and 3.6 t (~1.5 million individuals) in 1996 (Vincent 1996), to as high as 12 t (~5 million individuals) in 1999-2000 (Perry et al. 2020). Exports have been estimated at 9.75 t (~2.7 million individuals) in 2001-2002 (Salin et al. 2005) (Table 2.1) although official figures from India's Marine Product Export Development Authority (MPEDA) only reported exports of about 5.24 t (~1.4 million individuals) during this period (MPEDA 2003). For all time periods, most seahorses in India were exported, with few consumed domestically (Perry et al. 2020). Before the ban, a significant number of seahorses were obtained from targeted fisheries by skin-diving, providing significant income to divers in the few regions where seahorses were targeted (Perry et al. 2020). However, many seahorses (~11 million individuals, or 67% of total seahorse catches) were landed as bycatch from non-selective gear such as dragnets (modified shrimp trawls) and bottom trawls (Perry et al. 2020, Salin et al. 2005).

Very little research was conducted on the seahorse fisheries and trade in the country for about a decade and a half after the implementation of the ban, but recent studies carried out between 2015 and 2017 revealed that seahorse extraction continues in large numbers. Estimated placed national seahorse catches at 13 million seahorses annually at that time (Vaidyanathan et al. 2021). Most of the more recent seahorse catches have been from non-selective fishing gear such as bottom trawls and drag nets, while the targeted fishery that existed before the ban is now virtually non-existent. This incidental catch by non-selective gear continues virtually unchecked, being neither managed nor monitored (Vaidyanathan et al. 2021, Vinod et al. 2018).

Recent findings suggest that persistent catch and trade is largest in the state of Tamil Nadu, primarily in the Palk Bay region (Vaidyanathan et al. 2021, Vinod et al. 2020) with around 10 million seahorses caught annually between 2015 and 2017, from the state alone. Tracking this illegal trade is challenging because of the organized and underground operations of the smuggling activities. Findings based on interviews with smaller traders, conducted between 2015 and 2017, suggested at least 1.6 t (~740,000 individuals) continued to be exported annually. In contrast, analyses of seahorse catch estimates and the proportion of fishers who reported selling seahorses suggest this figure is more likely to be in the range of 11- 30 t (~3.4 to 9.2 million individuals) (Table 2.1).

**Table 2.1.** Studies from Tamil Nadu, India – the enduring hot spot for seahorse fisheries and trade – estimated annual seahorse trade volumes (tonnes, t). Adapted from Vaidyanathan et al. 2021.

Year	Location	Number of seahorses traded annually	Volume of seahorses traded (t) annually	Reference
1993	Palk Bay	924,000-1,050,000	3.7-4.2	Marichamy et al. 1993
1995	Palk Bay	1,500,000	3.6	Vincent 1996
1999	Tamil Nadu and Kerala (mostly from Tamil Nadu)	5,000,000	12.5	Perry et al. 2020
2000-2001	Gulf of Mannar, Palk Bay, Coromandel Coast	104,018	1.456	Murugan et al. 2008
2001	Palk Bay and Gulf of Mannar	2,648,179	9.75	Salin et al. 2005
2001	Palk Bay	~1,400,000*	5.3	Lipton & Thangaraj 2002
2002	Palk Bay	~340,000	1.32‡	Lipton & Thangaraj 2002
2015-17	Tamil Nadu coast	6,500,000	~21	Vaidyanathan et al. 2021

\*Using a conversion of 3.89g per individual dried seahorse as observed in the Palk Bay region (Salin 2005)

‡Extrapolations based on observations made only a month after the ban

## 2.2 Methods/Strategy

The author of this report, Dr. Tanvi Vaidyanathan, is an Indian citizen from Tamil Nadu who has worked extensively on marine management and conservation in India. She has a Ph.D. in Zoology from The University of British Columbia, Canada. Over the last decade and a half, she has worked on projects including the impacts of climate change on marine resources along the west coast of India, integrated coastal zone management plans for the Indian coastline, and on shared marine resources in the southern part of the country. Over nearly the last decade, her focus has been on understanding the seahorse fisheries and trade along mainland India, with a focus on the southern state of Tamil Nadu.

This study took place in April to December 2021 and drew on three repositories of knowledge. The author gathered information from all known published literature (grey and peer-reviewed), and notes from her own field surveys between 2015 and 2017, about seahorse fisheries and trade in India. She also asked the opinion of a diversity of experts in India. All such requests occurred during the COVID-19 pandemic when India was under a number of different restrictions.

The author reached out to key personnel from the Indian CITES Management Authority (MA), CITES Assistant Management Authority (CITES-AMA), three CITES Scientific Authorities (SAs), and the CITES Enforcement Focal Point (CITES EFP). Some participants suggested other respondents for the author to contact. In total, the author sought interviews with one respondent from the CITES-MA, four from the CITES-AMA, four scientists from the CITES SAs (two active and two retired - including one former head of an SA), one from the CITES EFP,

two from various enforcement agencies, a member of the CITES cell (explained in Section 2.3), a respondent from an NGO dealing with wildlife trade, and two scientists working on seahorse fisheries and trade in India. The author also received input from a lawyer proficient in the field of wildlife law who formerly worked with a conservation non-governmental organization (NGO) in India, a scientist working on seahorse aquaculture, a freelance marine conservationist, and one marine conservationist who used to work with an NGO.

In spite of best efforts, detailed responses were obtained from just six of the possible respondents. In the end, information for this report was obtained from:

- 1 officer from the CITES-AMA
- 2 scientists from one of the CITES SAs
- 2 retired scientists from the CITES SAs
- 1 representative from an NGO dealing with wildlife trade
- 1 lawyer proficient in the field of wildlife law
- 1 scientist working on seahorse aquaculture
- 1 freelance marine conservationist
- 1 marine conservationist formerly with an NGO

Despite repeated follow-ups, the author did not hear back from representatives at two of India's CITES SAs, one of the regional AMAs, the member of the CITES cell (see Section 2.3), and two local seahorse experts. Another AMA representative stated that seahorses did not fall under their purview and forwarded the query to another office. Additionally, the representative contacted at the EFP stated that they had not received the necessary permissions to respond to the questions. A response from the CITES-MA was supposedly in the works, but still pending at the time of writing.

As in-person visits were not possible because of COVID-19, a local resource person helped the author contact informants. The first approach was an email outlining the purpose of the project and posing key questions, such as the respondent's understanding of the seahorse fisheries and trade, legislation related to the protection of seahorses, seizures, tools and information available for seahorses, and the coordination between the different agencies (MAs/SAs/EFPs). The author then requested appointments from the respondents to discuss the questions over the phone, and where not possible the respondents were asked to email their responses with the possibility of follow-up questions and clarifying any answers. Calls were made to respondents at frequent intervals, and where phone numbers could not be obtained, repeated emails were sent.

## **2.3 The Actors**

### **CITES Authorities**

The primary actors responsible for CITES implementation in India include two Management Authorities (MAs), seven Scientific Authorities (SAs), and one Enforcement Focal Point (EFP) that coordinates and collates intelligence information (Figure 2.1).

### **Management Authorities**

The **Additional Director General of Forests (Wildlife), Ministry of Environment Forests, Climate Change (MoEF-CC)** is the CITES Management Authority of India. MoEF-CC is the central agency responsible for the formulation of policy and legislation for Indian wildlife law. The **Directorate of Wildlife Preservation, a division of the MoEF-CC**, is responsible for all matters related to wildlife, and the **Additional Director General of Wildlife** heads the Directorate. Conservation of wildlife falls under the concurrent list<sup>4</sup> of the Indian constitution, meaning that the responsibility lies with both the central and state

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<sup>4</sup> The Seventh Schedule of the Constitution of India defines and distributes legislative powers between the Union and States under three lists, viz., a Union List, State List, or a Concurrent List <https://www.mea.gov.in/Images/pdf1/S7.pdf>

governments. The central government is primarily responsible for formulating laws and advancing policy, whereas implementation of the laws and policies falls to the states.

**Wildlife Crime and Control Bureau (WCCB)**

The **regional directors of the Wildlife Crime and Control Bureau** (north, east, south, and west), located in Delhi, Kolkatta, Chennai, and Mumbai, respectively, are the Assistant Management Authorities-CITES (AMA-CITES). The AMA-CITES are primarily responsible for the issuance of export permits (Figure 2.2).

WCCB assists Customs officials at various points of entry and exit from the country including Delhi, Mumbai, Kolkata, and Chennai in i) identifying wildlife products and their parts, and ii) helping verify the legality of supporting documents. Officials from the WCCB ensure that consignments do not violate provisions of the Wild Life Protection Act, CITES, or the Export Import Policy (EXIM) (see Section 2.5), and if this is the case then a No-Objection Certificate (NOC) is issued.



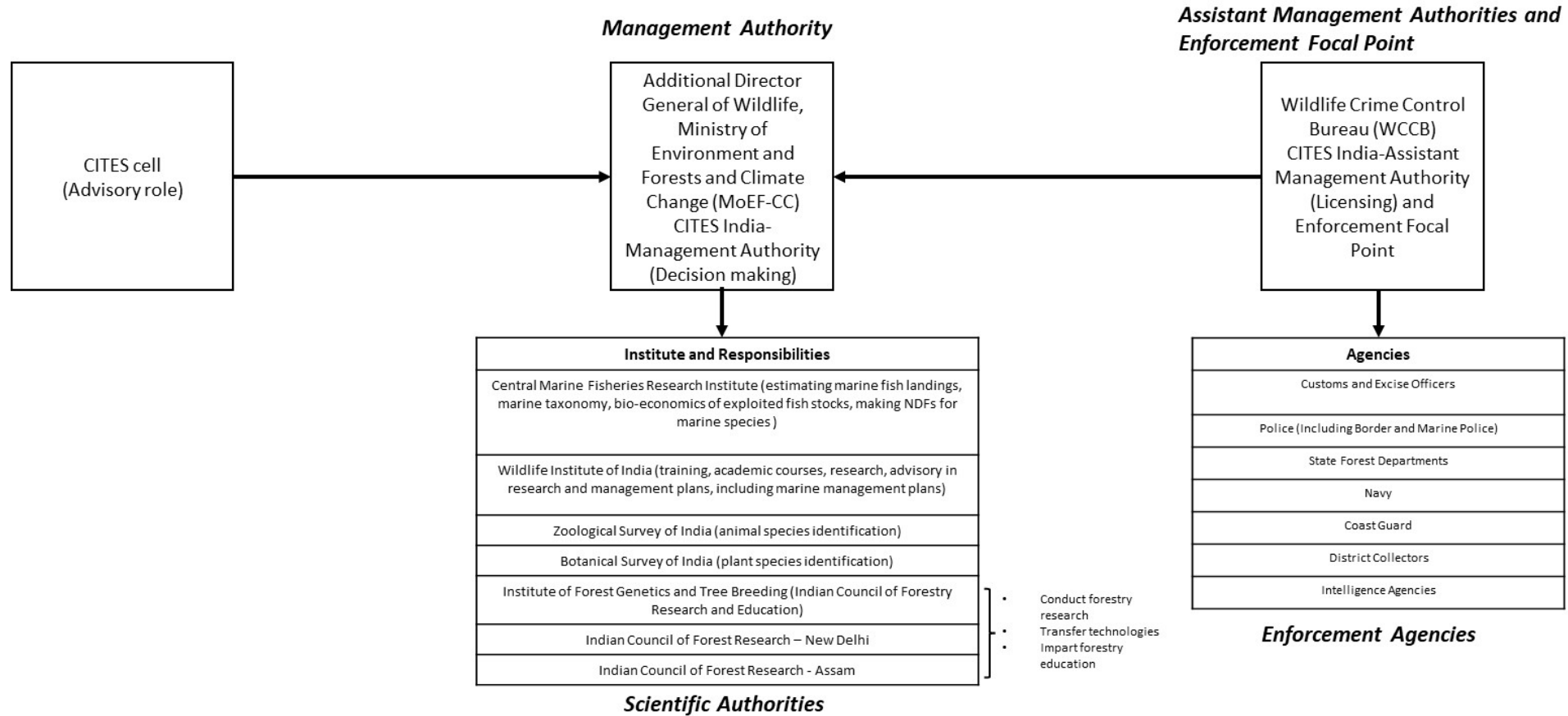


Figure 2.1. CITES Authorities in India.

## Scientific Authorities

There are seven Scientific Authorities (SAs) responsible for CITES implementation in India, namely:

1. the Wildlife Institute of India (WII),
2. the Zoological Survey of India (ZSI),
3. the Botanical Survey of India (BSI),
4. the Central Marine Fisheries Research Institute (CMFRI),
5. the Institute of Forest Genetics and Tree Breeding (Indian Council of Forestry Research and Education),
6. the Indian Council of Forest Research (ICFRE, Dehradun), and
7. the Indian Council of Forest Research (ICFRE, Assam).

Only three of these SAs are relevant to marine fishes, namely:

- **Central Marine Fisheries Research Institute (CMFRI):** CMFRI is a dedicated CITES SA for marine fishes, and responsible for coordinating NDFs for marine fishes.<sup>5</sup> CMFRI was established by the Government of India in 1967 and is currently part of the Indian Council for Agricultural Research (ICAR). Originally established to estimate marine fisheries landings and effort, identify marine organisms, and understand the bio-economic characteristics of exploited stocks of finfish and shellfish, the organization subsequently expanded its focus to marine finfish farming, biotechnology, and biodiversity. The Institute is responsible for the formulation of state fisheries management plans, with its primary mandate in increasing production, and in addressing issues relating to climate change and fisheries. CMFRI is also responsible for the national census on marine fishers that takes place every five years.
- **Wildlife Institute of India (WII):** WII is an autonomous institution of the MoEF-CC, established in 1982. The Institute conducts wildlife research and has an advisory role for wildlife management.
- **Zoological Survey of India (ZSI):** ZSI was established over a century ago, under the MoEF-CC. ZSI carries out surveys and research on a wide array of organisms and is one of the leading organizations in India with regards to species taxonomy. Scientists from ZSI are primarily responsible for identifying the species in trade and those confiscated from smugglers.

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<sup>5</sup> NDFs are developed when the MA (MoEF-CC) asks the central fisheries department for an NDF. The central fisheries department then invites an agency to make an NDF. This need not be an SA, but can be any government agency.

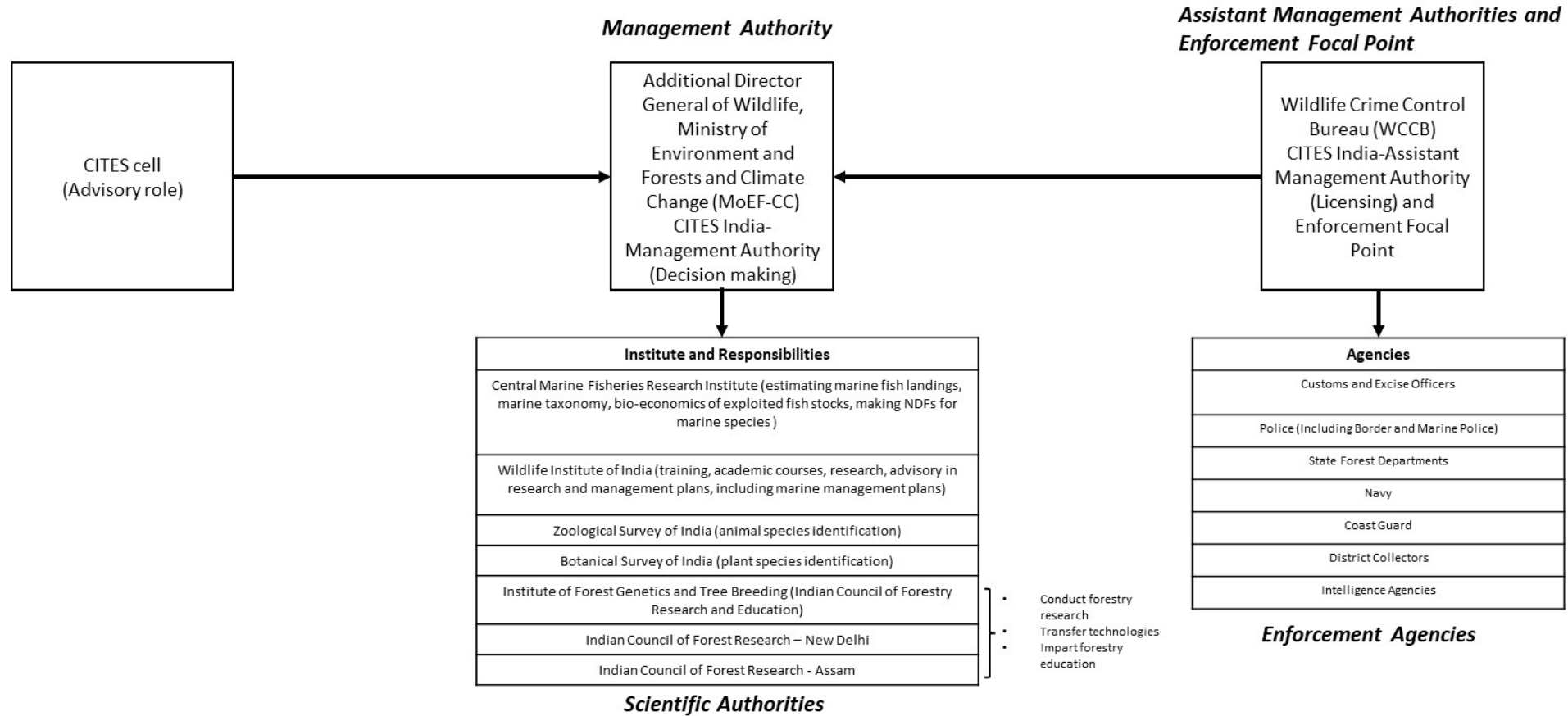


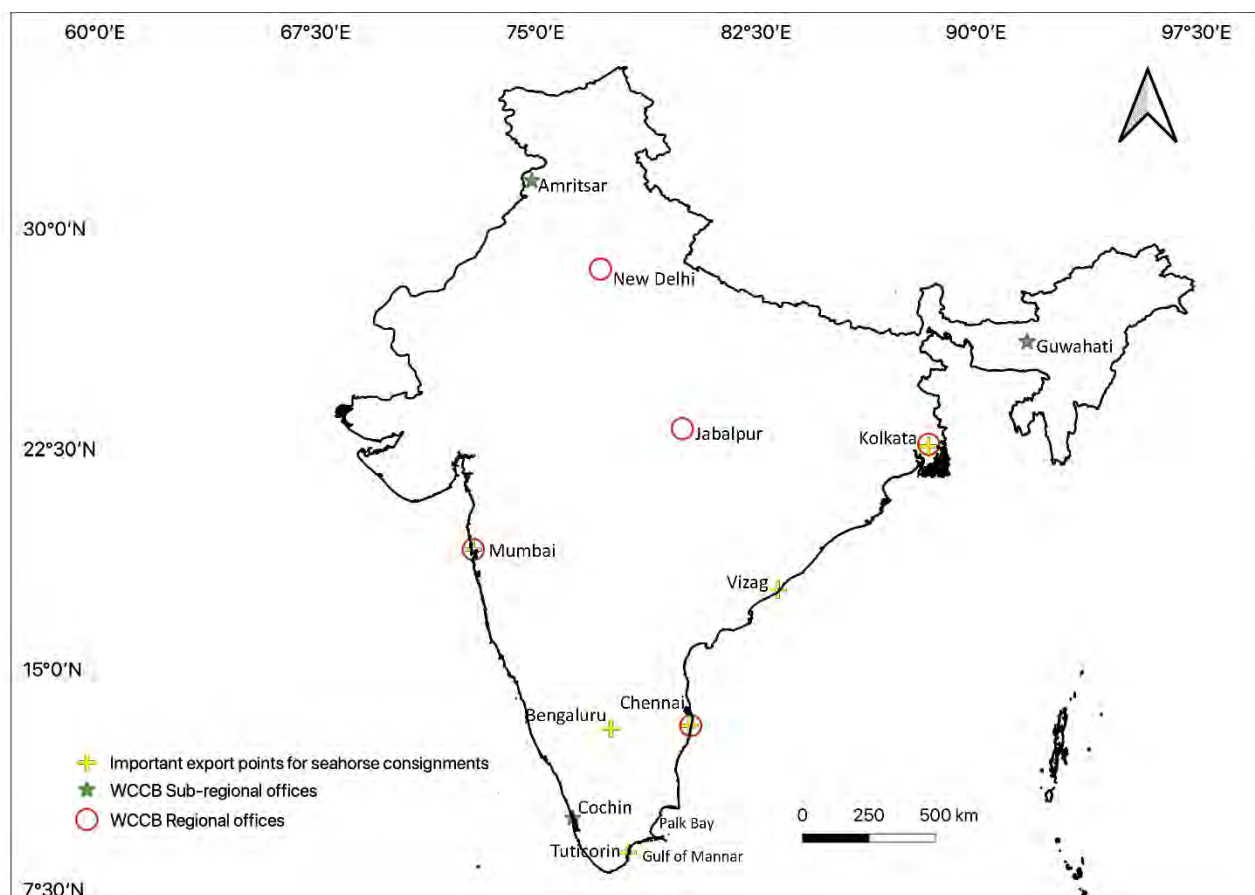
Figure 2.2. Process of issuing CITES export permits for listed species (modified from WCCB n.d.).

### Enforcement Focal Point

**Wildlife Crime Control Bureau (WCCB):** WCCB is the nodal agency for CITES enforcement in India and was created as a multi-disciplinary entity to counteract wildlife crime in the country. Enabling conditions for the creation of the Bureau were passed in the 2006 amendment of the Wild Life Protection Act, the Government of India notified the constitution of the WCCB (Order No. S.O. 918 (E)), and the Bureau itself was created in 2008. The WCCB coordinates enforcement efforts with various state agencies (e.g., State Forest Departments, Marine Police) and collects information from the various states. The WCCB coordinates the actions of State Governments and other authorities for the enforcement of provisions under the Wild Life Protection Act either directly or through regional and border units set up by the WCCB.

It is important to note that the State Department of Fisheries has no role in implementing the catch ban for seahorses or other Schedule I species. The State Fisheries Department has a mandate to enforce the rules of the Marine Fisheries Regulation Act and to increase fish production (see Other relevant agencies, below). Enforcing the catch ban mostly falls to the State Forest Departments.

The Headquarters of WCCB is located in New Delhi, and after its establishment, existing Regional Wild Life Preservation offices were designated as Regional Offices of the Bureau. The current regional offices are located at New Delhi, Kolkata, Mumbai and Chennai, and a new regional office in Jabalpur, with sub-regional offices at Amritsar, Guwahati, and Cochin (Figure 2.3).



**Figure 2.3.** Important export points for seahorse consignments and location of WCCB regional and subregional offices.

Officials of the WCCB gather intelligence through their own networks, from other state agencies, and through site visits. To foster inter-agency coordination at a national level, a Special Coordination Committee was constituted under the Chairmanship of the Secretary, Government of India, Ministry of Environment and Forest-Climate Change (MoEF-CC). Wildlife inspectors from the WCCB are also placed at various exit points to assist Customs officials in combatting illegal trade.

The Bureau was given the following responsibilities and tasks under Section 38 Z, of the Wild Life Protection Act, 1972:

- 38 Z (1) Subject to the provisions of this Act, the Wildlife Crime Control Bureau shall take measures with respect to –
- i) Collect and collate intelligence related to organized wildlife crime activities and to disseminate the same to state and other enforcement agencies for immediate action so as to apprehend the criminals and to establish a centralized Wild Life Crime databank.
  - ii) Co-ordinate actions by various officers, state Governments and other authorities in connection with the enforcement of the provisions of this Act, either or through regional and border units set up by the Bureau.
  - iii) Implement obligations under the various International Conventions and protocols that are in force at present or which may be ratified or acceded to by India in future.
  - iv) Provide assistance to concerned authorities in foreign countries and concerned international organizations to facilitate co-ordination and universal action for wildlife crime control.
  - v) Develop infrastructure and capacity building for scientific and professional investigation into Wild Life crimes and assists state Government to ensure success in prosecutions related to Wild Life crimes;
  - vi) Advise the Government of India on issues relating to Wild Life crimes having national and international ramifications, and suggest changes required in relevant policies and laws from time to time.

### **Enforcement Agencies supporting the Enforcement Focal Point**

Officials primarily responsible for enforcing the provisions of the Wild Life Protection Act, and matters relating to wildlife, are the various State Forest Departments. For marine violations, officials from State Forest Departments are responsible for apprehensions at the landing sites, even though they are rarely present in such areas. In other locations such as houses, processing units, and warehouses, enforcement is carried out by the State Forest Departments headed by the Chief Wildlife Wardens through the provisions of the Wild Life Protection Act. The Chief Wildlife Wardens are also responsible for issuing licenses and Legal Procurement Certificates for exporters. At the point of entry/exit, the enforcement of CITES provisions are carried out by the Customs officials and Regional Deputy Directors, WCCB, through the Customs Act, 1962 (see Section 2.5).

Other agencies that help the WCCB with gathering intelligence on wildlife crimes include The Directorate of Revenue Intelligence (DRI) and the Central Bureau of Investigation (CBI). The Police and the State Forest Departments also play a key role in gathering information on the illegal trade in marine wildlife and in enforcing the provisions of the Wild Life Protection Act, and apprehending violators. The Coast Guard, Navy, and Marine Police also assist, but enforcing the Wild Life Protection Act is not their primary duty or responsibility.

## **CITES cell**

In addition to the above Authorities, for India to bolster its adherence to CITES regulations and fulfill its expectations as a CITES signatory, a “CITES cell”<sup>6</sup> was created by the MoEF-CC in 2010 (MoEF&FWD, 2010). The Additional Director General of Forests (Wildlife) (CITES MA) was designated as the chair of this cell. The CITES cell comprises ten members, including two NGO representatives, the Additional Director General of Forests (Wildlife), the Member Secretary of the National Tiger Conservation Authority,<sup>7</sup> the Director of Project Elephant<sup>8</sup>, and the Additional Director of the WCCB.

Meetings of the CITES cell are conducted as and when required, and the Government of India may request for other government agencies to be present for the meeting to discuss specific issues where the agency is related. The members of the CITES cell advise the Government of India representative for CITES (the Additional Director General of Wild Life –CITES MA), who then works with other government bodies to make decisions based on this advice, as appropriate.

Duties of this cell include:

- Aiding in the legal and technical administrative functioning of CITES implementation in the country.
- Being up to date and acting on CITES Decisions and responding to requests of the CITES Secretariat.
- Acting as a connection to NGOs working on tackling illegal wildlife trade.
- The MoEF-CC formed this cell with the expectation that it would help tackle the unsustainable trade in endangered species.

## **Other relevant agencies**

In addition to the above authorities, a key department relevant to CITES implementation for seahorses would be the State Departments of Fisheries (each state has their own with no central coordination). The State Departments of Fisheries have no jurisdiction to enforce any matters relating to the Wild Life Protection Act, but are responsible for enforcing the Marine Fisheries Regulation Act (MFRA) (see Section 2.6.5) of the respective state, falling within the territorial limits of India’s waters (12 nautical miles). The various State Department of Fisheries are responsible for stopping the use of mechanized vessels like trawls in the areas reserved for artisanal fishers, preventing the use of banned fishing gear, enforcing minimum mesh size regulations, and ensuring that mechanized fishers do not fish during the seasonal monsoon ban amongst other laws. Enforcing these regulations effectively could help ensure the sustainable catch of CITES listed marine species. Officials from the State Department of Fisheries are also normally the ones present at fish landing sites surveying catches for the day. However, given the large number of landing sites present along the coastline of India (~1400 sites), effective patrolling is a challenge (and officials are typically present only at the larger landing sites).

## **2.4 History of trade research and CITES activity in India**

A number of studies on seahorse fisheries and trade have been conducted over the past 28 years. They are not directly comparable, using different methods, covering different regions, and involving different respondents. Nonetheless, they provide an indication of a large trade that has persisted over the decades despite the national ban on exploitation and trade.

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<sup>6</sup> “Cell” is defined as a small group acting as a unit within a larger organization

<sup>7</sup> The National Tiger Conservation Authority (NTCA) was constituted under Section 38 L (1) of Wildlife (Protection) Act, 1972. The authority consists of the Minister in charge of the Ministry of Environment and Forests (as Chairperson), the Minister of State in the Ministry of Environment and Forests (as Vice-Chairperson), three members of Parliament, Secretary, Ministry of Environment and Forests and other members.

<sup>8</sup> Project Elephant was launched by the Government of India in the year 1992 as a Centrally Sponsored Scheme with following objectives:

1. To protect elephants, their habitat & corridors
2. To address issues of man-animal conflict
3. Welfare of captive elephants

The Ministry of Environment, Forest and Climate Change provides the financial and technical support to major elephant range states in the country through Project Elephant.

1993 – First official research on seahorse fisheries and trade in the country (Marichamy et al. 1993). Seahorses were observed to be caught and between 3.7-4.2 tonnes traded (~924,000-1.05 million individual seahorses) by divers or along the southeastern coast of the country, along the Palk Bay region, as an alternative to a declining sea cucumber fishery.

1995 – Trade research estimated annual seahorse exports from India at about 3.6 t (~1.5 million seahorses), a majority of which was from the Pak Bay region, along the south-eastern coast of the country (Vincent 1996). Seahorses were largely caught through a targeted fishery and incidentally by shrimp trawlers.

1999 – A survey conducted by Project Seahorse (Perry et al. 2020) found that around 12.5 t (~5 million individuals) of dried seahorses entered the export market. Most seahorses were caught incidentally by trawlers and drag-netters along the south-eastern coast of India. A more negligible trade existed for live seahorses.

2000-2001 - A study along 15 landing centres in the state of Tamil Nadu found that approximately 104,000 seahorses, reported as equivalent to 1456 kg, were caught and traded annually (Murugan et al. 2011).

2001 – A study estimated that about 18.25 t of seahorses, by wet weight, were landed, and 9.75 t (~2.7 million individuals) of dried seahorses were exported, with most seahorses obtained by drag-net fishers operating along the Palk Bay region of India (Salin et al. 2005). The volume of dried seahorses estimated to enter the export market was found to be far greater than official estimates from the Marine Products Export Development Authority (MPEDA), which recorded peak exports of 4.34 t (~1.1 million individuals) of dried seahorses from India worth about 2.7 million rupees (US\$ 70,000) in 2001 (MPEDA 2003).

2001 - Another study based on information collected from traders in the Palk Bay region found that 5300 kg (1.4 million individuals) of seahorses entered the trade in 2001, and around 100 kg (~340,000 individuals) of seahorses entered the trade in 2002 during the month in which their study was conducted (Lipton & Thangaraj 2002).

2001 – Based on reports of a burgeoning trade, all seahorses (and pipefishes, family Syngnathidae) were included under Schedule I, part II, of India's Wild Life Protection Act 1972, prohibiting their catch and trade.

2002 – All seahorse species (*Hippocampus* spp.) listed on CITES Appendix II.

2002-2003 – A study from three stations in the Gulf of Mannar region of Tamil Nadu, India, found that ~17,000 seahorses were caught incidentally by trawls, drag nets, and shore seines, in a 36-day period (Murugan et al. 2011).

2004 – CITES listing implemented in May.

2015 – A project initiated by the Bay of Bengal Large Marine Ecosystem (BOBLME), along with the Central Marine Fisheries Research Institute (CMFRI), found that seahorses continued to be caught in large numbers primarily by drag-netters in the Palk Bay region, followed by trawlers operating in the Palk Bay and Gulf of Mannar region (BOBLME 2015, Vinod et al. 2018). Seahorses were then illegally traded, though this study did not explore the details of this trade and trade routes.

2015-17 – A study conducted by the author of this report found that despite the catch and trade ban, seahorse fisheries and trade continued. About 13 million seahorses were caught annually along the coast of mainland India (Vaidyanathan & Vincent 2021). Nearly 90% of seahorses were caught incidentally by trawlers and drag-netters. Catch data suggested that around 6.5 million seahorses (~21 tonnes) entered the international trade, though given the clandestine nature of the trade, only 1 million seahorses could be accounted for based on interviews with traders who could be located (Vaidyanathan et al. 2021). When seahorse catch data were

compared with earlier studies, there appeared to be an overall decline in catches, which supported fishers' perceptions on declines in their individual catches.

Given that estimates were extrapolated for a greater number of vessels in 2015–2017 (about 70,000) than in 1999 (56,000), there appears to have been a decline in catch per unit effort over the intervening 16–18 years. Much of the catch was from the southern state of Tamil Nadu (~75%), primarily from the Palk Bay region by non-selective drag-netters. However, even in this state, seahorse catches were lower than before the ban (9.7 million compared with 13.4 million), but given that seahorse are primarily obtained as bycatch, declines in totals were not likely related to the catch ban. However, this study also found that the contribution of seahorse catches from targeted fisheries by divers had dramatically declined, and there were far fewer known divers operating in the Palk Bay region than before the ban.

2016-17 – A Project Seahorse study investigated the illegal trade of seahorses, among the first taxa of marine fishes to come under global trade restrictions (Foster et al. 2019). To investigate global compliance, 220 interviews were conducted with traders in Hong Kong Special Administrative Region of China (hereafter Hong Kong SAR), the largest entrepôt for dried seahorses. Traders reported obtaining dried seahorses from many countries with bans or suspensions on seahorse exports. **Traders reported India as among the top ten countries supplying dried seahorses imported into Hong Kong SAR at that time.** Almost all dried seahorses in Hong Kong SAR (95%) were reportedly imported from source countries that had ended legal exports, indicating a widespread lack of enforcement.

2018-2019 – A study examined the population dynamics of two threatened species, *H. kuda* and *H. trimaculatus*, from the south-east coast of India using samples encountered in trawl by-catch (Shalu et al. 2021). The study was based on onboard sampling of seahorses taken as by-catch from mini-tractors/country trawlers. An assessment of mortality rates (instantaneous total, natural and fishing) indicated a high vulnerability of the local population of both species to fishing pressure. Demographic parameters of the two threatened seahorses indicated that even as 'incidental catch', these species are vulnerable to overfishing, and species-specific conservation guidelines need to be developed and their on-ground implementation and enforcement ensured.

*In addition to the above research on seahorse fisheries and trade, a number of studies have also been conducted on other aspects such as seahorse aquaculture and on their distribution (Annex 2.i).*

## 2.5 Nature of export bans/suspensions

Due to the increasing demand for seahorses and the indiscriminate fisheries catching them, all seahorses were included under Schedule I, Part II a (marine fishes) of India's Wild Life Protection Act, 1972, thus precluding their catch (all forms) and trade (all forms).

India's Wild Life Protection Act, 1972 is India's only Act to focus on the conservation of species and habitats. Under this Act, wild animals are classified under one of six different schedules (I to VI) differing in the level of protection, with animals listed under Schedule I being afforded the greatest protection, and incurring the highest penalties for violations. The Wild Life Protection Act is also the main legislation under which different protected areas are designated (e.g., community reserves, marine protected areas, tiger reserves).

Under the Wild Life Protection Act, extraction and trade of all animals and derivatives of animals listed under Schedule I<sup>9</sup> (e.g., seahorses), and Part II of Schedule II<sup>10</sup> (e.g., green flash butterfly), are prohibited.

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<sup>9</sup> Schedule I includes endangered species that requires rigorous protection. Species are protected from poaching, killing, and trading. Animals included in this Schedule are offered stronger protection in matters relating to trade and penalties. Hunting of animals protected under this Schedule is allowed by the Chief Wild Life Warden only when the animals are considered as a threat to human life or when they have been 'disabled' or 'diseased' to an extent where recovery does not seem a possibility ([https://legislative.gov.in/sites/default/files/A1972-53\\_o.pdf?](https://legislative.gov.in/sites/default/files/A1972-53_o.pdf?)).

<sup>10</sup> Animals under this list are also accorded high protection with prohibition on their hunting and trade. Hunting of animals protected under this Schedule is allowed only when the animals are considered as a threat to human life or when



However, extraction of wild animals may be allowed by the Chief Wild Life Warden for education, scientific research, scientific management, and collection for museums and other institutions. Furthermore, the export or import of wild animals and their parts and products listed under the Wild Life Protection Act is allowed for the purpose of scientific research and exchange of animals between zoos, but such trade is subject to licensing by the Director General of Foreign Trade (DGFT), Government of India (Figure 2.2). The Act (Section 17A) also prohibits the collection or trade of plants and their derivatives listed in Schedule VI of the Act, from any forest land and any area specified by notification by the Central Government. This Schedule lists all six plants of Indian origin included in CITES Appendices.

Other laws and regulations work together with the Wild Life Protection Act to regulate trade in wildlife parts and products. In addition to the Wild Life Protection Act, trade in species included under CITES are regulated through the provisions of the **Foreign Trade (Development and Regulation) Act, 1992**<sup>11</sup> and the **Customs Act, 1962**.<sup>12</sup>

Unless exempt, the export of wildlife, as defined by the Wild Life Protection Act, 1972, and their parts and products are prohibited under the **Export and Import Policy of India (EXIM policy)**<sup>13</sup> which is formulated under the Foreign Trade (Development & Regulations) Act, 1992. Penalties for violations of the EXIM policy are meted out under the **Customs Act of 1962** – such that all violations under the EXIM policy and CITES are handled by Customs officials.<sup>14</sup>

The **Foreign Trade Policy**<sup>15</sup> is announced periodically by the Ministry of Commerce, and is brought out under the provisions of the Foreign Trade (Development and Regulation) Act, 1992. The Foreign Trade Policy includes information about wildlife and wildlife products which are either prohibited or permitted for import or export, and is decided in consultation with India's CITES MA for matters pertaining to wild fauna and flora, and is enforced through the Customs Act, 1962.

With respect to species on Schedule I and Schedule II part II of the Wild Life Protection Act, penalties for violating the Act involve at least a three year prison term, extending to seven years, and/or a fine of at least ~USD 135 (₹ 10000). A second offence against these protected animals results in at least a three-to-seven-year prison term and a fine of at least USD 340 (₹ 25000).<sup>16</sup> While cases have been registered for wildlife crimes, little is known about the outcome of the court cases, particularly for marine wildlife like seahorses (see also Section 2.6.6).

During an earlier interview with officials from the MoEF-CC, in June of 2016, the author was told that seahorses were listed in Schedule I (*vide* notification dated 11th July 2001), along with all holothurians (sea cucumbers), 24 species of molluscs, and 10 species of elasmobranchs (sharks and rays), based on a consultation meeting with representatives of institutes including CMFRI, ZSI, WII, MPEDA and the State Forest Departments. However, the inclusion of seahorses under Schedule I of the Wild Life Protection Act came at a time CITES was actively considering including seahorses under Appendix II, and while India was part of the CITES Syngnathid Working Group during 2000-2002 (Amanda Vincent, *personal communication*).

When asked if it was possible to remove a species from a certain Schedule, the author was told that the Ministry, in pursuance of the decision taken by the National Board for Wildlife held on 17th March 2005,

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they have been 'disabled' or 'diseased' to an extent where recovery does not seem a possibility ([https://legislative.gov.in/sites/default/files/A1972-53\\_o.pdf?](https://legislative.gov.in/sites/default/files/A1972-53_o.pdf?)).

<sup>11</sup> Online at [https://legislative.gov.in/sites/default/files/A1992-22\\_o.pdf](https://legislative.gov.in/sites/default/files/A1992-22_o.pdf)

<sup>12</sup> Online at <https://www.cbic.gov.in/htdocs-cbec/customs/cs-act/cs-act-ch1-revised3>

<sup>13</sup> <https://www.google.com/search?client=safari&rls=en&q=EXIM+policy+India&ie=UTF-8&oe=UTF-8>

<sup>14</sup> Section 3(3) of the Foreign Trade (Development and Regulation) Act, 1992 states that wild fauna and flora covered in the EXIM Policy are also covered under Section 11 of the Customs Act, 1962.

<sup>15</sup> <https://www.dgft.gov.in/CP/?opt=ft-policy>

<sup>16</sup> Section 51, Wild Life Protection Act. Online at [https://legislative.gov.in/sites/default/files/A1972-53\\_o.pdf](https://legislative.gov.in/sites/default/files/A1972-53_o.pdf)

constituted an Animal Committee and a Plant Committee, to suggest the entry / deletion / alteration of species in various Schedules of the Act on a scientific basis, and that Section 61 of the Wild Life Protection Act provides for alteration of entries in the Schedules.<sup>17</sup> He further stated that this Committee met on a need-based manner, and included scientific experts, scientific institutions, member(s) of National Board for Wildlife, representatives from Government Departments, etc. With regards to seahorses, the official from the MoEF-CC stated that there were scientific studies on seahorses being carried out by various scientific institutions, including studies by the National Institute of Oceanography (mostly on culture) and the Central Marine Fisheries Research Institute (on seahorse fisheries and trade in conjecture with the Bay of Bengal Large Marine Ecosystem, see Section 2.4 and Annex 2), though he provided no further details. The respondent was not sure whether the Ministry had sanctioned a specific project to ascertain the impact of the Act on seahorse conservation.

At the time of writing, the only known case of down-listing a species listed on the Wild Life Protection Act was the removal of the edible-nest swiftlet from Schedule I. This was done with the objective of allowing local communities to harvest the nests commercially, thereby preventing the poaching of the nest which often resulted in the death of the fledgling along with it. Local nest collectors, whose livelihoods were dependent on the collection of these nests, were employed by the local forest department for the season to monitor and protect nests from poachers until the end of the breeding season (Manchi & Sankaran 2014). Nests from protected caves could be harvested only after fledgling of at least one brood, in contrast to the multiple times they normally were harvested.

## **2.6 Understanding of seahorse fisheries, trade and bans/suspensions**

### **2.6.1 What do respondents understand/know about seahorse fisheries and trade?**

All respondents interviewed for this report were aware of the ban on seahorse fisheries and trade. Three of the respondents provided details about the seahorse fisheries, and two of these respondents stated that they were aware that until the ban there was an organised fisheries and trade for seahorses in Palk Bay and Gulf of Mannar (southeast coast of India). One of the respondents, retired from an SA, who provided details stated that this location was where there was an abundance of seahorse habitats such as seagrass, coral and sponge habitats. One former head of a SA stated that prior to the ban, seahorses were in great demand for export for traditional medicines, curios, and as aquarium fish. According to the former head of the SA, prior to the ban, seahorses were collected by divers along with sea cucumbers and gastropods. A respondent from the AMA stated that currently, illegal collection has been reported from the Gulf of Mannar Marine National Park in the Ramanathapuram District of Tamil Nadu. All respondents stated that despite the ban, the illegal catch and trade of seahorses continued, as was evident from the seizures by the various enforcement agencies (see Section 2.6.6). A respondent retired from an SA stated that the export of dried seahorses continued in the same magnitude as before the ban, but in a more clandestine manner.

### **2.6.2 What is respondent awareness and use of existing tools and information for seahorses?**

When respondents consulted for this report were asked about their awareness of tools such as ID guides, seahorse fisheries and trade studies, non-detriment finding frameworks, or any other tools, all respondents were primarily aware of identification guides. A former head of a SA stated that seahorse identification was a great problem even for scientists. He went on to state that it was a bigger problem for those implementing conservation policies, and despite the presence of manuals it was still a massive challenge.

When asked about other tools, respondents were either not aware of other tools or were aware but felt them irrelevant to the Indian situation. Two respondents stated there were no other tools, of which one respondent from an NGO dealing with wildlife trade stated that he was not aware of any other tools, but was open to

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<sup>17</sup> Section 61. Power to alter entries in Schedules. The Central Government may, if it is of opinion that it is expedient so to do, by notification, [add or delete any entry to or from any Schedule] or transfer any entry from one Part of a Schedule to another Part of the same Schedule or from one Schedule to another. Provided that any such alteration made by the State Government, if it has been made with the previous consent of the Central Government, shall prevail in that State.

suggestions about other potential tools. Two of the respondents, one retired from a SA and one from the NGO working on wildlife trade, stated that they were aware of seahorse fisheries and trade studies, but because of the ban stated that other tools such as seahorse NDF frameworks were not relevant to them. Members of one SA stated that identification of species was their main mandate, and hence other tools such as seahorse fisheries and trade studies were not relevant to them. A member of the AMA stated that amongst the other tools, WCCB maintained a centralized Wild Life Crime databank, though this was not publicly available.

With regards to studies about seahorses, one respondent retired from a SA stated that the studies have been sporadic, and another from an NGO dealing with wildlife trade stated that seahorse studies were few, and restricted to anecdotal studies on the ecology, reports of species occurrence, and a few studies on captive breeding. One respondent, the former head of a SA, felt that the inclusion of seahorses under a protected Schedule meant that researchers were at a disadvantage because of the need to obtain permission to work directly with specimens, and the fact that aquaculture was not allowed. However, on talking to a scientist working on seahorse aquaculture, the respondent stated that as per the provisions of the Wild Life Protection Act, permission could indeed be obtained to work on a scheduled species.<sup>18</sup>

One respondent from a wildlife trade NGO was not aware of, and so had not consulted with, any seahorse researcher, while three other respondents were aware of only a handful of scientists working on seahorses (ranging from one to four). A respondent from an AMA stated that consultations with seahorse researchers were carried out at the Ministry level and not by them. However, one respondent, retired from an SA, stated that there were many researchers who worked on seahorses but the dedicated and sustained expertise on seahorses was almost zero. He said that PhD dissertations and projects had been carried out, but once the degree had been granted, the experts did not continue the work on seahorses for various reasons. He put the overall number of in-country researchers at 15 to 20 with varying levels of expertise on seahorses, most of which focus on aquaculture.

During the author's interviews along the coasts of mainland India, between 2015-2017, more than 90% of fishers interviewed (321 of 350) in the state of Tamil Nadu spontaneously mentioned that seahorses were protected. However, this was also the state where the reported catch and trade of seahorses continued in large numbers. Few fisher respondents in other states mentioned that they were aware of a ban (~3% or 18 of 611), and if the topic came up with respect to other bans, more respondents were unaware of a ban on seahorses (~6% or 35 of 611) (Vaidyanathan & Vincent 2021). When fishers in the state of Tamil Nadu – where there was greatest awareness of the ban but also the greatest reported fisheries and trade – commented on the ban, they questioned the legitimacy because a) they had not been consulted prior to the imposition of a ban, b) seahorses were normally caught incidentally in their fishing gear, and were often dead

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<sup>18</sup> Wildlife Protection Act, Section 12 allows scientific research on wildlife.

12. Grant of permit for special purposes. —Notwithstanding anything contained elsewhere in this Act, it shall be lawful for the Chief Wild Life Warden, to grant a permit, by an order in writing stating the reasons therefore, to any person, on payment of such fee as may be prescribed, which shall entitle the holder of such permit to hunt subject to such conditions as may be specified therein, any wild animal specified in such permit, for the purpose of, —

(a) education;

[(b) scientific research;

(bb) scientific management.

(c) collection of specimens—

(i) for recognised zoos subject to the permission under Section 38-I; or

(ii) for museums and similar institutions;

(d) derivation, collection or preparation of snake-venom for the manufacture of life-saving drugs

[Provided that no such permit shall be granted—

(a) in respect of any wild animal specified in Schedule I, except with the previous permission of the Central Government, and

(b) in respect of any other wild animal, except with the previous permission of the State Government;]

(d) derivation, collection or preparation of snake-venom for the manufacture of life-saving drugs.

by the time they pulled their net up, and therefore they did not see the point of throwing seahorses back, and c) seahorse sales provided quite a sizeable supplemental income, particularly when main target catches were low, and therefore fishers were not willing to throw seahorses back despite the ban (Vaidyanathan 2021).

During the same research, carried out in 2015-2017, of the two traders who were willing to provide comments about the ban, one stated that since seahorses anyways came dead in the nets, there was no point in throwing it back. He further felt that the implementation of the ban was more for political purposes than as a conservation measure. Finally, he stated that enforcement authorities seemed more concerned about the protected sea cucumbers than seahorses, and he could often fly under the radar. The other trader simply stated that seahorse trade was highly lucrative, and in the few years he had been a part of the trade there had been a drastic increase in the export value per kilogram of seahorses.

### 2.6.3 Seahorse export/import paths

#### Trade routes

A regional AMA interviewed for this report noted that seahorses were passed on by fishers with the help of their contacts/networks to foreign buyers, and at times were concealed with shark fins, sea cucumbers, and fish maws. The respondent stated that fishers stockpiled the seahorses and sent them to middle-people located near airports and seaports, who stockpiled the seahorses in their godowns.<sup>19</sup> The respondent further stated that when there was an order from foreign buyers, carriers would transport seahorses through means such as in their personal baggage, through foreign post offices, cargo consignments, and through vessels and boats to Sri Lanka. The respondent said that, according to their records, seahorses were transported to Sri Lanka, Hong Kong SAR, and Singapore. The respondent stated that Sri Lanka was found to be a transit point from where seahorses are transported to various southeast Asian countries. This response was similar to the findings from the author's trade surveys, during which traders stated that seahorses were often smuggled out of the country in the baggage of individuals or were consolidated and exported from the country either through airports or seaports, often with other goods. During the trade surveys, fishers stated that they often passed seahorse consignments to Sri Lankan boats at the border, less than 20 km from the Indian coast at many locations in Tamil Nadu, by dropping off sealed containers with the goods. Furthermore, a trader in Sri Lanka stated that seahorses were often packaged with other dried fish to circumvent detection by Customs officials.

One former head of an SA, consulted for this report, stated that the final destination of protected species is often unknown. The former head of an SA further stated that unless the consignments pass through major cities with airports or seaports, such as Tuticorin, Chennai, Vizag, or Kolkata, no information existed on the final destination of the consignments. Another respondent, retired from a SA, stated that seahorses were mostly sent from Palk Bay to Chennai and exported to Singapore and Hong Kong SAR illegally. Two other respondents, currently with the SA, stated that they were not aware of the trade routes, or the personnel involved along these paths and that only the law enforcement departments would be able to answer.

A respondent from an NGO dealing with wildlife trade stated that the key trading nodes for seahorses were in the states of Tamil Nadu, Bengal, Kerala, and Andhra Pradesh. The respondent further stated that seahorses were traded mostly in the dried form, and that they were exported either by road or through export consignments by air, but he was not sure of their destination. He also noted that the personnel likely to be involved were Customs and Excise officers at all nodes (seaports, airports, and transborder areas of land crossing). However, he stated that as the seahorse trade was clandestine, the nodes and personnel in the trade were kept in secrecy.

From the author's previous interviews with ZSI (not for this report), scientists stated that consignments had been confiscated from West Bengal, headed to Bangladesh by road. The author's own work in the region revealed that dried seahorses from Tamil Nadu were generally sent to bigger cities in India such as Bengaluru

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<sup>19</sup> A warehouse

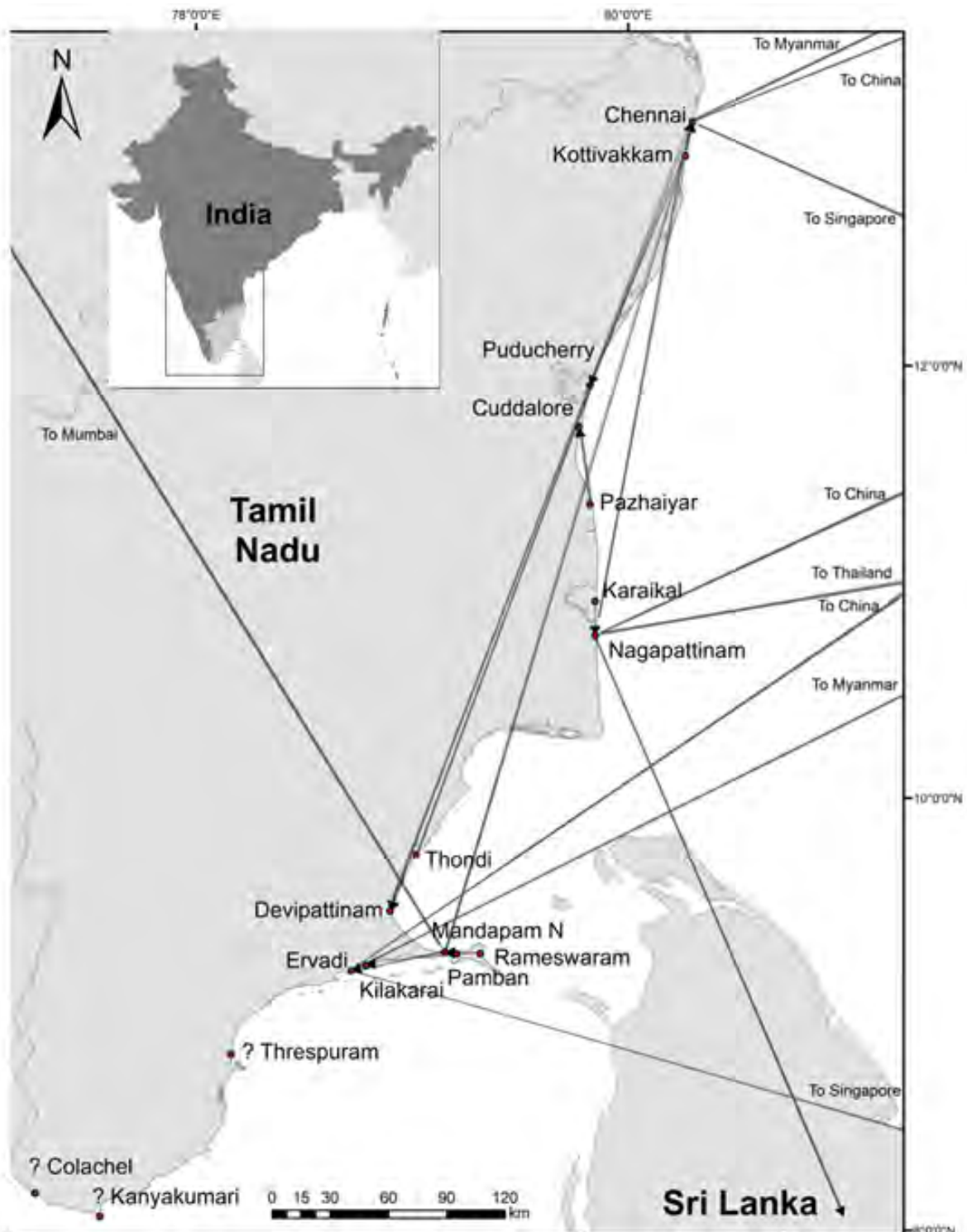
and Chennai, normally by road. They then went to a large port city, like Mumbai, and were also apparently exported, by ship and by air, to countries including China, Myanmar, Singapore, Sri Lanka, and Thailand (Figure 2.4).

### **Enforcement along trade routes**

According to government documentation, the Marine Police, coast guard, and navy are responsible for preventing violations at sea. The coast guard (territorial waters) and the navy (international waters) have a mandate to protect the borders in the sea, and natural resources, and could take action when aware of illicit activities. State Forest Department officials are responsible for apprehensions at the landing site, though their presence at the landing sites is sporadic (personal observations) and they, along with the District Administration, oversee any seizures where seahorses are caught. While crossing land-borders within the state, Police officials overseeing road borders are responsible for confiscating illegal goods. Police officials and other intelligence agencies are also responsible for apprehensions from warehouses and houses. At ports and airports, Customs officials along with wildlife experts from the WCCB are responsible for ensuring that seahorses are not illegally traded, and the Border Police are in-charge for international road borders.

With regards to the personnel responsible for seizures, one respondent retired from a SA stated that the District Administration (Collector), Police, and Customs officials had the power to seize prohibited wildlife and its products and imprison smugglers. He added that these officials acted on receiving information in coordination with Wildlife Officials. He also stated that the Marine Products Export Development Authority and Export Inspection Agency were the nodal points for legal export of products and had the responsibility of ensuring that protected species were not exported.

Respondents had different perspectives on the awareness levels of the enforcing authorities. The respondent from an NGO dealing with wildlife trade felt that the only actions currently deployed for seahorses was the awareness and training of enforcement agencies. The former head of an SA felt that the forest department was poorly equipped to identify marine species, and the respondent from WCCB felt that continuous awareness program by WCCB for the forest department and Customs could help enforce the ban. From the author's own experiences in Tamil Nadu, there seemed to be a high awareness amongst officials, with a number of fishers stating they had been apprehended by officials ranging from the forest department to the navy for possession of seahorses. However, during these surveys, a newly appointed forest official in the region told the author that identification of marine species was an issue because most of his training to date had been on terrestrial animals.



**Figure 2.4.** Trade routes of seahorses within India from the state of Tamil Nadu and to international destinations. Due to the clandestine nature of the trade, many nodes could not be traced completely despite reports of seahorse trade in the area. (From Vaidyanathan et al. 2021).

#### 2.6.4 Seahorse conservation status and regulations

No national conservation assessments exist for wildlife in India. Of the seven seahorses found in the Indian waters, six species are assessed as Vulnerable and one as Data Deficient according to the global IUCN Red List of Threatened Species that documents the extinction risk for species (Table 2.2).

**Table 2.2.** Global IUCN Red List status of seahorse species found in Indian waters.

Species	Global IUCN Red List status	URL
<i>Hippocampus camelopardalis</i>	Data Deficient	<a href="https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T10064A100939136.en">https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T10064A100939136.en</a>
<i>Hippocampus histrix</i>	Vulnerable	<a href="https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T10070A54905206.en">https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T10070A54905206.en</a>
<i>Hippocampus kelloggi</i>	Vulnerable	<a href="https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T41010A54908593.en">https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T41010A54908593.en</a>
<i>Hippocampus kuda</i>	Vulnerable	<a href="https://dx.doi.org/10.2305/IUCN.UK.2014-3.RLTS.T10075A16664386.en">https://dx.doi.org/10.2305/IUCN.UK.2014-3.RLTS.T10075A16664386.en</a>
<i>Hippocampus mohnikei</i>	Vulnerable	<a href="https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T41005A54907304.en">https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T41005A54907304.en</a>
<i>Hippocampus spinosissimus</i>	Vulnerable	<a href="https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T107259870A54906372.en">https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T107259870A54906372.en</a>
<i>Hippocampus trimaculatus</i>	Vulnerable	<a href="https://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T10087A17252219.en">https://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T10087A17252219.en</a>

All respondents interviewed for this report stated that seahorses were under the purview of the Wild Life Protection Act and that there were no other emerging policies for the protection of seahorses.

#### 2.6.5. Other relevant laws and regulations

Given that even seahorse extraction is illegal, fisheries laws and regulations are highly relevant for the conservation of seahorses.

Fisheries legislation within the first 12 nautical miles falls under the control of the state, and each state has its own **Marine Fisheries Regulation Act (MFRA)**.<sup>20</sup> One of the most important measures under the state MFRA is the declaration of **trawl exclusion zones**, whereby trawlers are not allowed to fish typically within 5 and 10 km of the coast, extending to a distance of 18 km in the case of the state of West Bengal. The Marine Fisheries Regulation Acts also prohibit the use of certain fishing gear (e.g., pair trawling in Tamil Nadu). Given the presence of seahorses and seahorse habitats, such as seagrasses, within these limits – particularly in the Palk Bay and Gulf of Mannar region of Tamil Nadu – this measure, if implemented properly, could alleviate some pressures on seahorse populations. However, violations in terms of both distance from the shore and the use of banned fishing gear are common (Bavinck 2001, Vaidyanathan et al. 2021) thereby undermining the effectiveness of the MFRA for seahorse conservation. Furthermore, drag netting – the main threat to seahorses in the Palk Bay and Gulf of Mannar region of Tamil Nadu – is not prohibited in these zones.

The strictly enforced **annual monsoon ban** for 61 days, between April 15 and June 15 on the east coast and May 31 to July 1 on the west coast, is an instrument that is relevant to reduce fishing effort by mechanized boats including trawlers. This measure could be of great importance to seahorses, because for two months the pressure from active, non-selective gear – which operate on seagrass habitats and catch a great many seahorses – is removed.

<sup>20</sup> Salient features of the MFRA summarized at [http://eprints.cmfri.org.in/9871/1/Rajesh\\_8.pdf](http://eprints.cmfri.org.in/9871/1/Rajesh_8.pdf)

The designation of **marine protected areas** (MPAs) is through the Wild Life Protection Act, and, in India, if these protected areas are designated as National Parks, they are strictly no-take with neither human interference nor extraction allowed unless beneficial to conservation.<sup>21</sup> States may delineate the boundaries of these protected areas, unless the boundaries fall within the territorial waters (outside 12 nm), in which case prior permission from the central government must be obtained. Currently, there are 25 MPAs along mainland India covering an area of ~6850 sq.km, and a further 104 MPAs in the two island chains of India covering another ~3500 sq.km. Seahorses have been reported from three of the Marine National Parks along the coast of mainland India, ranging in size from 29.12 sq.km to 560 sq.km, and seahorse habitats such as corals and sponges are notionally protected by these Marine National Parks. However, provisions of these MPAs are poorly enforced. Moreover, the boundaries of the Gulf of Mannar Marine National Park, are yet to be delineated even 25 years after the designation of the MPA. Additionally, fishing activities continue largely unmonitored, with even trawling activities persisting unchecked.

**The Coastal Zone Regulation Notification, 2011**,<sup>22</sup> was issued under Section 3(1) and Section 3(2(v)) of India's Environmental Protection Act of 1986, and Rule 5(3) of the Environmental Protection Rules, 1986. Under this notification the coastal strips of India were declared as Coastal Regulation Zones, and development was to be regulated along these stretches. Coastal stretches of bays, estuaries, creeks, rivers, backwaters, and seas, which are influenced by tidal action to a landward distance of 500 m from the High Tide Line, inclusive of the land between the High Tide Line and Low Tide Line, were designated as Coastal Regulation Zones. Areas deemed environmentally critical are classified as CRZ-1, and include ecologically sensitive areas (ESAs) and the geo-morphological features which play a role in maintaining the integrity of the coast, including critical seahorse habitats such as corals and coral reefs in the Gulf of Mannar region, and seagrass beds in the Palk Bay. CRZ-1 areas also include MPAs and other protected areas under the provisions of Wild Life Protection Act, 1972, Forest (Conservation) Act, 1980 or Environment (Protection) Act, 1986 including Biosphere Reserves, such as the Gulf of Mannar Biosphere Reserve where notable seahorse catches have been reported (Murugan et al. 2011, Vaidyanathan et al. 2021). But while a number of activities that may impact these ecologically sensitive areas, like construction and development of fish farms, are prohibited on the landward side, no protection is explicitly afforded to these habitats in the sea.

Other laws relevant to the protection of wildlife include the following Articles from the **Constitution of India**:<sup>23</sup>

**Article 48A** of the Constitution mandates that the state shall endeavor to protect and improve the environment and safeguard the forests and wildlife of the country.

**Article 51 A (g)** of the Constitution states that it shall be the fundamental duty of every citizen to protect and improve the natural environment including forests and Wildlife.

It should be noted that the only marine species that would be considered as "wildlife" in India are those listed on the Wild Life Protection Act, otherwise they are considered as an extractive resource.

#### 2.6.6. Seahorse seizures

Records of wildlife seizures are supposed to be consolidated by the State Forest Departments and then passed on to the CITES EFPs and collated in India's centralized Wild Life Crime databank.

Seahorses have been seized at various levels of trade by the various wildlife authorities. Records are maintained and details are held by State Forest Departments but are not available on public domains. Most respondents, other than the respondent from the WCCB (see next paragraph), were not aware if the seizures were reported to CITES in India's annual illegal trade reports to CITES. The former head of a SA stated that several tonnes of seahorses have been seized in the past, but little information/transparency exists on the fate

<sup>21</sup> According to the provisions of the Wild Life Protection Act, protected areas are divided into 5 categories- national parks, sanctuaries, conservation reserves, community reserves and tiger reserves, with Marine Protected Areas falling under any one of the five categories. Online at [https://legislative.gov.in/sites/default/files/A1972-53\\_0.pdf](https://legislative.gov.in/sites/default/files/A1972-53_0.pdf)

<sup>22</sup> [https://ncscm.res.in/pdf\\_docs/crz-2019.pdf](https://ncscm.res.in/pdf_docs/crz-2019.pdf)

<sup>23</sup> Constitution of India (Forty second amendment) Act 1976. Online at <http://lawmin.nic.in/coi/coiason29july08.pdf>.



of the person arrested. Contrary to reports from other respondents, the former head of an SA seemed to be under the impression that no database existed on the seizures by the State Forest Departments. Another respondent from an NGO dealing with wildlife trade stated that when seahorses were seized, the specimens became part of the court case and were then destroyed according to legal procedure. One respondent, working with a SA, stated that he had received seized seahorses from the WCCB, State Forest Departments, Customs, and the Police, and had identified the specimens and passed on the identification report for further processing at court. The respondent stated that he had received only a small sample of the seized specimens, and that the agency did not report seizure data to CITES as it was outside the organization's purview, but he did not provide further details.

In contrast to information in the previous paragraph, our respondent from the CITES MA, WCCB, stated that seahorse seizures were passed on to CITES in India's annual reports. The respondent also provided an account of two seizures conducted by the Customs, WCCB, the Tamil Nadu Forest Department, as follows:

1. On 17/4/2014. Airport, Chennai detected smuggling of seahorse - 18.8 kg by a Sri Lankan Moahmmed Nizar Wazni Moahmmed from Chennai to Sri Lanka. This case was taken over by WCCB. Case is still under investigation, as the offender is in Sri Lanka.
2. On 17/8/2021 Customs seized 6.3 kg of seahorse from a passenger Shahulhameed, case was taken over by WCCB. The honourable judicial Magistrate, Alandur convicted the accused for 3 years imprisonment, case is under trial.

The author, in August 2021, attended an online workshop conducted by the WCCB, whereby it was suggested that if researchers wanted permission to access species seized during raids, they could access these specimens by requesting permission from the Chief Wildlife Wardens of individual states.

Seizure data may be obtained from:

- i) the media which occasionally report on seizures,
- ii) TRAFFIC, founded as a joint venture between the World Wide Fund for Nature (WWF) and the International Union for the Conservation of Nature (IUCN), and globally the largest wildlife trade monitoring program, which compiles open-source seizures from the country (<https://www.wildlifetradeportal.org/#/incidents/>), and
- iii) from the IUCN seahorse seizures database at [https://www.iucn-seahorse.org/s/seahorseseizures\\_2018nov15-1.xlsx](https://www.iucn-seahorse.org/s/seahorseseizures_2018nov15-1.xlsx).

The TRAFFIC database had about 18 seizures between 2009 and 2021 (Table 2.3), amounting to around 3 tonnes (~1 million individuals) during this time period (note that one seizure included pipefish also). Volumes apprehended ranged from two individuals to 852 kgs (~250,000 individuals).<sup>24</sup> Of these 18 seizures, all apprehensions took place in India, and 13 were from the state of Tamil Nadu, three from the state of West Bengal and two from Mumbai. Seizures were made at airports, on private buses, and at seaports. Seahorse consignments were found to be hidden in cardboard boxes, parcels, packages, sacks, gunny bags, under fish maw, and, in one case, in the suspect's house. Half of these apprehensions (9 of 18) were of lower-level traders, either at the seashore, the point of collection, or during transit, and three were of traders at the transit location or destination location. Eight of the apprehensions resulted from efforts by intelligence agencies, three during routine inspections - one where the Police were called in as the suspect appeared nervous, and one during a large-scale operation, and the remaining were not known. In seven of the 18 cases, the seahorses were confiscated; in ten of the 18 cases the seahorses were confiscated and the suspect was arrested; and in one case no further details were available. Destination countries included China, Malaysia, Nepal, Sri Lanka, and Thailand. Given the author's estimates of seahorse export volumes of around 21 tonnes annually (6.5 million individual seahorses) (Vaidyanathan et al. 2021), it appears that only a small fraction of seahorses smuggled in the export market were apprehended.

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<sup>24</sup> Note that a conversion of 3.89 g per individual was used from Salin et al. (2005).

**Table 2.3:** Example of Indian seahorse seizures from the TRAFFIC database.

Date	↓	Category	Subject	Country of Incident	Countries Involved	Species
27/09/2019		Seizure	76kg of dried seahorses seized in Mannad...	India		Hippocampus
06/03/2019		Seizure	30kg of dried seahorse seized at Chhatra...	India	Malaysia	Hippocampus
25/02/2019		Seizure	111kg of pangolin scales. 180kg of pipe ...	India	China	Elasmobranchii; Hipp...
17/04/2018		Seizure	6kg of processed seahorses seized from a...	India		Hippocampus
01/11/2017		Seizure	Processed sea cucumbers, sea horses, dry...	India		Hippocampus; Holothu...
14/10/2017		Seizure	15kg of processed seahorses seized in To...	India		Hippocampus
13/08/2017		Seizure	55kg of seahorses seized in Siliguri, on...	India	2 countries	Hippocampus
02/03/2017		Seizure	Operation Thunderbird - 3 weeks - 1,300 ...	Multiple	43 countries	Animalia; Aves; Elep...

From the IUCN seahorse seizure database, six seizures were reported between 2010 and 2018, by central agencies, Customs, and State Forest Department officials. Seahorse consignments were purportedly heading towards China, Malaysia, Sri Lanka, and Thailand. Apprehensions took place either on land or at the airport. One of the seizures took place at the Indo-China border.

## 2.7 Challenges and opportunities

Enforcement of the Wild Life Protection Act is a huge challenge with respect to seahorses. Despite the inclusion of seahorses under Schedule I of the Wild Life Protection Act that prohibits their catch and trade, both clearly persist. From existing studies, interviews with fishers, and seizure data, it is clear that illegal extraction and trade continues in large and unsustainable volumes.

Given that seahorses are largely incidentally caught in non-selective fishing gear, challenges begin with managing the extraction of seahorses. To fully enforce the provisions of the Act, India would need to ban the non-selective fishing gears that catch seahorses in all areas where seahorses live. This would include banning approximately 31,000 trawlers (CMFRI-FSI-DoF 2020) and 2,000 drag netters that operate along India's coasts. Otherwise, seahorses will continue to get caught in large numbers, in violation of the Act.

Enforcement remains a challenge once seahorses are caught and landed by fishers. This is because the officials normally found at the landing sites are from the State Department of Fisheries, present to observe the fish landings for the day, but with no power to enforce the provisions of the Wild Life Protection Act. Only rarely do the State Forest Department officials, who do have the power to enforce it, visit landing sites. Coordination between these agencies is inadequate, as their mandates are at cross-roads, with forest officials focusing on conservation and fisheries officials working towards maximizing fish production.

Many factors add to the complexity of curbing the illegal seahorse trade: (i) small size of seahorses, (ii) proximity of the International Maritime Boundary Line of Sri Lanka from Tamil Nadu, (iii) focus of forest officials on terrestrial aspects and their lack of familiarity with protected marine species, and (iv) lack of knowledge of Customs officials for species listed on CITES. Many fishers interviewed during the author's surveys in 2015-2017 stated that they were not worried about being apprehended, given that the small size of seahorses allowed for easy concealment. A wildlife official interviewed during these surveys stated that much of his experience had been in the terrestrial realm, and that he had little experience identifying marine

species. Given the number of different departments involved in the enforcement of the Wild Life Protection Act, there is a need for awareness and training programs to help detect violations.

Even where seahorses are seized and violators arrested, the penalties are negligible compared to profits to be made, and obtaining a conviction remains challenging. Fines associated with the Wild Life Protection Act range from about USD 135-340, whereas even low-level traders reported making at least USD 300 for a kilogram of the smallest seahorses (~600-700 individuals). Fishers the author interviewed stated that they were forced to sell seahorses at the rates set by traders, because traders claimed that they faced a greater risk, and the traders interviewed reported that there was a 50% profit at every subsequent level, to buffer from the risks in the event they were apprehended.

A wildlife lawyer interviewed stated that convictions under the Wild Life Protection Act were low (~1% of court cases resulted in convictions in their estimate). They stated that having sufficient evidence to prove the case in court was often an issue. They further stated that understanding the number of convictions under Wild Life Protection Act was a task by itself, as no specific database existed for wildlife crimes, because violations under the Wild Life Protection Act were filed under criminal court, and each case was initiated from the relevant district court. Therefore, in order to gather these data, information would have to be collected from every district court, and then from the High Court and Supreme Court. The respondent further stated that while most other environmental laws could be tried under India's National Green Tribunal,<sup>25</sup> cases under the Wild Life Protection Act has to go to the criminal courts, and judges presiding these cases do not necessarily have the background to convict these cases.

Another clear challenge is that the inclusion of seahorses on Schedule I of the Wild Life Protection Act has given a false sense of security to the conservation of these threatened marine fishes. In spite of widespread violations of the Wild Life Protection Act for seahorses, three of the respondents interviewed stated that seahorses were afforded the strongest protection under the Wild Life Protection Act, which has stringent provisions, and therefore there was no need for any other measures. This perceived protection of seahorses under the Wild Life Protection Act has resulted in a lack of exploration of other management measures that may help effectively manage seahorse populations. While current actions to implement the ban include patrolling by Indian Coast Guard and State Forest Department officials, even if the Wild Life Protection Act was enforced for seahorse trade in its current form, it would be less meaningful for seahorse conservation, given that the animals are always caught in non-selective gear.

With respect to the state of marine conservation in Indian in general, the former head of a SA felt that marine conservation in the country faced severe setbacks because there was: i) no networking among the various government agencies; ii) no government led capacity building, particularly involving young professionals and the scientific community for marine conservation; iii) no long-term awareness and education regarding marine issues; iv) no publicly available databases on illegal marine trade including information on who was involved and where; and v) traditional knowledge was not being protected by government agencies.

## **2.8 Conclusions and recommendations**

Despite the blanket ban on seahorse catch and trade, it is evident that both the extraction and export of seahorses continues, though in a clandestine manner. The pressure on seahorses from indiscriminate fishing gear has not declined, and current fisheries measures appear to be inadequate to address these pressures. In addition to rampant violations of its Wild Life Protection Act, India is not meeting its CITES obligations, which require that it make positive NDFs for all exports and ensure legal sourcing.

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<sup>25</sup> The National Green Tribunal is a specialized body equipped with the necessary expertise to handle environmental disputes. <https://greentribunal.gov.in>

India has two options to improve its implementation of CITES for seahorses: 1) to fully enforce the export ban, putting an end to illegal trade, or 2) to lift the ban under the Wild Life Protection Act and move toward sustainable and legal export as required by the Appendix II listing.

### **1) Enforcing the Wild Life Protection Act export ban**

Full enforcement of the Wild Life Protection Act would bring India in compliance with CITES provisions, but ultimately requires enforcing India's current bans on both extraction and trade. As long as the international demand for seahorses continues, any seahorses that are caught will be smuggled into the export trade (given how easy it is to hide dried seahorses in personal or mixed shipments). There is no real domestic market so all seahorses that enter markets are destined for export. Protection under the Wild Life Protection Act amounts to little unless the fisheries are constrained, with particular reference gears that catch large numbers of seahorses incidentally and drive exports.

Enforcing the bans on both extraction and trade would require greater coordination between the various State Departments of Forests, which are responsible for the implementation of the Wild Life Protection Act, and the State Departments of Fisheries, whose officers are normally present at the site of the catches. Given that a number of violations occur at sea, the respondent from the WCCB-AMA suggested that the Departments of Forests must be equipped with the latest boats and other necessary equipment for monitoring coastal and marine areas. However, empowering the Departments of Fisheries to enforce wildlife violations may help alleviate some of the pressures off the Departments of Forests. As such, fisheries officers must be empowered with the ability to implement the Wild Life Protection Act. Certain states have proposed the idea of empowering fisheries officials, but the actual status of these measures remains unclear. For example, Tamil Nadu is forming exclusive marine enforcement wings for fisheries violations. Given that fisheries officers are often the officials at landing sites, allowing them to enforce penalties for violations should help curtail offences.

Furthermore, providing them with the responsibility for conservation laws might help bridge the gap between the mandates of the Departments of Fisheries and Departments of Forests. It is important to note that some fisheries violations come in the form of illegally long trawl vessels or illegally powerful engines, both matters that can be recognized while vessels are docked, allowing for more apprehensions of broad conservation benefit.

Enforcing the bans would also require greater stakeholder communication. In its current form, compliance with the Wild Life Protection Act is poor because stakeholders feel they were not consulted prior to the imposition of the ban, and because of the incidental nature of seahorse catches. There also appears to be a lack of awareness among enforcement agencies, as well as among the local communities involved in the illegal extraction. Respondents from the WCCB-AMA suggested that more awareness programs must be imparted by the WCCB to fishers, and this need for more awareness amongst the resource users was a perspective shared by the former head of an SA, as well as the respondent from wildlife trade NGO. Furthermore, given the number of agencies involved in the enforcement of the Wild Life Protection Act, there must be greater coordination between these agencies, led by the WCCB-EFPs. That said, it is difficult to know how communication would enhance compliance of the ban on catching seahorses when the very act of bottom trawling more or less guarantees capture of seahorses.

### **2) Lifting bans under the Wild Life Protection Act**

Given the challenges in enforcing the bans on both extraction and trade, India could consider looking beyond the poorly enforced Wild Life Protection Act for the conservation of seahorses, and move towards sustainable use. It is simply not pragmatic to ban all the gears that catch seahorses incidentally wherever seahorses are found. It is furthermore a real challenge to enforce trade bans for seahorses, which are so easy to smuggle. Legalizing fisheries and trades for seahorses would provide opportunities for regulation and monitoring which are hitherto not possible. In the long term, this should achieve greater gains for seahorse conservation

than the ban ever could. Indeed, a former head of a SA felt that the protection of seahorses under the Wild Life Protection Act was unnecessary, given how little is known about the carrying capacity, taxonomy, biology, and morphology of India's seahorses.

Moving toward legal and sustainable catch and trade would require systematic research in support of adaptive management. According to a respondent, retired from a SA, there is a particular need for scientific institutions (particularly the CITES SA, CMRFI) to generate research in four domains: i) habitat mapping; ii) population assessment in areas of seahorse occurrence; iii) accurate estimates of seahorse catches; and, iv) estimates on the proportion of seahorses removed from existing stocks. At present, research is constrained because of the inclusion of seahorses under the Wild Life Protection Act. A former head of a SA felt that researchers should have complete access to seahorses, to understand their status, and that the State Departments of Forests needed to be funded to head out to sea to understand the situation better. However, even in the absence of this detailed data, enough is currently known about where the species are found, where the pressures on these species are found, where existing spatial management exists, and whether these existing management measures alleviate the pressures found on these species. Using this as a starting point, India could enforce existing measures, while also developing complementary measures to manage seahorse populations.

Legalizing catch would result in the decriminalisation of fishers, allowing them to co-operate in data collection and knowledge generation, as suggested by a respondent retired from an SA, and the respondent from the NGO dealing with wildlife trade. Such legalization would also allow fisheries officials from the State Departments of Fisheries and from CMFRI to collect systematic data on seahorse landings while collecting data on other landed species. Scientific institutions could start with the data obtained in existing research on seahorse exploitation, while setting up systematic surveys in support of a shift away from a ban towards sustainable trade.

A key element of any adaptive management plan would be to implement existing fishing laws, and protect vital seahorse habitats. Some of the major challenges in this respect include the fact that regulations such as trawl exclusion zones are poorly implemented, and trawlers continue operating in these waters. This may impact seahorse habitats and populations found near-shore, as in the case of the seagrass habitats of the Palk Bay region of Tamil Nadu, where greatest seahorse catches in India have been reported. Furthermore, illegal fishing methods such as the destructive pair-trawling continue, damaging seahorse habitats, and catching seahorses, despite regulations under state MFRAs banning such methods. Seagrass habitats, where large number of seahorses are found, remain largely unprotected, as in the Palk Bay region where traditional drag-netters continue to operate, catching these seahorses in large numbers.

For any sustainable use plan for seahorses to be viable, there is a pressing need to constrain the operations of both traditional and mechanized non-selective gear to reduce the impacts on seahorses and their habitats. In support of enforcing fisheries regulations, India's draft National Marine Fisheries Policy, which was introduced to phase-out trawling and shift towards sustainable fisheries, could help seahorse conservation if enacted. Also, the recent formation of an exclusive marine agency in the state of Tamil Nadu, with its own full-time staff, to enforce regulations and prevent illegal fishing, such as the use of destructive fishing methods (e.g., pair trawling) and banned fishing methods (e.g., purse seines) would help seahorse conservation if deployed.<sup>26</sup> Such an initiative could provide a model for other states.

In implementing an adaptive management plan for seahorses, the government could further consider developing and implementing species and location-based management plans. An example is the Wildlife Institute of India's imminent creation of an at least 500 sq.km dugong conservation reserve in the Palk Bay region. Indeed, the protection of the seagrass beds vital for dugongs is also likely to benefit seahorse

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<sup>26</sup> Tamil Nadu Fisheries Policy Note, 2020, accessed online at: [https://cms.tn.gov.in/sites/default/files/documents/fisheries\\_e\\_pn\\_2020\\_21.pdf](https://cms.tn.gov.in/sites/default/files/documents/fisheries_e_pn_2020_21.pdf)

conservation efforts. India will need to expand its protected areas in line with emerging global norms to protect 30% of the ocean by 2030. The country could support a great many marine species and habitats – and potentially enhance selective fisheries while facilitating CITES NDFs – by using this opportunity to exclude bottom trawling from many more areas, with meaningful enforcement.

There is also a need to improve communication and consultation with key stakeholder groups. According to a former SA, he felt that, for example, State Departments of Fisheries and State Departments of Forests would need to consult and engage with fishing and trading groups, to resolve a way forward for the conservation of seahorses. A respondent from an NGO dealing with wildlife trade felt that WCCB as the CITES EFP should carry out continuous awareness programs with State Departments of Forests, Customs, other wildlife law enforcement agencies (e.g., Coast Guard, Navy), as well as with fishers.

Another recommendation for the conservation of seahorses includes the use of other Acts, such as India's National Biodiversity Act, 2002, which is geared towards equitable sharing and sustainable use of resources. The Act has a number of provisions that could help seahorse conservation, directly or indirectly, such as making provisions for establishing a State Biodiversity Fund (SBF) (Section 32), socio-economic development of biological resources, and related knowledge bases (Sections 23 and 24). The Act also sets valuable objectives: equitable and fair benefit sharing of biological resources and related knowledge bases; conservation, and sustainable use of biodiversity; protecting local knowledge pertaining to biodiversity; sharing benefits with local user groups as the conserves of biological resources and holders of related knowledge; protecting and rehabilitating threatened species; and, involving State governments in the implementation of the Act by establishing committees (Section 18). The respondent from the NGO dealing with wildlife trade suggested using community-level based mechanisms such as involving communities under the Biodiversity Act to report and act against law breakers.

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## Annex 2

**Table 2.i.** Studies on seahorse aquaculture and distribution conducted in India (adapted and modified from Pawar 2014 and BOBLME 2015).

Author(s)	Species	Year of study	Scope of study	Source
Anil et al. (1999)	<i>H. kuda</i>	Unknown	Seahorse aquaculture	Marine Fisheries Information series no. 162, CMFRI
Ignatius et al. (2000)	<i>H. kuda</i>	Unknown	Seahorse aquaculture	Marine Fisheries Information series no. 163, CMFRI
Gokulakannan (2002)	<i>H. kuda, H. mohnikei</i>	Unknown	Seahorse biology, with descriptions of seahorse species distribution.	Ph.D Thesis, Annamalai University, 105 pp
Ignatius and Jagadis (2003)	<i>H. kuda</i>	Unknown	Seahorse aquaculture	Indian Journal of Fisheries, 50(3):369-372
Salin K.R. (2003)	<i>H. kuda</i>	Unknown	Seahorse aquaculture	PhD Thesis
Salin et al. (2004)	<i>H. kuda</i>	Unknown	Seahorse aquaculture	Ocean Life Food and Medicine Expo 2004 proceedings 368-383
Dhamagaye et al. (2007)	<i>H. kuda</i>	Unknown	Seahorse aquaculture	Asian Fisheries Science 20:1-6
Murugan et al. (2009)	<i>H. trimaculatus</i>	Unknown	Seahorse aquaculture	Aquaculture 290:87-96
Singh et al. (2011)	<i>H. kuda</i>	Unknown	Molecular and phylogenetic studies, with description of seahorse distributions.	Indian Journal of Animal Sciences 81(1):97-101
Pawar et al. (2013)	<i>H. kuda</i>	Unknown	Seahorse aquaculture	The Israeli journal of aquaculture = Bamidgheh 63(4)
Murugan et al. (2013)	<i>H. trimaculatus</i>	Unknown	Seahorse aquaculture	Indian Journal of Animal Sciences 83(2):204-208
Pawar, H.B. (2014)	<i>H. kuda</i>	Unknown	Seahorse aquaculture	Ph.D Thesis, Goa University
Murugan et al. (2017)	<i>H. kuda</i>	Unknown	Seahorse aquaculture, with descriptions of seahorse species distribution.	Indian Journal of Geo-Marine Sciences 46(10):1996-2002
Marichamy et al. (1993)	<i>H.kuda, H. trimaculatus</i>	1992	Seahorse fisheries and trade, with descriptions of seahorse species distribution.	Marine Fisheries Information Service, Technical and Extension Series 119:17-20
Naik et al. (2002)	<i>H. kuda</i>	1997	Seahorse aquaculture	Economics and Environmental Conservation 69-72
Perry et al. (2020)	<i>H. hystrix, H. kelloggi, H. kuda, H. spinosissimus, H. trimaculatus</i>	1999	Seahorse fisheries and trade, with descriptions on seahorse distributions	Fisheries Centre Research Reports 28(3); University of British Columbia: Vancouver, BC, Canada, 2020; 55pp
Balasubramanian, R. (2002)	<i>H. kelloggi</i>	2000-01	Seahorse aquaculture	PhD Thesis 124pp
Balasubramanian, R. (2017)	<i>H. kelloggi</i>	2000-01	Seahorse aquaculture	Indian Journal of Education and Information Management Vol 6(3)
Murugan, A. (2004)	<i>H. trimaculatus</i>	2000-01	Seahorse aquaculture	PhD Thesis 176pp



Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions

Author(s)	Species	Year of study	Scope of study	Source
Murugan et al. (2008)	<i>H. kelloggi</i> , <i>H. kuda</i> , <i>H. spinosissimus</i> , <i>H. trimaculatus</i>	2000-01	Seahorse (and pipefish) distribution, fisheries, and trade.	Current Science 95:253-260
Salin et al. (2005)	<i>H. kuda</i> , <i>H. trimaculatus</i> , <i>H. spinosissimus</i>	2001	Seahorse fisheries and trade, with descriptions of seahorse species distribution.	Fisheries Management and Ecology 12:269-273
Lipton & Thangaraj (2002)	<i>H. kuda</i> , <i>H. trimaculatus</i>	2001- 02	Seahorse fisheries and trade, with descriptions of seahorse species distribution.	Marine Fisheries Information Service, Technical and Extension Series 174:5-8
Lipton et al. (2006)	<i>H. kuda</i>	2003	Seahorse aquaculture	Asian Fisheries Science 19:423-428
Murugan et al. (2011)	<i>H. kuda</i> , <i>H. spinosissimus</i> , <i>H. trimaculatus</i>	2002- 03	Seahorse fisheries and biology, with description of seahorse species distribution.	Indian Journal of Marine Sciences 40:411-423
Thangaraj & Lipton (2008)	<i>H. trimaculatus</i>	2004	Seahorse aquaculture	The Israeli Journal of Aquaculture Bamidgheh 60(3):185-189
Lipton & Thangaraj (2013)	<i>H. hirtix</i> , <i>H. kelloggi</i> , <i>H. kuda</i> , <i>H. mohnikei</i> , <i>H. spinosissimus</i> , <i>H. trimaculatus</i>	2003- 07	Seahorse species distribution and densities.	Notulae Scientia Biologicae, 5(1):20-24
Subburaman et al. (2014)	<i>H. camelopardalis</i>	2011	Seahorse distribution.	Indian Journal of Geo Marine Sciences 43(3): 408-411
BOBLME (2015)	<i>H. kelloggi</i> , <i>H. kuda</i> , <i>H. spinosissimus</i> , <i>H. trimaculatus</i>	2015	Seahorse fisheries, with description of seahorse species distribution.	BOBLME-2015- Ecology-58. Studia Marina Sinica 23:83-93
Vinod et al. (2018)	<i>H. kelloggi</i> , <i>H. kuda</i> , <i>H. spinosissimus</i> , <i>H. trimaculatus</i>	2015	Seahorse fisheries, with descriptions of seahorse species distribution.	Marine Fisheries Policy Series 8:1-106
Vaidyanathan et al. (2021)	<i>H. hirtix</i> , <i>H. kelloggi</i> , <i>H. kuda</i> , <i>H. spinosissimus</i> , <i>H. trimaculatus</i>	2015-2017	Seahorse fisheries and trade, with descriptions on seahorse distributions	Aquatic Conservation: Marine and Freshwater Ecosystems 31(1):43-59

## 3. Indonesia

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### 3.1 Background

Indonesia is a historically important source of seahorses in international trade. Pre-CITES in-country surveys were used to assess the seahorse trade in Indonesia from 1999 to 2001 (Perry et al. 2005), which revealed a large and complex seahorse trade in Indonesia, both domestically and for export. Indonesia was a significant consumer of dried seahorses, using an estimated 21.9 tonnes annually for traditional medicines (~8 million individuals based on universal conversion of 2.69 g/seahorse, Foster et al. 2016), of which 21.7 tonnes were for traditional Indonesian *jamu* medicine, and the remainder for traditional Chinese medicine (TCM).

Seahorse-based *jamu* medicines were manufactured in Java using local seahorses and—given the large volumes consumed—possibly imported seahorses as well. Unknown quantities of dried seahorses were also exported from the country, to Hong Kong Special Administrative Region of China (hereafter Hong Kong SAR), South Korea, and likely Malaysia and Singapore, with additional exports of seahorse-based *jamu* medicines to the latter two countries. Although the in-country trade survey did not estimate export volumes, Indonesia was a reported source of dried seahorses in Customs data curated by destination jurisdictions.<sup>27</sup> Hong Kong SAR Customs data report importing ~280,000 dried seahorses from Indonesia across 2000-2002 alone, Taiwan Province of China data reported importing ~390,000 dried seahorses from 1988 to 2003, and Mainland China data indicate imports of ~760,000 individuals of dried seahorses and pipefish from 1993 to 1999.

Seahorses were caught by fishers throughout Indonesia, in both target and incidental fisheries, but were traded only from certain areas at that time (Perry et al. 2005). Target fisheries were particularly well-established for the live trade, supplying approximately 100,000 seahorses annually, of which more than 50,000 animals may have been exported to Asia, Australia, Europe, and North America. Indeed, CITES trade data for the years before seahorses were added to Appendix II reported Indonesia as the source of 38,432 live, mostly wild, specimens into 11 EU member States from 1997 to 2004 (UNEP-WCMC 2021). These were mostly reported as wild *H. kuda* or *H. erectus*, though the latter species is not found in Indonesian waters. Live seahorses were also sold domestically, on an apparently limited scale. Surveys revealed that Indonesian seahorses were threatened by loss of habitat for land reclamation, and possibly by overfishing (Perry et al. 2005). Respondents suggested that seahorse supplies may have decreased in both the dried and live trades.

Indonesia continued to be a source of seahorses in international trade after the CITES listing, though available data are patchy at best. The CITES trade database reported very little dried seahorse volume being exported from Indonesia after 2004;<sup>28</sup> Indonesia is the reported source of dried seahorses in only 14 direct-trade records between 2004-2012, and none thereafter. Most records (n = 11/14) were reported as seized by the importing country – these were reported by the UK (n = 5 records all in 2004), New Zealand (n = 3 records in 2008, 2009 and 2010), the US (n = 2 records in 2008 and 2011), and Poland (n = 1 record in 2008). New Zealand further reported importing 100 wild “bodies” in 2005 for personal use, and Poland

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<sup>27</sup> Hong Kong Special Administrative Region (SAR) of China maintains a database of Census and Statistics Data (CSD) that records year, country of origin, quantity and value for both live and dry seahorse imports starting in 1998. CSD data were recorded in kilograms. We used conversion factor of 2.69g per seahorse to estimate the number of individuals. Taiwan Province of China (hereafter referred to as Taiwan Province of China) and Mainland China also maintain similar databases, except that they start in 1983 and 1993, respectively. As Hong Kong SAR, Taiwan Province of China and Mainland China are the largest importers of seahorses, these data sets are important points of reference for the CITES data.

<sup>28</sup> CITES trade data were downloaded from [www.trade.cites.org](http://www.trade.cites.org) on 14 Jan 2020 and analysed for the gross trade output as described in Foster et al. 2016.

reported importing 890 wild “derivatives” in 2008 for commercial purposes. Finally, Indonesia reported exporting 184 captive bred “medicine” to Russia in 2012. CITES data do not, however, paint the whole picture. Hong Kong SAR Customs data reported total imports from Indonesia of ~275,000 dried individuals across 2004, 2007 and 2009, and Taiwan Province of China’s data reported importing a total ~300,000 dried seahorses from 2004 to 2007. Nothing is reported in CITES or Customs data past 2009, the year Indonesia suspended legal exports of all dried and wild live seahorses (see Section 3.5, below), but trade field surveys indicate that dried trade continued. Traders and importers interviewed in Hong Kong SAR reported Indonesia among the top five source countries of dried seahorses obtained in 2016-17 (Foster et al. 2019), suggesting that Indonesia is not adequately enforcing its export suspension and illegal trade remains.

Live seahorse exports also continued from Indonesia after the CITES listing, though there was a decrease in reported trade volumes over time and a supposed shift from wild caught to captive bred individuals (Foster et al. 2021). CITES trade data reported Indonesia as the source of 150 records of trade in live seahorse specimens into 38 countries from 2004 to 2008, for a total of 82,641 live specimens reportedly sourced in Indonesia during this four-year period (annual mean = 20,660 individuals). The top five importers by volume were reported to be the United States (which reportedly imported 62% of total volume during this period), France (8%), Japan (7%), South Korea (7%), and Poland (4%). Almost all the live trade volume supposedly exported from Indonesia during this period was reported as wild sourced (source code W, >99%). Wild *H. barbouri*, *H. comes*, *H. histrix*, and *H. kuda* comprised roughly one-quarter of total reported trade volumes each. The reported trade patterns shifted after 2009 when Indonesia was included in the CITES Review of Significant Trade (RST) for three seahorse species (see Section 3.4). From 2009 to 2018 Indonesia was the reported source of 64 records of trade in live seahorse specimens into 17 countries, for a total of 24,493 live specimens reportedly exported from Indonesia during this ten-year period (annual mean = 2,449 individuals). The top five importers by volume were reported to be the US (which reportedly imported 37% of total volume during this period), Germany (26%), Netherlands (14%), the UK (6%), and France (4%). Most of the live trade volume supposedly exported from Indonesia during this period was reported as captive bred (source code C; 82%), with 13% reported as captive born (source code F) and just 4% as wild sourced (source code W). The US reportedly imported most of the captive born and wild sourced individuals (68% and 85%, respectively). The main species reportedly exported from Indonesia during this period were captive bred *H. kuda*, *H. barbouri*, and *H. comes* (in descending order by volume). In addition, data from the Indonesian quarantine agency (BKIPM)<sup>29</sup> revealed that (for example) in 2018 to 2020 a total of 50,849 live seahorses exported from Indonesia (source is unspecified; possibly mostly captive bred).

According to available information, Indonesia continues to be a source of both dried and live seahorses in international trade. All dried exports are illegal, happening outside CITES regulations, whereas live seahorse export is permitted for captive bred individuals only. There is, therefore, a need to understand how Indonesia is implementing CITES for seahorses across both trade types, in an effort to ensure any trade is sustainable, legal and monitored. This report examines Indonesia’s CITES implementation for seahorses according to key stakeholders, summarizes key challenges and opportunities, and makes recommendations for Indonesian CITES Authorities to consider going forward.

## 3.2 Methods

This study was carried out by Yudi Herdiana. Mr. Herdiana is an Indonesian fluent in Bahasa Indonesia. He is currently pursuing his PhD in marine conservation and is a technical advisor for the marine and fisheries program of the Rekam Nusantara Foundation. Mr. Herdiana has extensive experience working on marine and fisheries issues, especially on marine protected areas and sustainable fisheries management, which he gained while working for the Wildlife Conservation Society (WCS) Indonesia Program for seventeen years. Of particularly relevance to this report, Mr. Herdiana was involved in assisting the development of WCS

<sup>29</sup> Badan Karantina Ikan, Pengendalian Mutu dan Keamanan Hasil Perikanan – Ministry of Marine Affairs and Fisheries; <http://bkipm.kkp.go.id/bkipmnew/v2016/extlink.php?l=stat>

Indonesia's sharks and rays' program, developing conservation actions and supporting CITES management for listed species.

Information regarding the implementation of the CITES App II listing for seahorses in Indonesia was collected from February to April 2021 through online interviews (by phone and online meeting platforms) with experts and government representatives who have authorities in CITES implementation, as well as supporting data and documents from online sources. The interviews were aimed to collect information in order to answer key questions in Sections 3.3 to 3.7. The questions asked during the interviews were tailored based on respondent's capacities and roles in regards to CITES implementation in Indonesia. The respondents were selected based on their knowledge and capacity, as well as representation of different CITES Authorities: Management Authority (MA), Scientific Authority (SA), and Enforcement Focal Points (EA). The institutions represented by respondents that participated in the interviews and scope of the interviews is presented in Table 3.1.

**Table 3.1.** Institutions represented by respondents interviewed for this study, and scope of interviews.

<b>Institution</b>	<b>Scope of interview</b>
Marine Species Utilization, Directorate of Marine Biodiversity Conservation (Ministry of Marine Affairs and Fisheries – MMAF – CITES Management Authority for fishes)	The role of MMAF as new CITES MA for fishes (including the challenges); MMAF priority species for 2021; opportunity to open seahorse trade under CITES scheme; supports needed by MMAF toward potential opening seahorse trade from wild catch
Surveillance in Marine Conservation Area, Directorate of Surveillance of Marine Resources Management (MMAF)	The roles of the DG of Surveillance of MMAF in regards to CITES Implementation, including challenges and opportunities.
Sub-Directorate of Convention and Conservation Network, Directorate of Marine Biodiversity Conservation (MMAF)	The role of MMAF as new CITES MA for fishes; challenges in strengthening policy and regulation for seahorses within MMAF (collaboration with other DGs); data and information needed prior to review the opening seahorse trade through CITES mechanism.
Balai Budidaya Laut Lampung (BBL Lampung); Aquaculture research center of MMAF in Lampung	The current status of captive breeding activities of seahorses in the research facility; potential for expansion; the role of BBL Lampung to transfer knowledge and technology of seahorse captive breeding.
Lembaga Ilmu Pengetahuan Indonesia (LIPI) – CITES Scientific Authority	Indonesia's position when seahorse was proposed to be listed in the CITES Appendix II; the historical aspects of the CITES implementation in Indonesia; the role of LIPI as the Scientific Authority; issues regarding the seahorse trade (including illegal dried seahorse); the potential for Indonesia to open seahorse trade under the CITES scheme.
Sekretariat Kewenangan Ilmiah Keanekaragaman Hayati (SKIKH, LIPI)	The role of SKIKH in relation to CITES in Indonesia; opportunity and challenges in CITES implementation for seahorses in Indonesia; existing policy and regulation; transition process of Management Authority from MoEF to MMAF (See Section 3.3); seahorse trade in Indonesia; quota for seahorse in Indonesia.
Pusat Karantina dan Keamanan Hayati Ikan, Kementerian Kelautan dan Perikanan (BKIPM, Quarantine Agency, MMAF) – CITES Enforcement Focal Point	The roles of BKIPM and mechanism of monitoring the export traffic of CITES species.

During the collection of data and information, the author was unable to build contact with the Ministry of Environment and Forestry, which was identified as a key informant to this report.

### **3.3 The Actors**

#### **CITES Authorities of Indonesia**

Since 1999, the Ministry of Forestry (now Ministry of Environment and Forestry or MoEF; Kementerian Lingkungan Hidup dan Kehutanan or KLHK) has been appointed as the Management Authority for CITES in Indonesia. This responsibility was legalized through Government Regulation Number 8 of 1999 (Pemanfaatan Jenis Tumbuhan dan Satwa Liar or “Utilization of Wild Plant and Animal Species”).<sup>30</sup> Daily technical implementation for CITES management under the MoEF is carried out under the Directorate of Biodiversity Conservation (Direktorat Keanekaragaman Hayati or KKH) which itself falls under the Directorate General of Forest Protection and Nature Conservation (Direktorat Jenderal Perlindungan Hutan dan Konservasi Alam or DG-PHKA), which since 2015 has been called the Directorate General of Natural Resources and Ecosystem Conservation (Direktorat Jenderal Konservasi Sumber Daya Alam dan Ekosistem or DG-KSDAE) (Figure 3.1). To carry out its authority, the MoEF works closely with the Indonesian Institute of Sciences (Lembaga Ilmu Pengetahuan Indonesia or LIPI) as the CITES Scientific Authority for Indonesia (Figure 3.1). Technical aspects of CITES implementation are regulated through the Decree of the Minister of Forestry Number 447 of 2003 (Tata Usaha Pengambilan Atau Penangkapan Dan Peredaran Tumbuhan Dan Satwa Liar or “Business Procedures for Collection or Capture and Circulation of Wild Plants and Animals”).<sup>31</sup>

To ensure legal and administrative order in the CITES implementation under this Scientific Authority, LIPI established the Secretariat for the Scientific Authority of Biodiversity (Sekretariat Kewenangan Ilmiah Keanekaragaman Hayati or SKIKH) in 2019 (Figure 3.1), legalized through LIPI Regulation Number 26 of 2019 concerning the Implementation of Scientific Authority in Biodiversity (Pelaksanaan Kewenangan Ilmiah Dalam Keanekaragaman Hayati).<sup>32</sup> SKIKH is an independent non-structural technical unit that provides services in providing scientific recommendations and responses in the capacity of LIPI as a Scientific Authority.

The main challenge of CITES implementation for marine species in Indonesia is that the authority that manages marine and fisheries resources is the Ministry of Marine Affairs and Fisheries (MMAF; Kementerian Kelautan dan Perikanan or KKP), while permitting, licensing and legality related to CITES species are managed by the MoEF. Plans to transfer some of the authority for fish species to MMAF have been discussed for a long time, but only took effect in 2020. In May 2020, the CITES Management Authority in Indonesia was divided between the MoEF and the MMAF, with the MMAF being the CITES Management Authority for all fish species (Actinopterygii) (Figure 3.1). The authority of MMAF in managing fish is based on Government Regulation Number 60 of 2007 on Conservation of Fishery Resources (Konservasi Sumber Daya Ikan),<sup>33</sup> and its implementation is regulated through Minister Regulation of MMAF Number 61 of 2018 on Utilization of Protected Fish Species and/or Fish Species Listed in the CITES Appendices (Pemanfaatan Jenis Ikan yang Dilindungi dan/atau Jenis Ikan yang tercantum dalam Appendiks CITES).<sup>34</sup> This decision was effectively recognized by the CITES Secretariat in October 2020. Although the MMAF is now responsible for CITES listed fish species, it was agreed that the MoEF still has a role as coordinator of CITES MA that has responsibility for submitting regular reports to CITES (MMAF should submit the report through MoEF).

Authority of CITES implementation under MMAF is carried out and coordinated under the Directorate of Marine Biodiversity Conservation (Direktorat Konservasi Keanekaragaman Hayati Laut or KKHL) which falls under the Directorate General for Marine Spatial Management (Ditjen Pengelolaan Ruang Laut or DG-PRL) (Figure 3.1). In carrying out its duties, DG-PRL coordinates and shares authority with several other units

<sup>30</sup> <http://www.bphn.go.id/data/documents/99pp008.pdf>

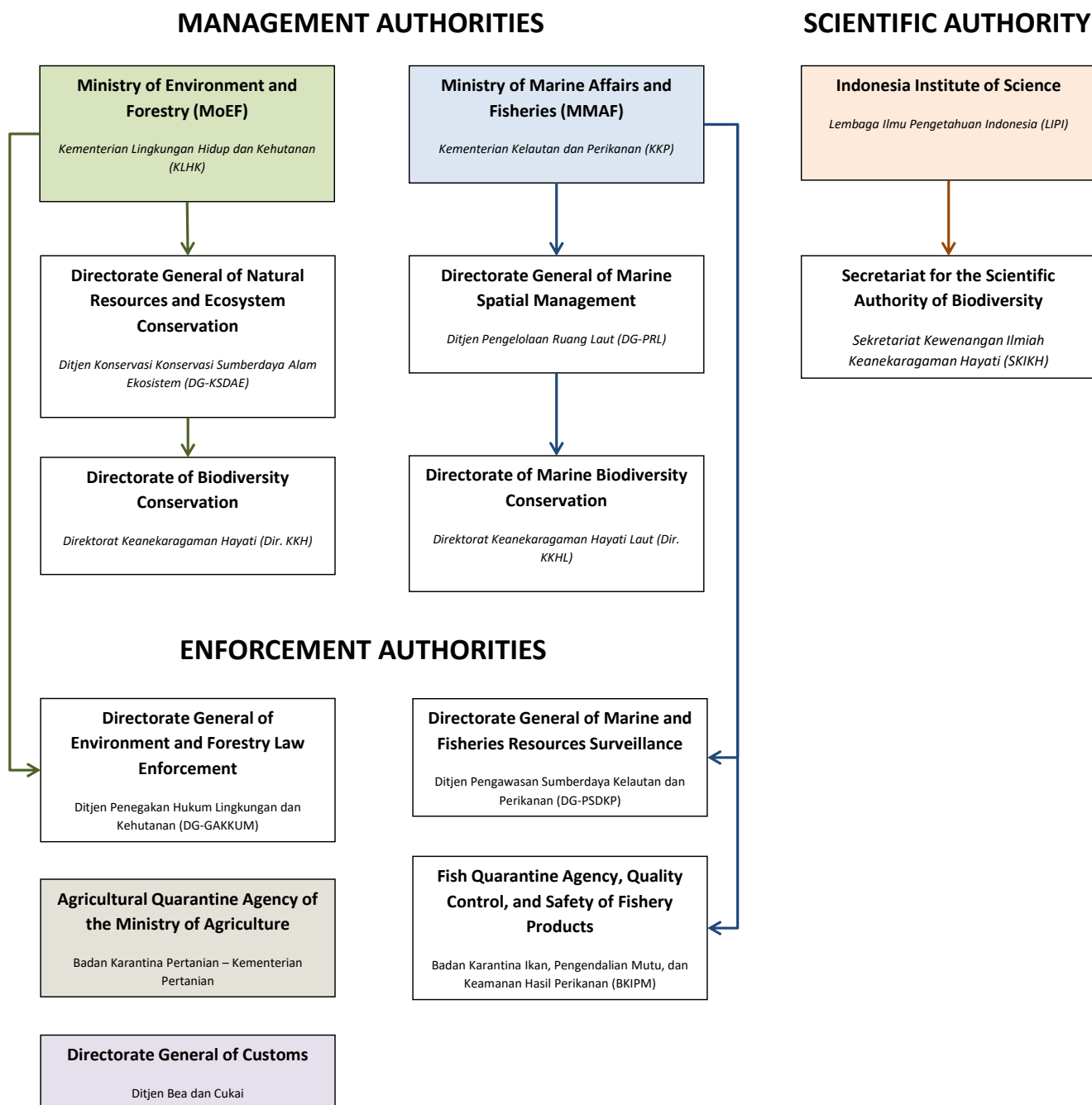
<sup>31</sup> [https://graccess.co.id/assets/document/SK\\_447Kpts-II2003.pdf](https://graccess.co.id/assets/document/SK_447Kpts-II2003.pdf) (English translation at [http://www.flevin.com/id/lgs0/translations/JICA%20Mirror/english/54.FORESTRY\\_%20447.2003\\_final.Eng.QC.html](http://www.flevin.com/id/lgs0/translations/JICA%20Mirror/english/54.FORESTRY_%20447.2003_final.Eng.QC.html))

<sup>32</sup> [https://jdih.lipi.go.id/peraturan/2019\\_Peraturan%20LIPI\\_26.pdf](https://jdih.lipi.go.id/peraturan/2019_Peraturan%20LIPI_26.pdf)

<sup>33</sup> <https://peraturan.bpk.go.id/Home/Details/4783/pp-no-60-tahun-2007>

<sup>34</sup> <http://peraturan.go.id/common/dokumen/bn/2019/BN%201300-2019.pdf>

under the MMAF, including DG of quarantine (Badan Karantina Ikan, Pengendalian Mutu dan Keamanan Hasil Perikanan or BKIPM) and DG of marine and fisheries resources surveillance (Ditjen Pengawasan Sumberdaya Kelautan dan Perikanan or DG-PSDKP) (Figure 3.1).



**Figure 3.1.** Current structure of CITES Authorities in Indonesia. MoEF has been the Management Authority for all species since 1999, whereas MMAF was only recognized as the Management Authority for marine species in 2020.

### Tasks and authorities of the MA and SA CITES in Indonesia

In general, the division of tasks and authorities between the CITES MA and CITES SA in Indonesia are very distinctive with a very good coordination.

The responsibilities of the CITES Management Authorities in Indonesia that have been implemented so far are:

- Permit issuance in relation to domestic and foreign trade and collection of wild specimens for captivity (captive breeding);

- Permit issuance for importing all CITES listed specimens;<sup>35</sup>
- Law enforcement of regulations through revocation of licenses, rejection of specimen trafficking, and confiscation of specimens that do not comply with CITES principles. The role for law enforcement is carried out by specific directorate generals under each ministry (MoEF and MMAF) in coordination with other national law enforcement agencies such as police and Customs (details below, see also Figure 3.1);
- Communicate with the CITES Secretariat and other CITES members, including attending CITES meetings to provide information about in-country CITES implementation through official written reports, as well as in official CITES forums such as SC meetings and the CoP.

The tasks and authorities of the LIPI as the CITES Scientific Authority in Indonesia that have been implemented so far are:

- Provide recommendations to the Management Authority regarding population status (i.e. vulnerability and its conservation priority), captive breeding and trade quotas, including exports, re-exports, imports and introductions from the sea for all specimens of wild plants and animals, terrestrial and marine;
- Monitor trade permits and trade realization, as well as provide recommendations to the Management Authority regarding restrictions of permit granting for trade based on biological evaluation;
- Acting as an independent party in providing recommendations on international conventions in relation with conservation of wild plants and animals.

### **Supporting bodies and coordination in CITES implementation**

In carrying out its duties and functions, CITES MAs in Indonesia have technical implementing units at the site level, namely the Natural Resources Conservation Agency (Balai Konservasi Sumber Daya Alam, BKSDA) under MoEF and the Coastal and Marine Resources Management Agency (Balai Pengelola Sumberdaya Pesisir dan Laut, BPSPL) under the MMAF. The duties and functions of the BKSDA and BPSPL are:

- Data collection on CITES species, including their populations and trade;
- Field verification of the proposed permits in relation with CITES species collection and trade;
- Issuance of domestic traffic permit (Surat Angkutan Tumbuhan dan Satwa Liar Dalam Negeri or SATS-DN);<sup>36</sup>
- Monitoring of domestic trade; and
- Recommendation of quota sharing for users to DG-KSDAE.

The monitoring and surveillance system for CITES implementation in Indonesia is carried out through a standardized licensing mechanism, issued by CITES MAs and enforced by the law enforcement authorities (EA) under each of the ministries, namely DG of Environment and Forestry Law Enforcement (Direktorat Jenderal Penegakan Hukum Lingkungan Hidup dan Kehutanan, DG-Gakkum) of MoEF and DG of Marine and Fisheries Resource Surveillance (Direktorat Jenderal Pengawasan Sumberdaya Kelautan dan Perikanan, DG-PSDKP) of MMAF (Figure 3.1). In carrying out their monitoring and surveillance authority, the two agencies coordinate with other agencies such as quarantine and Customs (Figure 3.1).

Effective monitoring of the trade of CITES species is a collaborative work of the CITES Management Authorities, technical implementing units who monitor domestic trade (i.e., BKSDA and BPSPL), and agencies that have responsibility to control the foreign trade. For international trade monitoring and control in relation with CITES specimens, the MoEF coordinates with the Agricultural Quarantine Agency (Badan Karantina Pertanian, Barantan) under the Ministry of Agriculture, while the MMAF has its own quarantine unit, namely the Fish Quarantine Agency, Quality Control and Fishery Product Safety (Badan Karantina Ikan, Pengendalian Mutu, dan Keamanan Hasil Perikanan, BKIPM) which is responsible for monitoring trade of fishery products and their derivatives (Figure 3.1). These quarantine agencies have authority to carry out prevention of pests and diseases entry and spread from abroad and among areas in the country, or their exit

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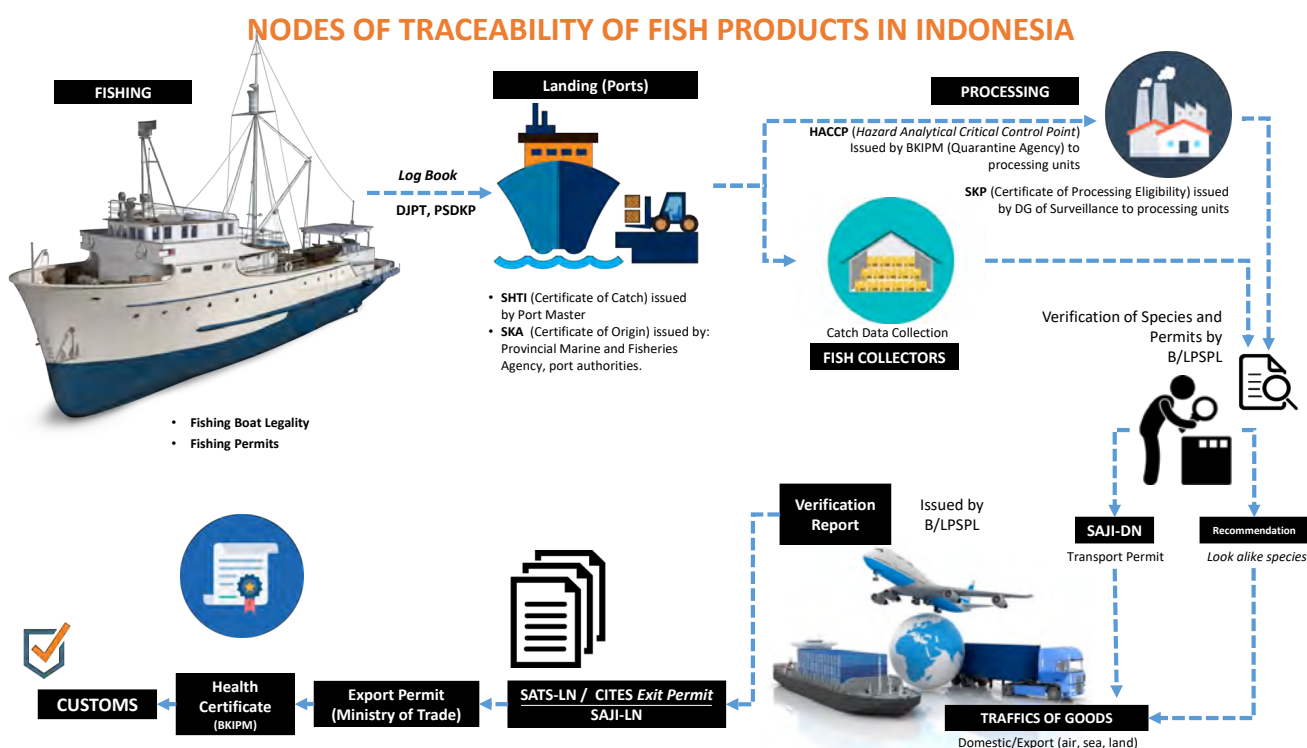
<sup>35</sup> Indonesia requires an import permit for all CITES listed species, regulated in SK Menhut No. 447/Kpts-II/2003 tanggal 31 Desember 2003 (Article no 72) – see footnote 6.

<sup>36</sup> By regulation (Ministerial Decree; Keputusan Menteri Kehutanan No. 447/Kpts-II/2003), all in-country transport/distribution of wildlife specimens both for commercial and non-commercial should apply for SATS-DN.

from the territory of the Republic of Indonesia; health certificates will only be issued when all necessary administration is fulfilled (i.e., domestic transfer permit from BKSDA or BPSPL). The quarantine agencies also have responsibility for quality control and product safety, application of quality management systems, monitoring of biosafety, as well as compliance to policy and regulation in destination countries and with international conventions.

The CITES Management Authorities also have been working closely with the Indonesian Custom or Direktorat Jenderal Bea dan Cukai (DG Bea dan Cukai) as the ‘gate controller’ for exports and imports of wildlife specimens (Figure 3.1). The DG Bea dan Cukai has authority to enforce regulations related to transnational wildlife trade and is responsible for checking additional necessary administration related with export permits.

More detailed list of agencies that are involved in CITES implementation, including their coordination nodes, are presented in Figure 3.2.



**Abbreviation notes:**

- MMAF: Ministry of Marine Affairs and Fisheries
- DJPT: DG of Capture Fisheries - MMAF
- PSDKP: DG of Surveillance of Marine and Fisheries Resources - MMAF
- B/LSPPL: Balai/Loka Pengelolaan Sumberdaya Perikanan dan Kelautan (MMAF)
- SAJI-DN: Surat Angkut Jenis Ikan – Dalam Negeri (Domestic Transport Permit for Fish Species)
- SAJI-LN/SATS LN: Permit for transport of export for Fish Species/or animal and plants
- BKIPM: Quarantine Agency of MMAF

**Figure 3.2.** Nodes of traceability in fish products in Indonesia, including CITES species (sourced and modified from Rusandi et al. 2019).



### 3.4 History of trade research and CITES activity in Indonesia

1994-95 – Dr. Amanda Vincent (Project Seahorse) carried out the first ever research on seahorse fisheries and trade in Indonesia (Vincent 1996). Indonesia was estimated to export hundreds of thousands of seahorses per annum for the marine aquarium trade, but only about 200 kg per annum of dried seahorses (~100,000 individuals) for TCM – though “investigations were limited in geographic scope and sample size.” Seahorses were caught – targeted or as bycatch – throughout Indonesia. Those targeted for the live trade were most often caught by hand push-nets or scoop nets, near the international airports – Jakarta and Denpasar. Dried seahorses were sourced as bycatch from trawls and gillnets. TCM retailers in Indonesia claimed they imported seahorses from Mainland China via Hong Kong SAR and Jakarta; marine product exporters confirmed that seahorses were being exported from Indonesia to Hong Kong SAR for processing, and then re-imported to be sold as Chinese origin. Seahorses were also reported to be used domestically in *Jamu* medicine. There was near universal consensus that seahorse populations in Indonesia were declining. For example, fishers and buyers in East Java and Bali reported decreases of as much as 50% in the previous 5 years (since 1990) (further details in Table Indonesia 4 of Vincent 1996).

1999-2002 – Project Seahorse carried out a study to obtain both quantitative and qualitative understanding of seahorse trade and domestic use in Indonesia (Perry et al. 2005). Indonesia was a significant consumer of dried seahorses, using an estimated 21.9 tonnes (~8 million seahorses) annually for traditional medicine, of which 21.7 tonnes were for traditional Indonesian *jamu* medicine, and the remainder for traditional Chinese medicine (TCM). Seahorse-based *jamu* medicines were manufactured in Java using local seahorses and—given the large volumes consumed—possibly imported seahorses as well. TCM was supplied with Indonesian-caught seahorses and with seahorses and patent medicines imported from Mainland China and/or Hong Kong SAR. In addition, dried seahorses were consumed in small quantities in Indonesia as folk medicine, charms and curios. Unknown quantities of dried seahorses were also exported from Indonesia to Hong Kong SAR, South Korea and likely Malaysia and Singapore, with additional exports of seahorse-based *jamu* compound medicines to the latter two countries. Seahorses were caught by fishers throughout Indonesia, in both target and incidental fisheries, but were traded only from certain areas. Target fisheries were particularly well-established for the live trade, occurring in more regions of the country than reported in Vincent (1996) and supplying approximately 100,000 seahorses annually, of which at least 31,364 – 52,295 animals may have been exported to Asia, Australia, Europe, and North America. Live seahorses were also sold domestically, on an apparently limited scale. Seahorses were caught incidentally in a range of gear-types, including trawl nets, gillnets, shrimp gillnets, beach seines, purse seines, fish traps, and crab traps. Indonesian seahorses were threatened by loss of habitat for land reclamation, and possibly by over-fishing. Respondents suggested that seahorse supplies may have decreased in both the dried and live trades.

2001 – Project Seahorse field survey of seahorses of Indonesia (Lourie 2001). A field-based survey of seahorses found in Indonesian waters revealed a total of nine species. These were provisionally assigned to *Hippocampus barbouri*, *H. bargibanti*, *H. comes*, *H. histrix*, *H. kelloggi*, *H. kuda*, *H. spinosissimus*, *H. trimaculatus*, and *H. sp. nov.*

2002 – All seahorse species (*Hippocampus* spp.) listed on CITES Appendix II.

2004 – CITES listing implemented in May.

2006-07 – Indonesia declared, to the CITES Secretariat for publication on the CITES website, quotas for live *H. barbouri*, *H. comes*, *H. histrix*, *H. kelloggi*, and *H. kuda* in each of 2006-2007, ranging from ~2,000-9,000 individuals depending on the species (<https://cites.org/eng/resources/quotas/index.php>). This compares to exports of hundreds of thousands live seahorses (across all species) before the CITES listing. A quota was not declared for dried specimens.

2007 – The European Union temporarily suspended imports of wild *Hippocampus* species (*H. barbouri*, *H. comes*, *H. histrix*, *H. kelloggi*, *H. kuda*, and *H. spinosissimus*) from Indonesia in 2007 on the advice of the European Union (EU) Scientific Review Group (SRG), until concerns outlined by the SRG could be addressed (note – the suspension was still valid as of 17/10/2019).<sup>37</sup>

2008 – A Polish company was found guilty of importing 14 tonnes of “Ginjal”, a drug containing powdered seahorses, from Indonesia.<sup>38</sup> A report compiled by the Polish CITES Scientific Authority (Kepel 2011) detailed the import of large volumes of a *jamu* medicinal product named Ginjal into Poland. According to the supplier of this medicine, each capsule contained 0.2g of seahorse. Between 2004 and 2008, shipments ranging from a few thousand pills up to 27 million pills were recorded with over 135 million pills reported to have been imported into Poland during this time period. This equated to approximately 27 tonnes of seahorses, or 10 million seahorses, based on the 0.2g of seahorse per pill and 2.69g per individual dry seahorse.

2009 – Indonesia was included in the CITES Review of Significant Trade (RST) as a range State for *H. kelloggi*, *H. kuda*, and *H. spinosissimus*.

2011 – Indonesia responded to the CITES Secretariat’s request for information, in support of the RST for *H. kelloggi*, *H. kuda*, and *H. spinosissimus*, by indicating they would no longer allow exports of wild specimens; Indonesia reported having taken precautionary measures by “issuing CITES permit to export live seahorses only... At present, Indonesia has already attained knowledge to breed *Hippocampus* spp. and has successfully developed captive breeding...therefor our Scientific Authority (LIPI) has recommended that CITES MA ban all harvest/export quota of all (wild) *Hippocampus* spp. Since the beginning of 2009, all trade of those species must be originated from captive breeding production” (AC25 Doc. 9.5 Addendum). Indonesia was subsequently removed from the Review on the basis of no anticipated trade (2008).

2011 – Indonesia was included in the CITES RST as a range state for *H. barbouri*, *H. histrix*, and *H. trimaculatus*.

2012 – Indonesia responded to the CITES Secretariat’s request for information, in support of the RST for *H. barbouri*, *H. histrix*, and *H. trimaculatus*, by indicating it had determined that all export of *Hippocampus* spp. must be live specimens and that “the Directorate General of Forest Protection and Nature Conservation (DG of PHKA) decree No. 148/IV-KKH/2008 dated 31 Dec 2008, CITES Management Authority of Indonesia determined zero quota from the wild to encourage the captive bred since 2009 (AC26 Doc. 12.3). Harvest quota from the wild just allowed for the parental stock.” Two companies were reportedly licensed to culture seahorses in Lampung, Sumatra and Sulawesi (AC26 Doc. 12.3). Malaysia was subsequently removed from the Review on the basis of no anticipated trade (AC26 WG7 Doc. 1 (Rev. 1)).

2013 – Representing Project Seahorse and with funding from the CITES Secretariat, Dr. Sarah Foster travelled to Jakarta from 5-7 June 2013, to consult with CITES Indonesia and other stakeholders. The main goals of the visit were to understand the background to the EU ban on wild seahorse imports from Indonesia and the current status of Indonesia’s trade in seahorses.

2016-2017 – A Project Seahorse study investigated the illegal trade of seahorses, among the first taxa of marine fishes to come under global trade restrictions (Foster et al. 2019). To investigate global compliance, 220 interviews were conducted with traders in Hong Kong SAR, the largest entrepôt for dried seahorses. Traders reported obtaining dried seahorses from many countries with bans or suspensions on seahorse exports. **Traders reported Indonesia as supplying the fifth highest number of dried seahorses imported into Hong Kong SAR at that time.** Almost all dried seahorses in Hong Kong SAR (95%) were

<sup>37</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R1587&from=EN>

<sup>38</sup> <https://www.traffic.org/news/illegal-seahorse-containing-medicine-handed-back/>

reportedly imported from source countries that had ended legal exports, indicating a widespread lack of enforcement.

### 3.5 Nature of export bans/suspensions

Until now, there have been no specific regulations creating national protection for seahorses in Indonesia. Seahorses as one type of fish (Actinopterygii) are generally managed under the Ministry of Marine Affairs and Fisheries (MMAF). Since seahorses are listed on CITES Appendix II, wild catch for trade and export of seahorses was managed by the Directorate General of Konservasi Sumber Daya Alam Ekosistem or KSDAE (previously DG PHKA) under the Ministry of Environment and Forestry (MoEF) through Government Regulation No. 8 of 1999 concerning Utilization of Wild Plant and Animal Species (See Section 3.3, Figure 3.1). However, since 2020, CITES management for seahorses has been handed over to MMAF as the new CITES Management Authority for all fish species.

Before the listing of seahorses on CITES Appendix II in 2002 (with implementation in 2004) Indonesia was one of the source countries that did not support the listing. This decision was based on the understanding that the inclusion of seahorses in CITES Appendix II would result in an increase of seahorse market value in Indonesia which Indonesia feared might encourage a subsequent increase in exploitation. At that time, in-country experts considered that seahorses were not being targeted in any significant way and had very low value. Indeed, Indonesia took out a reservation on the CITES listing, for all *Hippocampus* spp., effective 15 May 2004 and still in place, although they must still meet CITES obligations except when they trade with other Parties with reservations (Japan, Norway, Palau and South Korea) or with non-Parties.

Indonesia continued to trade in seahorses after the listing, but due to limited data on seahorses (i.e., data on wild populations, catch and trade), the Indonesian CITES Scientific Authority decided not to issue seahorse export quotas for wild caught specimens and all dried specimens from 2009. This decision was also driven by conditions where the Management Authority did not have an adequate traceability system to monitor the exploitation and trade specific for seahorse species.

Suspensions on exports of wild catches and dried form of seahorses remain in force in Indonesia until now (June 2021). Catch of seahorses, however, remains unregulated. And given the existing demand for live seahorses for aquarium display, at least in the last five years Indonesia has issued quotas for seahorses that include quotas for wild catch to be used as brood stock in captive breeding operations and for research purposes, and export quotas for live captive bred individuals (F2 generation or CITES source code C; specimens which their parents were also born in captivity) (details in Table 3.2). The export quotas were provided only for seahorses originating from aquaculture and exported in live form for the aquarium market. Based on the issued annual quota by the MoEF from 2015 to 2020, the annual wild catch quota only provided for three seahorse species (*Hippocampus barbouri*, *H. comes* and *H. kuda*), ranged from 200 to 8,000 individuals per year, and were specific only for South Sulawesi and Lampung Provinces (Table 3.2). The quota totals across the six years were 17,300 individuals to be taken from the wild for use as brood stock or for research purposes, and 12,500 individuals to be exported from captive breeding operations (though export quotas were only specified for 2015 and 2016, Table 3.2). The quota was issued based on specific requests from Indonesian companies based in South Sulawesi, who export captive bred seahorses for the aquarium market, and from aquaculture research centers in South Sulawesi and Lampung. The author was unable to discern how the quotas were determined.

Although Indonesia has reportedly only allowed export of live F2 generation (CITES source code C) seahorses since 2009, CITES trade data after 2009 contain records of live F1 generation (CITES source code F) seahorse exports for which Indonesia is the reported exporter. Indonesia reported a total export quantity of 2500 source code F individuals across 2012-2018, whereas importers reported receiving 1364 source code F individuals from Indonesia across the same years. The author was unable to clarify MoEF's position on source code F exports. However, based on interviews with respondents from various institutions, the author suggests there might be a gap of understanding in terms of allowed category for exported CITES Appendix II

species among some institutions. It will be important to clarify what Indonesia's position is with respect to source code F live exports as issuing an export permit for source code F individuals requires NDFs to be made for the wild caught parents.

Since the Management Authority for fish species was transferred to MMAF in 2020, the *status quo* of an export suspension on all dried and wild live seahorses may still persist for the next few years. Even though all seahorse species in Indonesia are included in the 20 priority marine species groups to be managed by the MMAF (under the Directorate of Marine Biodiversity Conservation, more information in Section 3.6, below), MMAF still needs to establish various aspects such as regulation, surveillance and traceability systems, and human resources to ensure effective CITES management. Learning from previous experience, LIPI as the CITES Scientific Authority in Indonesia will need to be convinced of the readiness of MMAF as the new Management Authority before reviewing the possibility of opening seahorse live and dried trade quotas from wild catch. Assessments are needed to determine Indonesia's next steps regarding the seahorse export *status quo*, with the option of opening quota from wild catch or continue encouraging captive bred sourcing.

**Table 3.2.** Official wild catch and export quota of seahorses in Indonesia from 2015 to 2020; issued by the Ministry of Environment and Forestry.

Year	Species	Province	Catch quota (number)	Export quota (number)	Remark
2020	<i>Hippocampus barbouri</i>	South Sulawesi	200	0	Quota of brood stock from wild catch for new company (South Sulawesi)
	<i>Hippocampus spp.</i>	Lampung	200	0	For research purposes
2019	<i>Hippocampus barbouri</i>	South Sulawesi	800	0	Quota of brood stock from wild catch for captive breeding. Distributed to 4 companies (200 each) in South Sulawesi (CV Mitra Hasil Bahari Badi, CV Paraikatte Abadi, Lembaga Budidaya Ikan Nemo dan Kuda Laut Bahari Lestari, and PT Dinar Darum Lestari)
2018	<i>Hippocampus comes</i>	South Sulawesi	100	0	For research purposes
	<i>Hippocampus kuda</i>	South Sulawesi	100	0	For research purposes
2017	<i>Hippocampus barbouri</i>	South Sulawesi	1,400	0	1,000 for captive breeding brood stock, 400 for research purposes
	<i>Hippocampus comes</i>	South Sulawesi	1,250	0	1,000 for captive breeding brood stock, 250 for research purposes
	<i>Hippocampus kuda</i>	South Sulawesi	250	0	For research purposes
2016	<i>Hippocampus barbouri</i>	South Sulawesi	8,000	8,000	Purpose of catch not specified; Export only sourced from captive breeding
2015	<i>Hippocampus barbouri</i>	South Sulawesi	5,000	4,500	Purpose of catch not specified; Export only sourced from captive breeding

### 3.6 Understanding of seahorse fisheries, trade and bans/suspensions

#### 3.6.1. What do respondents understand/know about seahorse fisheries and trade?

Knowledge on seahorse fisheries and trade varies among respondents in this study. In general, some of the respondents were aware that Indonesia is a source country for live and dried seahorse in international trade, including the illegal exports. Nevertheless, all relevant respondents express the same understanding that a more specific study to understand the utilization and trade pattern of seahorse in Indonesia is needed. They

also agreed that understanding the seahorse use and trade pattern in Indonesia is a key for CITES Authorities to strengthen policy, regulation and management of seahorse.

In terms of knowledge of the CITES species list and the regulation being applied, the quarantine agencies and Customs said they rely on the Management Authority to provide them information on CITES listed species.

### **3.6.2. What is respondent awareness and use of existing tools and information for seahorses?**

Respondents from the Management Authority (Directorate of Marine Biodiversity Conservation of MMAF) and Scientific Authority (LIPI) are aware of existing tools and information of seahorses that can be referenced when developing NDFs and management for seahorses in Indonesia. Among them are the Guidelines for Identification and Monitoring of Seahorses (Pedoman Identifikasi dan Monitoring Populasi Kuda Laut) published in 2015 by the Directorate of Marine Biodiversity and Conservation and Directorate General of Marine Space Management of MMAF.<sup>39</sup> Respondents were also aware that there are very few seahorse experts in Indonesia, and only LIPI and MMAF research centers have researchers with some experience in conducting population assessments of seahorses.

### **3.6.3. Seahorse export/import paths**

Figure 3.2, above, showed the key nodes of monitoring and surveillance for trading path of marine and fisheries products in Indonesia, including CITES listed species. Although currently not in place, key authorities for seahorse trade monitoring should be: (i) BPSPL to monitor domestic traffic (source and destination) and permits; (ii) BKIPM to monitor specification and health standard of the products; and (iii) Customs to ensure exported products meet all legal requirements. Since there is no catch regulation specific for seahorse in place, no catch recording and monitoring efforts is being conducted by local authorities. If the Government of Indonesia decided to open the seahorse trade from wild, specific catch recording and monitoring system for seahorse should also be developed since most of the catch will not be landed in official fishing ports.<sup>40</sup>

### **3.6.4. Seahorse conservation status and regulations**

In general, the use and trade of CITES listed species is regulated by the Indonesian Law No.5 of 1990 on Conservation of Natural Resources and Ecosystems (Konservasi Sumber Daya Alam Hayati dan Ekosistem),<sup>41</sup> and strengthened by the Government Regulation No. 7 of 2009 on Preservation of Plants and Animals (Pengawetan Jenis Tumbuhan dan Satwa),<sup>42</sup> Government Regulation No. 8 of 2009<sup>30</sup> and Minister of Forestry Decree no 447 of 2003.<sup>31</sup> CITES species are listed under the annex of the Government Regulation No. 7 and 8 of 2009, and frequently reviewed and updated following the international conventions. Utilization on protected marine species is also generally regulated under the Indonesian Fisheries Law No. 45/2009 amending No. 31/2004 (Undang Undang Perikanan).<sup>43</sup>

Although currently Indonesia does not have specific regulations for seahorse to control the catch (e.g. fishing gear, catch size) or other type of use, a national plan of action (NPOA) for seahorse (2016-2020) was developed in 2015 by MMAF.<sup>44</sup> The NPOA set targets for conservation program of seahorse, that included: (i)

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<sup>39</sup> <https://kkp.go.id/an-component/media/upload-gambar-pendukung/KKHL/PEDOMAN/Pedoman%20Umum%20Identifikasi%20dan%20Monitoring%20%20Kuda%20Laut.pdf>

<sup>40</sup> Given the very long coastline of Indonesian archipelago, it is not very common for small-scale fishers to land their catch in official fishing ports. They often landed their catch at their village. Commonly there is at least one fish collector (buyer) in each village who then sells the fish into the supply chain. This is one of the main challenges in managing small scale fisheries (SSF) in Indonesia. The reason for this practice is due to distance from village to official fishing ports. Fisheries tax and catch documentation remain not applicable for SSF in Indonesia, which make forcing small-scale fishers to land their catch in official fishing port irrelevant.

<sup>41</sup> <https://jdih.kemenkeu.go.id/fulltext/1990/5TAHUN~1990UU.htm>

<sup>42</sup> <https://peraturan.bpk.go.id/Home/Details/54143/pp-no-7-tahun-1999>

<sup>43</sup> [https://www.dpr.go.id/dokjdih/document/uu/UU\\_2009\\_45.pdf](https://www.dpr.go.id/dokjdih/document/uu/UU_2009_45.pdf); in English at <http://www.fao.org/faolex/results/details/en/c/LEX-FAOC097600>

<sup>44</sup> <https://kkp.go.id/an-component/media/upload-gambar-pendukung/KKHL/BUKU/RAN%20Konservasi%20kuda%20Laut.pdf>

data collection for seahorse wild population assessments and socioeconomics at piloted sites; (ii) establishing at least one marine protected area for seahorse habitat; (iii) developing regulation for seahorse catch and trade; (iv) developing 20 community-based captive breed facilities; (v) training and capacity building for government official; and (vi) piloting re-stocking of seahorses. Based on interview and communication with MMAF staffs, due to internal political and priority changes in the ministry, this NPoA was left unattended. Furthermore, the absence of partners with capacity and experience in working with seahorse issues is also another reason the NPoA was not implemented. It is also unclear if plans for re-stocking are going to adhere to global best practices as set out by the IUCN SSC Conservation Translocation Specialist Group.<sup>45</sup> Casual releases can be highly problematic for wild populations, and formal releases are lengthy and require a great deal of human and financial capacity.

Seahorses have been recently listed as a priority species group for conservation by the MMAF (through Directorate of Marine Biodiversity Conservation) in 2019. The priority actions for seahorse from 2020-2024 are data collection and population monitoring, restocking, and management.<sup>46</sup> The 20 species were prioritized based on recommendation from LIPI for conservation of 308 marine species. Seahorses were selected also due to their listing on CITES Appendix II. Since the CITES MA for seahorse was just recently transferred to MMAF, the Directorate of Marine Biodiversity Conservation of MMAF might need some time to bring seahorse issue and policy to higher level within the ministry, to get support from other DGs such as capture fisheries, surveillance, and research center.

In 2016, the MMAF developed a plan document for piloting an on the ground community-based seahorse conservation through habitat protection and re-stocking.<sup>47</sup> The plan was proposed to be implemented in Bintan Island (Riau Islands Province) under the COREMAP CTI Project.<sup>48</sup> The proposed conservation actions for the seahorses included: (i) identification and capacity building of community groups to carry out the seahorse conservation, and (ii) provide supporting facilities and infrastructure for implementing the conservation actions (e.g. captive breed facility, surveillance related equipment, information center). However, there is no available information that this plan is adopted and implemented under the COREMAP CTI Project.

### 3.6.5. Other relevant laws and regulations

Although no specific regulations exist for seahorses, from other sector, the trade of CITES listed species are regulated by:

- Law No. 10/1995 jo. No. 17/2006 of Customs (Kepabeanan)<sup>49</sup> that explains criminal offense and sanctions against the perpetrators of smuggling and embezzlement of wild flora and fauna in import and export activities;
- Law No. 21/2019 (revision of Law No. 16/1992) on Quarantine of animal, fish, and plants in wildlife export and import (Karantina Hewan, Ikan dan Tumbuhan);<sup>50</sup> and
- Law No. 8/2010 on Prevention and Eradication of Money Laundering Crime (Pencegahan dan pemberantasan tindak pidana pencucian uang)<sup>51</sup> explains criminal sanctions for money laundering offenders for the illegal trade in wild flora and fauna.

Furthermore, although seahorse has already been listed as priority species for conservation by MMAF, it remains unclear what actions for seahorse conservation have been planned by MMAF in 2021, especially in relation to their protection, utilization and trade. Nevertheless, the existing policy on marine protected area

<sup>45</sup> <https://www.iucn.org/content/guidelines-reintroductions-and-other-conservation-translocations>

<sup>46</sup> <https://www.mongabay.co.id/2020/07/17/ancaman-eksploitasi-laut-20-jenis-ikan-terancam-punah-di-indonesia-jadi-prioritas-konservasi/>

<sup>47</sup> Terms of references of seahorse conservation pilot project (Dokumen kerangka acuan kerja pilot project pengelolaan konservasi kuda laut); <https://surajis.files.wordpress.com/2017/11/pilot-priject-kuda-laut.pdf>

<sup>48</sup> <https://www.icctf.or.id/>

<sup>49</sup> [https://repository.beacukai.go.id/peraturan/2006/12/uu\\_17-2006.pdf](https://repository.beacukai.go.id/peraturan/2006/12/uu_17-2006.pdf)

<sup>50</sup> <https://peraturan.bpk.go.id/Home/Download/114486/UU%20Nomor%2021%20Tahun%202019.pdf>

<sup>51</sup> [https://www.kpk.go.id/images/pdf/Undang-undang/uu\\_8\\_tahun\\_2010\\_tindak\\_pidana\\_pencucian\\_uang.pdf](https://www.kpk.go.id/images/pdf/Undang-undang/uu_8_tahun_2010_tindak_pidana_pencucian_uang.pdf)

(MPA) management in Indonesia also encourage to include the conservation of the priority protected species (when exist in the MPA) as management objectives, through zoning system to protect their habitats and reduce fishing access.

### 3.6.6. Seahorse seizures

The quarantine agencies, Customs, and port authorities in Indonesia are responsible for enforcing the regulations related to exports of CITES listed species. Furthermore, BKIPM (quarantine agency for marine and fisheries products) is reportedly improving their services by developing an integrated monitoring system of export-import traffic and a 'one-door policy' for permit and licensing services. Monitoring the seahorse export chain has been conducted particularly by the Indonesian Customs and BKIPM (quarantine agency) since seahorses were listed on CITES, and in particular since 2009 when the Indonesian government imposed an export suspension of dried seahorses. For example, there have been two seizures by the Customs at Soekarno Hatta Airport in Jakarta reported in the media, one of 23,000 seahorses in 2008 with the modus operandi of being smuggled along with the export of agarwood/eaglewood destined for Korea,<sup>52</sup> and another destined for Hong Kong SAR (volume and modus unknown) in 2009.<sup>53</sup>

More recent seizures of illegal seahorses export also occurred in several exit points such as Jakarta, Makassar and Yogyakarta. For example: (i) seizure of 5,280 dried seahorses in Soekarno-Hatta Airport by BKIPM that smuggled by two Egyptian in 2016,<sup>54</sup> (ii) seizure of 16.5 kg of dried seahorses that smuggled from Makassar to Jakarta using an expedition service in 2017,<sup>55</sup> and (iii) seizure by the airport authority and Customs in 2019 of 26 kg (7,040 individuals) dried seahorses smuggled by an Indonesian from Yogyakarta to Thailand.<sup>56</sup>

Based on the Standard Operation Procedure, seizures of illegal wildlife trade by authorities such as BKIPM and Customs should keep detail records to total number (individual, weight), species ID, individual size, and sexes (when possible), as these detailed data is also required for the prosecution process. Information of seizures in illegal wildlife trade and seahorses by far are only accessible from news. Although all the cases are well recorded by BKIPM and Customs, access to that information only happens by special request. Specimens from illegal trade will be kept and preserved until no longer needed by judiciaries, then destroyed.<sup>57</sup>

Technically, seizures of illegal trade on CITES species is reported to CITES by the MoEF as coordinator of CITES Management Authority. Nevertheless, there is no regulation that currently exists which mandated other law enforcement institutions (e.g., quarantine agency, Customs and port authority) to report the seizures cases periodically to CITES Management Authorities. Data and information of seizure cases is gathered annually by request from MoEF to the relevant institutions.

The interview with BKIPM identified a gap of knowledge of the recent list of protected or CITES species due to lack of coordination among agencies, as well as capacity to make species identification. Challenges in species identification during inspection often occurred due to limited technical skill or available tools for species ID, especially for lookalike species. Some less-compliant exporting companies sometimes take advantage of this gap. Furthermore, a limited number of quarantine agency and Customs staffs on the ground are unable to do adequate inspection process during a high volume of export traffics. It was also confirmed that currently there is no requirement for quarantine agencies and Customs to perform regular reporting of IWT to the CITES Management Authority.

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<sup>52</sup> One species of agarwood, *Aquilaria malaccensis*, is listed on CITES Appendix II;

<https://www.antaraneews.com/berita/95996/penyelundupan-23000-kuda-laut-bermodus-pengiriman-kayu-gaharu>

<sup>53</sup> <https://www.antaraneews.com/berita/138036/penyelundupan-kuda-laut-ke-hong-kong-digagalkan>

<sup>54</sup> <http://tangerangnews.com/kabupaten-tangerang/read/17619/5280-Ekor-Kuda-Laut-Gagal-Diselundupkan-di-Bandara-Soetta>

<sup>55</sup> <https://www.merdeka.com/peristiwa/kuda-laut-kering-165-kg-coba-diselundupkan-lewat-bandara-makassar.html#>

<sup>56</sup> <https://news.detik.com/berita-jawa-tengah/d-4485905/penyelundupan-7040-kuda-laut-kering-dari-yogya-ke-thailand-digagalkan>

<sup>57</sup> <https://www.republika.co.id/berita/nyokpk283/ratusan-kilo-barang-bukti-perdagangan-satwa-langka-dimusnahkan-bareskrim>

### 3.7 Challenges and opportunities

#### Management policy of seahorse in Indonesia

Seahorse management in Indonesia can be seen from two perspectives, protected species utilization and/or capture fisheries, both targeted and bycatch. So far, seahorse has not become a priority species in Indonesia to be managed either through CITES mechanism or capture fisheries management. In addition, in the context of capture fisheries management, until now the DG of Capture Fisheries does not have specific policies or regulations regarding the seahorse fishery.

Since the seahorse was effectively included in CITES Appendix II, Indonesia has chosen an export suspension for wild live and all dried specimens as management policy for seahorses as a precautionary approach to prevent exploitation on a large scale. This policy was taken due to limited data on population, trade, and mechanisms for seahorse trade surveillance at that time. Nevertheless, the Indonesian government realizes that this decision is a double-edged sword, in which the illegal dried seahorse trade still occurs due to limited capacities of surveillance and law enforcement agencies, and the absence of specific regulation for seahorse. Respondents interviewed for this report offered three considerations regarding this issue, as follows:

1. LIPI as the CITES Scientific Authority will consider reviewing the potential for seahorse exports from wild catch when population and trade data are available, as well as when newly appointment Management Authority for fishes (MMAF) can convince them that they have monitoring and surveillance systems in place on the ground in order to regulate the trade for sustainability and legality;
2. Directorate Marine Biodiversity Conservation of MMAF believe that seahorse trade through CITES mechanism should be opened at some point in order to provide legal access for exports (especially dried seahorses), supported by strong monitoring and surveillance system on the ground.
3. In terms of program and budget, prioritizing seahorse conservation among MMAF's 20 priority species should be based on sound scientific studies (population and trade studies).

#### Gaps and challenges

In addition to the absence of technical regulation for seahorses, Indonesia as a 'mega biodiversity' country in general faces great challenges in managing wildlife trade, especially for fully protected and limited use animals and plants. The challenges of CITES management in Indonesia, includes (Soehartono & Mardiatuti 2002):

1. Discrepancies of understanding CITES management among relevant authorities and key stakeholders (e.g., trade monitoring and surveillance, reporting mechanism, monitoring on quota implementation);
2. Difficulty in species identification due to high species diversity and limited manual for species ID;
3. Some determination of the quota not based on sound scientific studies, due to limited data and research capacity; and
4. Illegal trade still remains due to vast area to cover by law enforcement agencies and multiple exit points for smuggling.

In the case of seahorses, at least nos. 2 to 4 of the above challenges are true, with additional challenge where no monitoring and surveillance systems for catch or trade are currently in place. For example, the illegal trade of dried seahorses from Indonesia is often smuggled together with other illegal trade of marine product (e.g., shark fin) or terrestrial animal (e.g., pangolin). These findings were obtained from several confiscation by law enforcement agencies on wildlife smuggling in Indonesia (Adhiasto *pers comm*).<sup>58</sup>

#### Opportunities

The transfer of CITES Management Authority for fishes to the Ministry of Marine Affairs and Fisheries (MMAF) in 2020 presents an opportunity for Indonesia to fully determine the policy and management approach for seahorse trade. In regard to seahorse trade management, MMAF currently has seen two possible opportunities, in addition to continuing the export suspension, namely:

- a. encourage the expansion of captive breed facilities to support domestic and export market demands for

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<sup>58</sup> Indonesian wildlife trade expert (informal communication)



both live and dried seahorses, and/or

- b. working toward sustainable use of wild seahorses through the CITES mechanism.

However, both options lead to consequences for the CITES MAs, SA, and EAs in Indonesia to improve efforts for data collection and population status assessments, monitoring and surveillance mechanism, and CITES management capacities both at national and regional levels.

Based on the discussions, in principle MMAF and LIPI has the desire to review the possibility of lifting the export suspension on wild and dried seahorse by implementing sustainable management through the CITES mechanism. However, MMAF and LIPI realizes that currently there are still many gaps that must be filled in order to implement this, namely: (i) research on the status of the seahorse population, (ii) research on the domestic utilization and trade patterns, (iii) human resource capacity, and (iv) funding to build an effective CITES implementation under MMAF, including data collection, monitoring, surveillance and law enforcement. MMAF as the new CITES Management Authority for fishes is currently open to potential partnership with NGOs and research institutions, to support the assessments of seahorse population status and strengthen their capacities in CITES implementation.

### **3.8 Conclusions and recommendations**

Since being included in the CITES Appendix II, seahorses have not become a priority species to be managed in Indonesia. This is understandable because: (i) there has been overlapping authority in the management of seahorses between MMAF and MoEF; (ii) the large number of species that must be managed through the CITES mechanism under the MoEF meant they put less priority to marine species; and, (iii) limited data and information of seahorse population status and its trade value. Nevertheless, enforcement actions to combat illegal trade have been carried out by quarantine agencies and Customs as the authorities to control the exports of wildlife products; although more efforts are needed to control the domestic wild catch by the relevant authorities.

The seahorse catch and trade quotas issued by the Indonesian government so far have been provided only for the development of captive breeding activities and for scientific research. Limited data on population and trade, and the absence of an effective monitoring, surveillance and traceability system, are reasons for Indonesia to continue implementing the export suspension on wild live and all dried trade, although realizing that illegal exports of dried seahorses from Indonesia exist. Indonesia's new export target from captive bred seahorses and its willingness to review the possibility of sustainable use of seahorse through CITES mechanisms create opportunities for other institutions to provide necessary supports.

Findings from this study (based on the interviews with key experts and government officials) suggest several recommended supports, actions and interventions toward sustainable seahorse management in Indonesia, as follows:

1. Raise awareness related with threats to seahorse population and its illegal trade to policy makers, enforcement agencies, judiciaries, and wider community.
2. Ensure regular coordination between quarantine agencies, Customs, BKSDA, BPSPL, and CITES MAs to ensure all institutions have the same updated information to CITES related regulations.
3. Conduct a study to understand the utilization pattern, supply chain, and illegal trade modus operandi of seahorses in Indonesia. To support further CITES implementation for seahorse in Indonesia, comprehensive study on seahorse utilization pattern and supply chain is urgently needed. This type of study requires specific methodology and skill sets in collecting information, especially on the illegal trade aspect. Organizations like Project Seahorse and the Wildlife Conservation Society in Indonesia, which have multi-years experiences working on illegal wildlife trade, could provide such support.
4. Support the Indonesian CITES SA (LIPI) to conduct assessments of seahorse population status in Indonesia. LIPI is open to research support and collaboration with any institutions such as the MMAF Research Center, university, and NGO.
5. Assist MMAF to assess and determine potential management options for seahorse in Indonesia (i.e.,

continue export suspension or working toward sustainable use of seahorse through captive breed or CITES mechanism). Similar to fisheries management planning process, experts, university, and NGO could provide a collaborative supports to MMAF.

6. Advocacy to the MMAF (specifically the DG of Surveillance) to prioritize seahorses in their program and budget in order to reduce illegal trade of seahorses. This requires a strong political will within MMAF and high-level communication to prioritize management on ETP species including seahorse, which will require strong collaboration between multiple DGs under the MMAF, including conservation, surveillance, capture fisheries, aquaculture, and research center.
7. Strengthen the capacities of MMAF and other related law enforcement agencies in monitoring, surveillance and law enforcement for seahorse trade. Organizations who have been working on seahorse trade issue and illegal wildlife trade could collaborate with the MMAF Research and Human Resource Development Agency (Badan Riset dan Sumberdaya Manusia Kelautan dan Perikanan or BRSDM-KP) to develop tools and trainings.
8. Provide training for BKIPM ground staff in seahorse species identification.
9. Develop an online reporting platform accessible across multiple institutions for monitoring and reporting illegal wildlife trade.
10. Assist the development of a national integrated data system (e.g., trade monitoring, permit/license) that accessible and synchronized among the key authorities in CITES Implementation. As a pilot, this could be started under the MMAF and LIPI, specific for CITES listed fishes. Marine and fisheries data system in MMAF is managed under the the Pusdatin (Pusat Data dan Informasi Kelautan dan Perikanan or MMAF's data and information center).

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- Terms of references of seahorse conservation pilot project (Dokumen kerangka acuan kerja *pilot* project pengelolaan konservasi kuda laut); <https://surajis.files.wordpress.com/2017/11/pilot-priject-kuda-laut.pdf>
- Guideline for identification and monitoring of seahorses (Panduan identifikasi dan monitoring kuda laut); <https://kkp.go.id/an-component/media/upload-gambar-pendukung/KKHL/PEDOMAN/Pedoman%20Umum%20Identifikasi%20dan%20Monitoring%20%20Kuda%20Laut.pdf>
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## Laws and regulations

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- Law No. 10/1995 jo. No. 17/2006 of Customs (Kepabeanan); [https://repository.beacukai.go.id/peraturan/2006/12/uu\\_17-2006.pdf](https://repository.beacukai.go.id/peraturan/2006/12/uu_17-2006.pdf)
- Law No. 21/2019 (revision of Law No. 16/1992) on Quarantine of animal, fish, and plants in wildlife export and import (Karantina Hewan, Ikan dan Tumbuhan); <https://peraturan.bpk.go.id/Home/Download/114486/UU%20Nomor%2021%20Tahun%202019.pdf>
- Law No. 8/2010 on Prevention and Eradication of Money Laundering Crime (Pencegahan dan pemberantasan tindak pidana pencucian uang); [https://www.kpk.go.id/images/pdf/Undang-undang/uu\\_8\\_tahun\\_2010\\_tindak\\_pidana\\_pencucian\\_uang.pdf](https://www.kpk.go.id/images/pdf/Undang-undang/uu_8_tahun_2010_tindak_pidana_pencucian_uang.pdf)
- LIPI Regulation Number 26 of 2019 on Implementation of Scientific Authority in Biodiversity (Pelaksanaan Kewenangan Ilmiah Dalam Keanekaragaman Hayati); [https://jdih.lipi.go.id/peraturan/2019\\_Peraturan%20LIPI\\_26.pdf](https://jdih.lipi.go.id/peraturan/2019_Peraturan%20LIPI_26.pdf)
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- Ministerial Regulation of MMAF No.61/2018 on Utilization of Protected Fish Species and/or Fish Species Listed in the CITES Appendices (Pemanfaatan Jenis Ikan yang Dilindungi dan/atau Jenis Ikan yang tercantum dalam Appendiks CITES); <http://peraturan.go.id/common/dokumen/bn/2019/BN%201300-2019.pdf>

## 4. Malaysia

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### 4.1 Background

Twelve of the 46 described seahorse species (Short et al. 2020) are known to occur in Malaysia, including *Hippocampus barbouri*, *H. bargibanti*, *H. comes*, *H. denise*, *H. hystrix*, *H. kelloggi*, *H. kuda*, *H. mohnikei*, *H. pontohi*, *H. satomiae*, *H. spinosissimus*, and *H. trimaculatus* (Aylesworth et al. 2016, Lim et al. 2010, Lourie et al. 2004). According to trade research carried out in 1998 (Perry et al. 2010), 2001 (Choo & Liew 2005) and 2013 (Lawson et al. 2015), all seahorses captured in Malaysia were obtained as bycatch in non-selective and destructive fishing gears. Research revealed the status of seahorse populations in the country to be concerning – with fishers reporting declines in seahorse bycatch volumes over time. For example, one study documented fisher reported declines in catch volumes of 20-30% on the Malaysian east coast from 1990-2000 (Choo & Liew 2005), and another documented fisher reported nationwide declines of 68% over the 12.5 year proceeding 1998 (Perry et al. 2010). A further study questioned the sustainability of *H. trimaculatus* catches in the south-west region of Peninsular Malaysia, where landed specimens had a notably smaller mean height (86.2 mm) and markedly skewed sex ratio (6% males) compared with samples from the south-east and north-west of the peninsula (Lawson et al. 2015). Overfishing and/or habitat degradation were thought to be contributing to the decline in seahorses (Lawson et al. 2015, Perry et al. 2010).

Malaysia has historically played a key role in the international trade in dried seahorses. Data on seahorse trade involving Malaysia pre-CITES listing comes from on the ground trade surveys carried out by Project Seahorse in 1995/96 (Vincent 1996) and again in 1998 (Perry et al. 2010). In 1995, trade statistics from Taiwan Province of China and anecdotal reports from Mainland China and Hong Kong Special Administrative Region of China (hereafter Hong Kong SAR) indicated that Malaysia was an important source of dried seahorses for international trade (Vincent 1996). In the mid-1990s, Malaysia reportedly exported about 0.5 tonne of dried seahorses annually to Mainland China, Hong Kong SAR, and Taiwan Province of China, and reportedly imported 0.1 tonne from India for use in traditional Chinese medicine (TCM) with another 0.4 tonne coming from local sources (Vincent 1996). The 0.4 tonne of dried seahorses obtained locally was equivalent to about 120,000 seahorses (Vincent 1996).

Malaysia's role in the international trade of dried seahorses was confirmed in the next set of trade surveys. In 1998, exports of dried seahorses from Peninsular Malaysia primarily went to Thailand while exports from Sabah were destined for Hong Kong SAR, Singapore, Taiwan Province of China, and Mainland China (Perry et al. 2010). While the survey could not estimate the overall export volume of seahorses from Malaysia, trade statistics from Hong Kong SAR and Taiwan Province of China suggested Malaysia's importance as a source of dried seahorses: Hong Kong SAR Customs data reported importing 40 kg (~12,500 individuals) of dried seahorses from Malaysia in 2003 and 985 kg (~310,000 individuals) in 2004; and Taiwan Province of China's Customs data reported importing 64 kg (~20,000 individuals) of dried seahorses in 1997 and 302 kg (~95,000 individuals) in 1998 (Perry et al. 2010). These seahorses were used to produce products like seahorse wine, capsules, pills and seahorse soup for human consumption (Lin et al. 2008). In addition to being a notable exporter of seahorses in 1998, Malaysia was reported to consume approximately 3000 kg of seahorses in TCM, which is equivalent to roughly 960,000 seahorses (Perry et al. 2010).

Malaysia has also played a minor role in the live seahorse trade. Surveys in 1998 and 1999 suggested that fisheries for live seahorses were non-existent in Malaysia, and none of the traders surveyed reported exporting live seahorses (Perry et al. 2010). Indeed, all live seahorses that were sold or traded in the country were reportedly imported from Indonesia, the Philippines, Singapore or Thailand. Nonetheless, European

import figures from Italy (1998 & 1999), the Netherlands (1999) and the United Kingdom (2001) reported small shipments (total n = 183 individuals) of live seahorses from Malaysia (UNEP-WCMC 2020).

In November 2002, all known seahorse species (*Hippocampus* spp.) were listed on CITES Appendix II and the listing was implemented in May 2004 (Vincent et al. 2011). Under the Appendix II listing, CITES Parties that wish to export seahorses must ensure that the international trade does not threaten wild populations which is in accordance with the 'non-detriment findings' (NDFs; Foster & Vincent 2005, 2016, Shepherd et al. 2020). They must also confirm that the specimens were legally sourced (in accordance with a 'legal acquisition finding'), and live animals must be humanely transported.

Information on seahorse trade involving Malaysia for the post-CITES period has been deduced from the CITES trade database (www.trade.cites.org). Malaysia was one of 87 countries across the globe that were known to contribute to the import and export of seahorses, dried and live, between 2004 to 2011 (Foster et al. 2016). CITES data indicate that Malaysia exported a total of ~850,000 dried seahorses from 2005 to 2009, but then none in the years that followed. On the other hand, CITES data reported Malaysia as the source of just 1,316 individual live seahorses from 2004 to 2008, with no reported live exports thereafter. The CITES data reflect a decision by Malaysia to stop the legal export of seahorses from 2009 in response to the CITES Review of Significant Trade (Foster et al. 2019, details in Sections 4.4 and 4.5). As a result, Malaysia was estimated to contribute to just 2% of total reported global dried seahorse exports from 2008 - 2018 (Louw & Bürgener 2020).

Exports of dried seahorses appear to have continued illegally in spite of the trade suspension. This has been confirmed by the lead author from on the ground surveys in Malaysia (details in Section 4.6.3.). As well, other countries report their imports as having been sourced from Malaysia. For example, traders in Hong Kong SAR reported Malaysia as among the top ten reported sources of dried seahorses in 2016-17 (Foster et al. 2019). Such exports would have occurred without the required export permits and so would represent illegal trade, undermining Malaysia's declaration of a suspension of all seahorse exports. This is notable because Malaysia's declaration of a supposed end to exports allowed it to escape a CITES investigation into how countries were justifying their exports (during the Review of Significant Trade, Foster & Vincent 2021).

Many historically important seahorse source and destination Parties have struggled to implement CITES fully for seahorses. At the 18<sup>th</sup> meeting of the CITES Conference of the Parties (CoP18), the Parties noted that challenges in implementing CITES for seahorses included making NDFs, monitoring trade and enforcing established trade controls (CITES CoP18 Doc 72). Parties also adopted a set of Decisions that would move them toward effective implementation of the Convention for trade in seahorses. This report is laying important groundwork to support such Decisions. Specifically, the report analyses Appendix II implementation and enforcement mechanisms at the national level for Malaysia, as a historically important source of dried seahorses in international trade, with the goal of generating recommendations to assist Authorities in improved implementation of the Convention for seahorses, and other taxa.

## 4.2 Methods

The author of this report, Dr. Adam Lim Chee Ooi, is a Malaysian national with 13 years expertise in syngnathid research and conservation. He is the Chairperson for Save Our Seahorses (SOS) Malaysia, and is a member of the IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group for which he serves as the Regional Focal Point for Southeast Asia and Focal Point for *Hippocampus kuda* and *Hippocampus comes*.

This study took place in August 2020 to November 2021. To gather information for this report, Dr. Lim interviewed nine individuals from the national and regional CITES MAs, SAs and an NGO to document trade controls for seahorses in Malaysia, and to understand how such controls are being implemented and/or enforced (Table 4.1). The author endeavored to interview representatives from the Royal Malaysian Customs Department and the Department of Fisheries Sabah, but was unsuccessful. The author also contributed information from their own experience working on seahorse conservation issues in Malaysia.

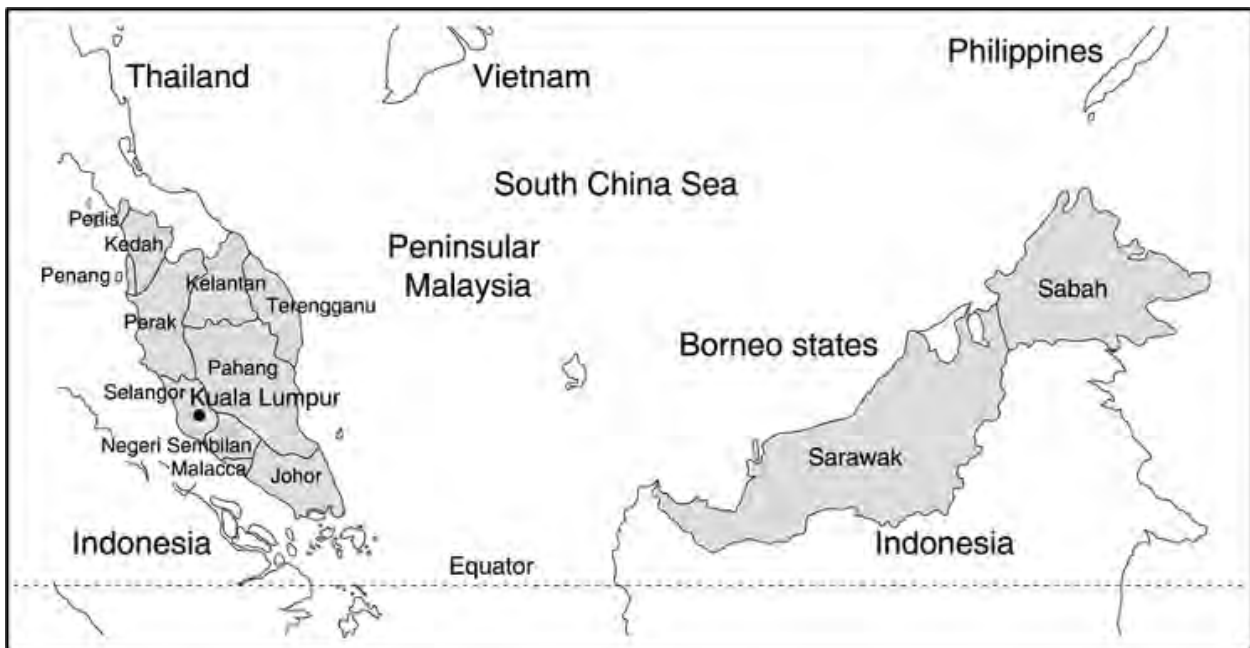
Due to the COVID 19 pandemic not all interviews could be carried out in person. Only the Senior Officer of the Biodiversity Management Division, Ministry of Energy and Natural Resources (KeTSA) and the General Manager of Perak State Parks Corporation (PSPC) could be interviewed in person. All other respondents were interviewed via virtual meeting platforms.

**Table 4.1.** Malaysian CITES Authorities and NGO representatives interviewed for this report.

<b>Group</b>	<b>Agency or organization</b>	<b>Position</b>	<b>Role</b>
Lead CITES Management and Scientific Authority (MA and SA) – national level	Biodiversity Management Division, Ministry of Energy and Natural Resources (KeTSA)	Senior Officer	Biodiversity policy
Regional CITES MA and SA - Peninsular Malaysia	Fisheries Biosecurity Division, Department of Fisheries Malaysia (DOFM)	Senior Fisheries Officer	Export certification and CITES
Regional CITES MA and SA - Johor	Research, Development and Innovation Department, Johor Biotechnology & Biodiversity Cooperation (J-Biotech)	Junior executive	Centre for the biotechnology industry in Johor (development, investment, businesses, and anything related to the bio-based industry) and assist with work related to biodiversity management (marine and terrestrial)
Regional CITES MA and SA - Perak	Perak State Parks Corporation (PSPC)	General manager	Heads the Perak State Parks Corporation. Manages the conservation of Royal Belum and other Perak State protected areas including the upcoming Pulau Sembilan Conservation Zone.
Regional CITES MA and SA - Sarawak	Sarawak Forestry Corporation (SFC)	Media Relations Executive; Head of Enforcement & Protection Department; Head of Enforcement; Head of Totally Protected Area under HQ (interviewed together)	Develop Protection Plan, set standards and coordinate enforcement activities, give advice on enforcement matters, coordinate Swift Wildlife Action Team (SWAT) matters, and manage Honorary Wildlife Ranger (HWR) – E&PD
NGO	TRAFFIC Southeast Asia	Programme Officer	Provide technical input and leadership to TRAFFIC Southeast Asia regional programme and management of key projects.

### 4.3 The Actors

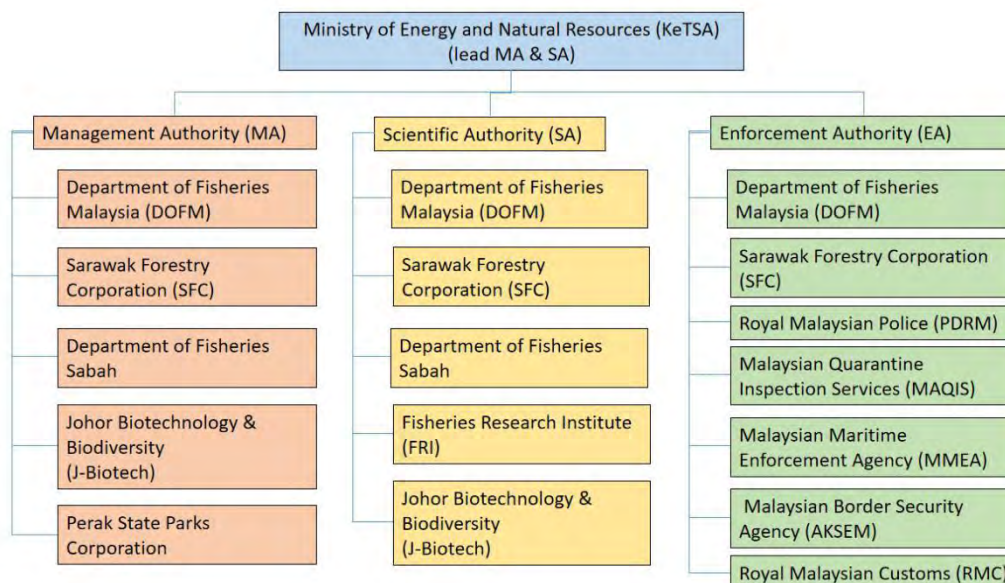
Malaysia is split into three regions; Peninsular Malaysia, Sabah, and Sarawak (Figure 4.1). CITES implementation in Malaysia happens at the country level as well as at the regional level.



**Figure 4.1.** Map of Malaysia. The States in West Malaysia are collectively called Peninsular Malaysia.

At the country level, the key agency for CITES implementation for marine fishes is the Ministry of Energy and Natural Resources (KeTSA, Kementerian Tenaga dan Sumber Asli) which serves as the lead Management Authority (MA) and lead Scientific Authority (SA) for the entire country (Figure 4.2). The final decisions on CITES implementation will be made by KeTSA.

KeTSA is supported by additional regional MAs and SAs (Figure 4.2). KeTSA relies on these technical agencies (MAs & SAs) for recommendations. The Secretary General of KeTSA is advised by policy and technical officers in these regional MAs and SAs when making key decisions about various aspects of CITES implementation. Each regional MA, SA & Enforcement Focal Point (~Enforcement Authority, EA) implements and enforces mechanisms for all CITES listed marine life, including seahorses, but all decisions are made within the national steering committee of KeTSA.



**Figure 4.2.** Organogram for CITES implementation/ decision making for marine fishes in Malaysia.

## Management and Scientific Authorities

### All Malaysia

Ministry of Energy and Natural Resources (KeTSA, Kementerian Tenaga dan Sumber Asli) [MA & SA]<sup>59</sup>

- Role: The Ministry acts as the main decision maker for all matters pertaining to CITES implementation in the country.

### Peninsular Malaysia

Department of Fisheries Malaysia (DOFM, Jabatan Perikanan Malaysia) [MA & SA]<sup>60</sup>

- Role: Manages all fisheries related matters in Peninsular Malaysia. Sub-divisions include Capture Fishery; Resource Management; Aquaculture; Biosecurity & Research

Fisheries Research Institute (FRI, Institut Penyelidikan Perikanan) [SA]<sup>61</sup>

- Role: Serves as the SA division within DOFM.

### Sarawak

Sarawak Forestry Corporation (SFC) [MA & SA]<sup>62</sup>

- Sarawak Forestry Corporation (SFC), Forest Department Sarawak and DOFM are responsible for the implementation of policy for trade of marine fishes including seahorses. Under the SFC, the Chief Executive Officer (CEO) and Deputy CEO make the decisions on CITES implementation.

Fisheries Research Institute Sarawak (Pusat Penyelidikan Perikanan Sarawak) [SA]<sup>63</sup>

- Role: Acts as a SA presence in Sarawak for DOFM.

<sup>59</sup> <http://www.ketsa.gov.my/ms-my/Pages/default.aspx>

<sup>60</sup> <https://www.dof.gov.my>

<sup>61</sup> <https://fri.dof.gov.my>

<sup>62</sup> <https://sarawakforestry.com>

<sup>63</sup> <http://www1.sarawak.com.my/org/frisb/about.htm>



## **Sabah**

Department of Fisheries Sabah (Jabatan Perikanan Sabah) [MA & SA]<sup>64</sup>

- The Department of Fisheries Sabah is responsible for the implementation of policy for trade of marine fishes including seahorses. Under the DOFS, the Director and Deputy Directors (I & II) makes the decision on CITES implementation.

## **Other States**

**Johor:** Johor Biotechnology & Biodiversity (J-Biotech, Perbadanan Bioteknologi dan Biodiversiti Negeri Johor) [MA & SA]<sup>65</sup>

- The Department of Wildlife and National Park of Johor, Johor Biotechnology & Biodiversity Corporation (J-Biotech) and DOFM are in charge of the implementation of policy for seahorse trade in Johor. The DOFM supports J-Biotech on matters related to seahorses and other marine fishes. The decision-making on CITES implementation goes from J-Biotech through their State Executive Council (EXCO) to their Head of Government (Menteri Besar) that is the House of Representatives (Dewan Rakyat) who deals with the implementation of small legislations in Johor. J-Biotech stands alone and does not fall under any department. In terms of portfolio, it is under the agriculture EXCO portfolio and environmental EXCO portfolio.

**Perak:** Perak States Park Corporation (PSPC, Perbadanan Taman Negeri Perak) [MA & SA]<sup>66</sup>

- In Perak, DOFM is responsible for the catchment and trade of marine fishes including seahorses. The Perak State Park Corporation also makes the decisions on CITES implementation for Perak, working with DOFM on CITES implementation matters arising from the state. The PSPC is entirely owned by the state and it is an entity by itself.

## **Enforcement Focal Points**

### **All Malaysia**

Interpol Malaysia, Royal Malaysian Police (PDRM, Polis Diraja Malaysia)<sup>67</sup>

- The main functions of PDRM, as stated in Section 3(3) Police Act 1967, are maintenance of law and order throughout Malaysia, preservation of peace and security in Malaysia, prevention and detection of crime and apprehension and prosecution. PDRM work very closely with all enforcement agencies especially with regards to illegal trade (wildlife included).

### **Peninsular Malaysia**

Fishery Capture & Licensing Division, Department of Fisheries Malaysia (DOFM)

- Role: Manages all fisheries related matters in Peninsular Malaysia, including enforcement. Sub divisions include Capture Fishery / Resource Management; Aquaculture; Biosecurity & Research

### **Sarawak**

Sarawak Forest Corporation (SFC)

- The SFC also acts as the EA for all plant and animal import and export at the State level. Often working closely together with other enforcement agencies to do inspections.

## **Other players**

### **All Malaysia**

Fisheries Development Authority of Malaysia (LKIM, Lembaga Kemajuan Ikan Malaysia)<sup>68</sup>

- LKIM is responsible for issuing a license for fish trading which includes import, export, retail and wholesale. This agency regulates the Fisheries Development Authority of Malaysia Act 1971 which is

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<sup>64</sup> <https://fishdept.sabah.gov.my>

<sup>65</sup> <https://jbiotech.gov.my/portal/>

<sup>66</sup> <https://www.royalbelum.my/eng>

<sup>67</sup> <https://www.rmp.gov.my>

<sup>68</sup> <https://www.lkim.gov.my/en>

responsible for increasing production and ensuring the national fish supply is sufficient and in compliance with national standards. It is also meant to provide modern and integrated fishery infrastructure facilities.

Malaysian Quarantine & Inspection Services (MAQIS, Jabatan Perkhidmatan Kuarantin dan Pemeriksaan Malaysia)<sup>69</sup>

- Empowered under the Malaysian Quarantine & Services Act, 2011, MAQIS functions to enforce all written laws that ensure plants, animals, carcass, fish, agricultural produce, soils, microorganisms and food that are imported into and exported out of Malaysia comply to the health aspect of human, animals, plants, fish and food safety. They also issue permits, licenses and certificates for imports and exports; manage quarantine stations; participate in inspection and certification of premises of the exporting country; and to provide advisory services with regards to compliances of import and export.

Royal Malaysian Customs (RMC, Jabatan Kastam Diraja Malaysia)<sup>70</sup>

- The RMC is responsible for administrating Malaysia's indirect tax policies, enforcement, and political offenses whereby Custom administers seven main Act and 39 subsidiary laws. Customs operate at entry and exit points (both legal and illegal) to the country but do not operate in the field. Customs are also responsible for confiscating illegal wildlife and investigating the source of the illegal trade.

Malaysian Border Security Agency (AKSEM, Pasukan Agensi Kawalan Sempadan Malaysia)<sup>71</sup>

- AKSEM is responsible for curbing smuggling and other illegal activities along national land borders. They are empowered under the Malaysian Border Security Agency Act 2017 (Act 799) to carry out their duties.

Malaysian Maritime Enforcement Agency (MMEA / APMM, Agency Penguatkuasaan Maritim Malaysia)<sup>72</sup>

- MMEA is the principal government agency tasked with maintaining law and order, coordinating search and rescue operation in Malaysian Maritime Zone and on the high seas. They function to perform any duty to ensure maritime prosperity and security.

### Communication and collaboration

In Malaysia, regulations and legislations related to the seahorse trade are always challenging because the country is split into three regions (Peninsular Malaysia, Sabah and Sarawak). As much as the country would like to consolidate efforts, it is always difficult as there are many agencies and key players involved. The DOFM works toward strong and effective collaboration with other CITES Authorities throughout the country by regularly scheduling meetings, actively sharing information among the officers in charge through various platforms such as email and social media and hosting the CITES Coordination Committee Meeting (*Jawatankuasa CITES Jabatan JCJ*) twice a year. The reality, however, is that CITES Authorities and related agencies within states do not effectively communicate among each other. This is partly due to overlapping and conflicting federal and state level jurisdictions in sectoral-based management system in the country, resulting in communication delays and miscommunications between agencies.

## 4.4 History of trade research and CITES activity in Malaysia

1994-95 – Dr. Amanda Vincent (Project Seahorse) compiled the first information on seahorse trade involving Malaysia. In the mid-1990s, trade statistics from Taiwan Province of China and anecdotal reports from Mainland China and Hong Kong SAR suggested that Malaysia was an important source of dried seahorses (Vincent 1996). There were also hints about potentially significant domestic consumption of seahorses for traditional medicine (TM), particularly TCM (Vincent 1996).

<sup>69</sup> <http://www.maqis.gov.my/index.php/en/>

<sup>70</sup> <http://www.customs.gov.my/en>

<sup>71</sup> <http://www.moha.gov.my/index.php/ms/kdn1/dir-kdn/265-agensi-keselamatan-sempadan-malaysia>. Note added in final copy-edits: AKSEM was disbanded in 30 June 2021 and its functional scope transferred to Polis Diraja Malaysia.

<sup>72</sup> <https://www.mmea.gov.my/index.php/ms/>

1998-99 – Project Seahorse carried out a study to obtain both quantitative and qualitative understanding of seahorse trade and domestic use in Malaysia (Perry et al. 2010). Seahorses were found to be landed primarily as trawl bycatch. Malaysia was documented to play an important role in the international dried, but not live, trade in seahorses. Malaysia's inferred catch of 2900 kg (~910,000 individuals) year<sup>-1</sup> was less than the estimated domestic consumption (5500–6000 kg = ~1.7 – 1.9 million individuals, dried seahorses per year<sup>-1</sup>). Malaysia imported seahorses from and exported to other Asian nations. Import statistics from Hong Kong SAR and Taiwan Province of China recorded maximum annual sourcing from Malaysia at 1280 kg (~400,000 individuals) dried seahorses per year<sup>-1</sup>. Fishers and traders reported decreasing availability of seahorses, raising conservation concerns. For example, fishers reported nationwide declines of 68% over the 12.5 year proceeding 1998.

2001 – Interviews with fishermen in fishing ports and villages across Peninsular Malaysia combined with underwater sampling found four species of seahorse in fishers catches and in their natural habitats: *H. trimaculatus*, *H. spinosissimus*, *H. kuda*, and *H. kelloggi* (Choo & Liew 2003, 2005). All four species were found in the Straits of Malacca; two species (*H. trimaculatus* and *H. spinosissimus*) in the east coast of Peninsular Malaysia in the South China Sea; and three species: *H. trimaculatus*, *H. spinosissimus*, and *H. kuda* in the south coast, Straits of Johor. There were habitat and depth separations by species. In 2001 alone, the study deduced that at least 565,000 seahorses were caught as trawl by-catch and traded as TCM, with most exported overseas. Only *H. kuda*, which lived in shallow mangrove estuaries, was targeted by artisanal fishermen. Evidence suggested populations of all species were rapidly declining. Interviews with fishers in revealed that in Kuala Kedah, in the norther region of Malaysia, the 1980s a single trawl haul could yield up to 30 seahorses, whereas there was hardly any caught in “recent years.” And while the East Coast still yielded a significant number of seahorses in catches, fishers reported a decline of 20-30% in catch rates since 1990. Furthermore, one fisher in southern Johor claimed he was able to catch an average of 40 seahorses per day in 1995, but the catch had dropped to less than then in the previous two years.

2002 – All seahorse species (*Hippocampus* spp.) listed on CITES Appendix II.

2004 – CITES listing implemented in May.

2009 – Malaysia was included in the CITES Review of Significant Trade (RST) as a range state for *H. kelloggi*, *H. kuda*, and *H. spinosissimus*.

2011 - Malaysia responded to the CITES Secretariat's request for information, in support of the RST for *H. kelloggi*, *H. kuda*, and *H. spinosissimus*, by indicating they would no longer allow exports of wild specimens **effective 1 October 2009**; Malaysia reported “all export trade of seahorse in Malaysia will be suspended until further studies have been done to look at the status of the seahorse in Malaysia and related issues regarding the exploitation and trade of the species” (AC25 Doc. 9.5 Addendum). Malaysia was subsequently removed from RST on the basis of no anticipated trade (AC25 WG1 Doc. 1).

2011 – Malaysia was included in the CITES RST as a range state for *H. barbouri*, *H. histrix*, and *H. trimaculatus*.

2011 – A review on the diversity, habitats and conservation threats of syngnathid (Syngnathidae) fishes in Malaysia was published (Lim et al. 2011). Using an examination of collected specimens, museum specimens, records from published journals and online databases, the review documented ten species of seahorse in Malaysia, and summarized their distribution, habitat preferences and other important life history information. The major threats to syngnathid conservation in Malaysia were documented to include overexploitation, by-catch, habitat destruction and degradation, recreational activities and pollution.

2011 - An underwater SCUBA survey for syngnathid biodiversity was carried out in the waters of Sembilan Archipelago, Perak. Two species of seahorses, *H. comes* and *H. kuda* were observed underwater whereas another two species, *H. trimaculatus* and *H. histrix* were observed in trawl bycatch and in underwater observations that were not part of the official survey (Lim & Chong 2013).

2012 – Malaysia responded to the CITES Secretariat’s request for information, in support of the RST for *H. barbouri*, *H. histrix*, and *H. trimaculatus*, by indicating “Due to no NDF study been conducted as of date, Malaysia has prohibited export of all species of *Hippocampus* since the year 2009” (AC26 Doc. 12.3 Replies from range States). Malaysia was subsequently removed from RST on the basis of no anticipated trade (AC26 WG7 Doc. 1 (Rev. 1)).

2012-13 – Seahorse diversity, species identification, size composition and sexual dimorphism were studied from November 2012 to March 2013 in selected coastal waters around Kota Kinabalu, Sabah and the local market trade (Shapawi et al. 2015). Six species of seahorses were identified in the study: *H. barbouri*, *H. comes*, *H. kelloggi*, *H. kuda*, *H. spinosissimus*, and *H. trimaculatus*. All six species were sold at the local market, and the seahorses in the dried trade were obtained mainly by local fishermen in trawl by-catch and traded as traditional medicine, souvenirs and other uses. Four species were identified by direct samplings in various different habitats of Kota Kinabalu coastal waters: *H. barbouri*, *H. comes*, *H. kuda*, and *H. spinosissimus*. Life history parameters are provided for the species.

2013 – Seahorse catches were surveyed at 31 landing sites along the west coast of Peninsular Malaysia and at two landing sites on the south-east coast of Peninsular Malaysia (Lawson et al. 2015). Life-history variables for three incidentally captured species of seahorse (*H. kelloggi*, *H. spinosissimus*, and *H. trimaculatus*) were established. It appeared that all three species were, on average, caught before reproducing. The findings questioned the sustainability of *H. trimaculatus* catches in the south-west region of Peninsular Malaysia, in particular, where landed specimens had a notably smaller mean height and markedly skewed sex ratio compared with samples from the south-east and north-west of the peninsula.

2014-15 - An underwater survey for seahorses was conducted within Penang National Park, Pulau Pinang from November 2014 to April 2015. A total of 11 individuals from two different species, *H. comes* and *H. kuda* were discovered during the survey (Quek et al. 2020).

2014-17 – Malaysian Authorities declared to the CITES Secretariat a zero quota for all seahorse exports (*Hippocampus* spp.) from Sabah, for publication on the CITES website.<sup>73</sup>

2016-17 – A Project Seahorse study investigated the illegal trade of seahorses, among the first taxa of marine fishes to come under global trade restrictions (Foster et al. 2019). To investigate global compliance, 220 interviews were conducted with traders in Hong Kong SAR, the largest entrepôt for dried seahorses. Traders reported obtaining dried seahorses from many countries with bans or suspensions on seahorse exports. **Traders reported Malaysia as among the top ten countries supplying dried seahorses imported into Hong Kong SAR at that time.** Almost all dried seahorses in Hong Kong SAR (95%) were reportedly imported from source countries that had ended legal exports, indicating a widespread lack of enforcement.

#### 4.5 Nature of export bans/suspensions

Seahorse export is not banned by law in Malaysia, but is currently subject to a zero quota throughout the country.

There is some confusion as to the year the zero quota was implemented. In 2009, Malaysia was included in the CITES Review of Significant Trade (RST) as a range state for *H. kelloggi*, *H. kuda*, and *H. spinosissimus*.

<sup>73</sup> <https://cites.org/eng/resources/quotas/index.php>

Malaysia responded to the CITES Secretariat's request for information by indicating they would no longer allow exports of wild specimens **effective 1 October 2009**; Malaysia reported "all export trade of seahorse in Malaysia will be suspended until further studies have been done to look at the status of the seahorse in Malaysia and related issues regarding the exploitation and trade of the species" (AC25 Doc. 9.5 Addendum). Malaysia was thus removed from RST on the basis of no anticipated trade (AC25 WG1 Doc. 1). Then in 2011, Malaysia was included in the CITES RST as a range state for *H. barbouri*, *H. histrix*, and *H. trimaculatus*. Again, Malaysia responded to the CITES Secretariat's request for information by indicating that "Malaysia has prohibited export of all species of *Hippocampus* since the year 2009" (AC26 Doc. 12.3 Replies from range States). Malaysia was again removed from RST on the basis of no anticipated trade (AC26 WG7 Doc. 1 (Rev. 1)). However, CITES Authorities interviewed for this report stated that the zero quota was implemented as of 2014. Indeed, from 2014-2017 Malaysian Authorities declared to the CITES Secretariat a zero quota for all seahorse exports (*Hippocampus* spp.) from Sabah, for publication on the CITES website.<sup>73</sup>

Regardless of the timing, at present no CITES export permits for seahorses are being issued by DOFM until the SAs can determine whether seahorse populations in the country are being exploited sustainably and thus can be exported with conditions. Seahorse imports and re-exports are permitted, however, with CITES import and re-export permits being issued by DOFM.

## 4.6 Understanding of seahorse fisheries, trade and bans/suspensions

### 4.6.1. Respondents understanding of seahorse fisheries and trade

In Malaysia, seahorses are often are obtained as bycatch by local fishers, but not much is known about any targeted seahorse fishing. Four respondents indicated that caught seahorse were traded domestically. The domestic seahorse trade was reported to be mostly for traditional Chinese medicine (TCM), with specimens either sourced locally or imported into Malaysia. Additionally, seahorse bycatch was reportedly often kept as a curio by the fishers or traded locally.

Most of the local seahorse trade was not monitored by any department/agency, except for general monitoring (not specific to seahorses) at entry and exit points of the country by CITES Enforcement Authorities (EAs), since seahorses are not listed within any local laws and regulations. Additionally, seahorse landings are not monitored or measured within the national fisheries statistics but are included as part of the "trash fish" category.

### 4.6.2. Respondent awareness and use of existing tools and information

The respondent from KeTSA considered that the awareness of seahorse trade and the technical level on seahorses specifically are very low within KeTSA. This is reflected among the state agencies and in public awareness. The Customs and police interviewed for this report were also usually not aware of the seahorse trade – they had not been trained or briefed with respect to seahorses. The DOFM conducts an annual training programme for all fisheries officers who are involved in CITES and also for CITES enforcement officers from other agencies. During the training, the participants will be introduced to the CITES rules and regulations as well as actual CITES listed species samples. They will be updated with the latest information on CITES species based on the previous CITES CoP meeting. These trainings are funded by KeTSA and DOFM, and to date have only mentioned seahorses.

In Sarawak, the SFC is the sole agency that handles everything on seahorse trade as per the Wildlife Protection Ordinance 1998 for Sarawak. SFC respondents interviewed for this report were generally aware that seahorses are protected within the state and its listing in CITES for entry and exit point inspections. However, they were not aware of existing tools and rely mainly on local scientific authorities for assistance such as DOFM.

The respondents interviewed for this report were aware of existing tools and information on seahorses within the scientific community and the Save Our Seahorses (SOS) Malaysia NGO. The respondents interviewed

from DOFM, FRI, J-Biotech, and PSPC reported that they commonly use the ID guides for seahorses and references from peer-reviewed journals aside from consulting local seahorse experts (Dr. Adam Lim Chee Ooi of Save Our Seahorses (SOS) Malaysia and author of this report).

Some of the respondents, namely the individuals from SFC and other EAs, were aware of existing tools and information but not using them. They reported this to be due to:

- uncertainties if the tools/ information are being used in other capacities aside from the above;
- key awareness of seahorses locally remains as unknown or unstudied;
- low occurrence/encounter with seahorses within their portfolio (for example, in Sarawak the seahorse trade is considered to be rare so the SFC does not issue a license for seahorse trade at the moment); and
- being unable to ascertain the validity the tools/ information.

The in-country seahorse experts that respondents are aware of/ have consulted are Dr. Adam Lim Chee Ooi and Mr. Ooi Boon Leong from SOS Malaysia. There are also two personnel, Mr. Daud Awang and Mr. Saupi Ismail, who are from DOFM who have knowledge regarding seahorse aquaculture. They are directly involved in seahorse studies and also the determination of departmental policies related to seahorses in Malaysia. There are other seahorse researchers such as Dr. Fatihah Khalid (Universiti Malaysia Sabah) and Dr. Fitri Yusof (Universiti Islam Antarabangsa Malaysia) but the respondents do not consult them regularly. In Sarawak, the SFC will often deal with DOFM to seek their assistance in searching for seahorse experts.

#### **4.6.3. Seahorse export/import paths**

There is a need to carry out in-country trade surveys to understand the extent of Malaysia's trade in dried seahorses. Based on a short bulletin by TRAFFIC with regards to seahorse trade, Malaysia appeared to have contributed 2% to the entire legal global dried seahorse export reported to CITES from 2008 – 2018 (Louw & Bürgener 2020), but this dataset doesn't reflect reality as it only reports permitted trade (which reportedly ended for Malaysia in 2009), and not illegal trade. The authors own observations, as well as traders reports from Hong Kong SAR (Foster et al. 2019), suggest that illegal exports of dried seahorses are ongoing in spite of Malaysia's export suspension.

The large supply chain involves multiple parties. It usually goes from the local fishers, who catch seahorses incidentally mostly by bottom trawl fishing, to the head fishers' group onshore to dealers and distributors/ transporters. At this point the seahorses enter domestic or international trade. For domestic trade, buyers collect the specimens from the fishing ports and distribute them to the local market. The last checkpoint will be to distribute these goods to different shops and consumers. Dried seahorses are transported to traditional medicine shops and curio retail shops whereas live seahorses are transported to aquarium shops.

For international trade, exports of seahorses to other countries would involve recipient buyers as well. The Customs are the gateway into and out of the country. Every shipment of CITES listed species with the complete documentation such as CITES permit, sales and purchase documentation together with MAQIS import/ export permit will be inspected at the exit and entry point by MAQIS and Customs officers based on their function and jurisdiction for each department. Black market syndicates are often involved in trade when specimens are brought in and out of the country illegally. In Sarawak, the SFC will be one of the players along the trade pathway. Police or other enforcement agencies are rarely involved because the Wildlife Protection Ordinance 1998 for Sarawak is handled by the SFC. The DOFM and in-country experts from higher institutions come in on an ID capacity for identification of the species or exhibit of seized seahorses.

Additionally, the author has witnessed illegal seahorse trade activity at the fish landing ports in Hutan Melintang (Perak), Endau (Johor), and Mersing (Johor). There, seahorses were typically collected and traded by the non-Malaysian fishing crews on Malaysian fishing boats, of Thai, Chin (Myanmar), Vietnamese, and mainland Chinese origin. As wild caught seahorses from bottom trawl activities were not the target species by the local fishing company, the crew were allowed to keep and trade them as an additional source of income.

According to the authors experience observing the trade, the seahorses were typically sold to a designated collector in their respective port locations who would either sell them to the local TCM practitioners or export them illegally. Non-Malaysian fishing crews also collected the seahorses and would personally carry them across the border to be traded back in their respective countries.

#### **4.6.4. Seahorse conservation status and regulations**

Unfortunately, there are no seahorse species on any National Red List or equivalent in Malaysia. To date, only species diversity and distribution data are available for Malaysia's seahorses, and there is only one long term monitoring data set (unpublished) for an *H. kuda* population surveyed by SOS Malaysia in Johor.

Interest in seahorse research in Malaysia is primarily in aquaculture by the local academic institutions, FRI and DOFM aquaculture facilities. DOFM is currently looking to evaluate the status of seahorses within Malaysia with a view to allow aquaculture bred seahorses for re-stocking programs (and export) in the near future.

At the moment, however, DOFM continues to not issue any permit and certification for export of seahorses from the wild until a suitability assessment is conducted by relevant SAs. The import and re-export of seahorses into and out of Malaysia is allowed. Only in Sarawak, a permit is required for any kind of activities including possession involving seahorses.

DOFM has reportedly planned to undertake four main actions for seahorses, including:

- Surveys to understand seahorse distribution across Malaysia (2020);
- Seahorse back to nature programme to restock cultured seahorse to the wild (2020);
- Strategic collaboration with DOFM's strategic partners; and
- Development of seahorse breeding technology programme for commercial purposes (2013 - 2019).

The year(s) in brackets indicate the planned timing for each action but, according to respondents, only a single account of cultured seahorse released into the wild (in Sabah) was reported in 2020.

In addition, there are other activities underway that would offer protection to seahorses should they be implemented. Currently, DOFM is preparing seagrass mapping areas for conservation purposes. These areas will be established in Mersing Archipelago, Johor, as a Dugong Sanctuary. As seagrasses are a preferred habitat of seahorses in Malaysia, it is possible that the Dugong Sanctuary could serve seahorses though studies are needed to understand if that is the case, and to what extent.

Also, the respondent from KeTSA mentioned that the Access to Biological Resources and Benefit Sharing Act 2017 is being strengthened to help control how many seahorses are taken from Malaysia and ensure the protection of seahorses even if they are located outside MPAs. This would mean that a permit would be required to perform any kind of research and collection of seahorses in the country even from locals alike.

Respondents indicated that no actions are being deployed for seahorses by PSPC in Perak, while in Johor, J-Biotech mostly conducts conservation research and awareness programmes. At the moment, they are researching with Universiti Teknologi Malaysia (UTM) to come up with complete multiple genomes of all seahorse species in Johor (though the research was placed on hold due to the COVID-19 pandemic). Complete genomic data will allow for further research and conservation work such as proposed research using a technology called Water Environmental DNA (eDNA) to be conducted in the future.

#### ***Sarawak***

In 2020, the SFC conducted a Demand Reduction Campaign whereby they try to get the user or the consumer to reduce demand for buying wildlife products including seahorse and even pipefish. Both of these campaigns covered three components: (1) enforcement, (2) awareness, and (3) capacity building. In 2021,

one of the plans was to review all the species and penalties that are under the Sarawak Wildlife Protection Ordinance though there have been no results shared to date.

#### **4.6.5. Other relevant laws and regulations**

##### **CITES relevant regulations**

No seahorse species are specifically listed in the major laws/regulations in Malaysia, but several laws/regulations are relevant to seahorses because of their listing on CITES. These include:

- A) International Trade in Endangered Species Act 2008 (INTESA) (Act 686);
- B) Customs Act 1967 (Prohibition of Exports) Order 2012; and
- C) Wildlife Protection Ordinance 1998 for Sarawak.

International Trade in Endangered Species Act 2008 (INTESA) (Act 686) [*All Malaysia*]

- INTESA (Act 686) was established to specifically implement CITES for international trade. Any violation of any CITES regulation will be punished under this Act because the appendices follow the CITES Appendices. Species covered under CITES will also be covered under this Act.

Customs Act 1967 (Prohibition of exports) Order 2012 [*All Malaysia*]

- Conditional prohibition for export and re-exportation unless in the manner provided under INTESA. An export permit is required and is to be issued by the DOFM for Peninsular Malaysia & Labuan, by Sabah Fisheries Department in Sabah and by the Director, Forest Department Sarawak.

Wildlife Protection Ordinance 1998 [*Sarawak Only*]

- All species listed within the Wildlife Protection Ordinance 1998 and Appendices I and II of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) are protected within the state. For seahorses, it is prohibited to be in possession without a permit from SFC within the state, and all matters including aquaculture, trade and fisheries will require a state license and permit from the controller of wildlife.

##### **Fisheries relevant regulations**

###### ***Peninsular Malaysia***

Some of the efforts that are underway to strengthen the implementation of the laws/regulations relevant to seahorses include fines/ compounds for enforcement purposes under the Fisheries Act 1985. The Fisheries Act 1985 has been amended to include illegal, unreported, and unregulated (IUU) fishing within and outside borders. Trawlers are currently allowed to operate in Zone B and above – greater than five nautical miles from the shore (Figure 4.3). However, Malaysia is now in the process of moving all trawling activities out of Zone B to Zone C and above only (Figure 4.3). Research is also being done to identify more areas to be declared as MPAs. Seahorses should be protected within MPAs as they prohibit any exploitation aside from approved research purposes by the relevant MAs.



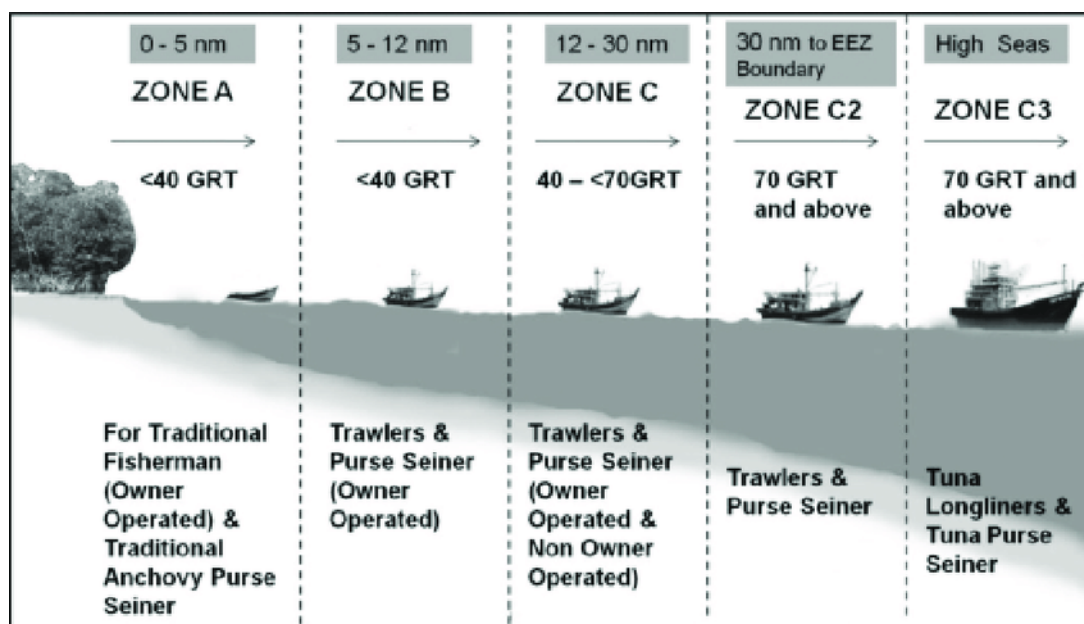


Figure 4.3. Fishing zones in Malaysia (Shaupi et al. 2011).

Some of the other management efforts that are under way for the fisheries include increasing the mesh size of trawl nets to avoid smaller fishes from getting caught as bycatch and ensuring all trawlers have GPS systems (mainly vessel monitoring systems, VMS) to be tracked by DOFM. It is unclear how these measures might help seahorses, if at all.

Furthermore, under the DOFM, there is a national plan of action to identify and establish marine resource zones of importance such as for marine aquaculture. It touches on other commodities like sea cucumber or seafood trade, but little is known about how much it concerns seahorse. There might be regulations like setting a quota system and gazetted marine parks that prohibit fishing. In a way, having regulations for other seafood species could also help seahorses if they reduce pressure where seahorses are.

In Perak, the Pulau Sembilan State Park is going extended its seaward border from 2 to 3 nautical miles from the coastline, as a totally protected marine conservation area. A Perak biodiversity-centric expedition is important to identify critical areas that have not been identified. From the expedition, the location of seahorse species and an examination into how they can be protected was started in 2019 and is still ongoing. The implementation of Pulau Sembilan State Park is also one of the management efforts in Perak.

### **Sarawak**

The SFC regulates where fishers can fish, especially in national parks such as the Luconia Shoals National Park, Miri-Sibuti Coral Reefs National Park, and Talang Satang National Park (only sport fishing is allowed in national parks). If trawling occurs in these national parks, then it will fall under the National Parks and Nature Reserves Ordinance 1998 whereby the SFC controls all the activities within the parks. However, there is not much information on how far these are enforced due to push back from the fisheries industry.

#### **4.6.6 Seahorse seizures**

Interviews carried out for this report and the authors own observations revealed that direct management and enforcement efforts for seahorses are non-existent throughout the country across all regions (Peninsular Malaysia, Sabah and Sarawak). Respondents from SFC reported that seahorse imports and exports are only examined if they are chanced upon in cargos and shipments in or out of the country. Indeed, there is hardly any news on enforcement efforts for seahorse trade, and no reports of seahorse seizures to date for Peninsular Malaysia and only two recently for imports into Sarawak (details below).

### **All Malaysia**

Although Malaysia has imposed a zero-export quota for seahorses, there is no specific check/ search specially for illegal seahorse exports at Malaysian border controls and no seizures of illegal exports have been reported. With respect to illegal exports, however, Malaysia has been implicated as the source of seahorses seized in Mainland China, Hong Kong SAR, Vietnam, Indonesia, and the Philippines (Louw & B urgener 2020).

Regarding imports, according to TRAFFIC Southeast Asia, if seahorses are discovered coming into the country without proper paperwork there can be an intervention. However, once illegal seahorse imports are in the country, no action can be taken as there are no laws in place restricting domestic trade. It was also claimed that seahorse imports will only be seized if they are wrongly declared. TRAFFIC does not have any records on seahorse seizures that took place in Malaysia.

In the event of seizures, DOFM and in-country experts from higher institutions would be the ones to help identify species or examine seized seahorses. Furthermore, the RMC would keep the records of seizures in Peninsular Malaysia, collecting information on the numbers, size, and species. The agency reported it would include the seizures in their CITES IWT reports as they are deemed not sensitive.

### **Sarawak**

The SFC maintains records of wildlife seizures in Sarawak, recording numbers, species, size, sex, and weight (kg) of seized seahorses and collates them in a biological report. The biological report will be used as evidence to prosecute the perpetrators. SFC also reported it would include the seizures in their CITES IWT reports as they are deemed not sensitive.

The SFC started the Illegal Wildlife Trade Campaign in 2019 which resulted in two seizures reported for seahorses encountered coming into the country in 2020 (no seizures were reported in 2019). Therefore, it is difficult to determine the import-export paths or routes for Sarawak at the moment. But assuming that SFC is aware of the trade path, the trade in Sarawak is mostly localised. Based on the recent cases in Sarikei and Sibul, it was found that some of the seahorses came from Cambodia and Thailand for local use.

Some of the seized seahorses were kept in a warehouse, disposed or sent to the SAs as samples for research purposes. The two seahorse seizure cases are still under investigation with a pending legal proceeding. Assuming that once the legal proceeding is complete, some of the seahorses that were seized will be kept as reference specimens for future use, what happens to the rest depends on the decision of the controller of wildlife on the method of disposal. To curb future illegal trade in the state, the SFC has worked with RMC to strengthen the entry and exit points in Sarawak, especially at the airport.

## **4.7 Challenges and opportunities**

Here is a list of challenges and opportunities that were identified based on interviews and information gathered for this report:

1. Geopolitical structure of Malaysia
  - Challenge:
    - Lack of communication among CITES Authorities and related agencies within states, and between states and the national level.
    - Challenging to enforce regulations and legislations because the country is split in to three different regions (Peninsular Malaysia, Sabah and Sarawak) which involves many agencies and key players resulting in overlapping jurisdictions across stakeholders.
    - This has led to several agencies in states to work in silo.
  - Opportunity:

- The implementation of a Standard Operating Procedures (SOP) for interagency cooperation that will involve various enforcement agencies including the police (PDRM) and military to work on enforcement trade regulations. This would also contribute directly in protecting Malaysian borders against illegal wildlife trade especially in airports and ports (RMC).
  - The SFC have started the Illegal Wildlife Trade Campaign in 2020 and is conducting a Demand Reduction Campaign whereby they try to get the user or the consumer to reduce demand for buying wildlife products including seahorse and even pipefish. In 2021, one of the plans is to review all the species and penalties that are under the Sarawak Wildlife Protection Ordinance. This is an opportunity for other states to work together in communication and implement the similar efforts within their respective jurisdictions.
2. All in one governance
- Challenge:
    - Since 2019, DOFM is responsible for all aspects of marine governance in Malaysia (i.e., “all in one” governance) – extraction, species protection, protected areas – each with varying priorities. Hence as a problem, it can be difficult to prioritize species protection within such capacity.
  - Opportunity:
    - It is only recently (since 2019) that the Department of Marine Parks Malaysia (DMPM) was absorbed into the DOFM to be placed under its jurisdiction. The government should reconsider placing protection-based management under an independent agency to increase efficiency and communication.
    - Alternatively, DOFM has implemented species-specific protection zones for sea cucumbers and this could be replicated and explored for seahorses (Ecolex 2010).
    - There is an opportunity to identify critical seahorse areas and get them protected as currently DOFM aims to increase spatial marine mapping of vital marine habitats.
3. Limitations of the judicial and enforcement sectors overlooking wildlife crime
- Challenge:
    - Seahorses are not being seized on export.
    - When seizures do occur with respect to illegal smuggling of wildlife in the country, enforcement actions tend to stop at the point of seizure and not continue through the judicial process.
    - Successful convictions will eventually act as deterrents but currently there are no indications that such convictions will take place.
  - Opportunity:
    - This poses an opportunity to increase efficiency by creating a training institution for all enforcement officers, prosecutors and judges. The training units will actively convey information and knowledge on wildlife crime to the people who are involved in these sectors and raise awareness of the current situation and what impact it will have if the seriousness of wildlife crimes continues to be disregarded.
    - Creating and implementing seahorse conservation and aquaculture legislations is something to be considered in the near future.
4. General lack of awareness on seahorses
- Challenge:
    - Lack of public awareness on why seahorses are important to be protected.
    - DOFM respondents suggested that consumers assume seahorses are not going to be depleted no matter how much they are exploited.
    - There is a lack of research and information dissemination on why people consume seahorse in traditional medicine.
    - Generally, there is a lack of communication, education and public awareness (CEPA) on wildlife, especially marine.
  - Opportunity:

- Existing frameworks and campaigns are present on other wildlife forms can be replicated for marine wildlife, especially seahorse to raise the awareness levels in the country. An example would be the tiger conservation framework in Malaysia, which is based on an integrated approach through collaborations of all stakeholders, field assessments along key ecological areas, and habitat restorations in critical areas.<sup>74</sup>
- This is important because the public are rarely aware of the source of their seafood, how their seafood is caught and the implications for threatened species such as seahorses, and the importance of key marine habitats to healthy seahorse populations (such as corals and mangroves).

5. Slow progress of seahorse research

- Challenge:
  - Lack of financial support to fund much needed research in the country.
  - One problem adding to limited funds is the uncoordinated and overlapping objectives by all fund seeking agencies working in silo.
  - There are not many in-country seahorse experts to drive the research or obtain new information.
- Opportunity:
  - Crowdfunding have gained interest with the public community and this presents a great opportunity to not only leverage on the fundraising opportunity but also to utilize it as an opportunity to raise awareness simultaneously.
  - Funders should promote collaborative research & capacity building in its fund distribution and allocations. This would encourage all agencies, NGOS and academicians to work together.
  - DOFM cited that improvements and developments of seahorse breeding technology has been ongoing since 2013 with an intension to restock wild seahorse population in the near future. Although they see this as an opportunity, it could present a huge challenge for wild seahorse populations if not done according to best practices. Any releases should adhere to the CTSG's globally-recognised, comprehensive guidelines for re-introductions and other conservation translocations, available in nine languages (<https://iucn-ctsg.org/policy-guidelines/conservation-translocation-guidelines/>).

## 4.8 Conclusions and recommendations

At present, the import and re-export of seahorses into and from Malaysia is permitted within the bounds of CITES guidelines, but direct export is subject to a zero quota. Nonetheless, there is a known illegal export of seahorses to meet the demands of international trade, which is not being actively addressed by Malaysian CITES Authorities. Furthermore, the impacts on wild seahorse populations from the fisheries supplying the trade are not known, not monitored and not regulated.

The current situation of ongoing illegal export is not helping to conserve seahorses in the wild. Instead, it has led to an underground trade that is challenging to monitor or enforce. Thus, in order to better implement CITES for seahorses, Malaysia would need to fully enforce its export suspension, or return to allowing exports as long as they are sustainable, legal and monitored.

Here is a list of recommended actions towards the effective implementation of CITES for seahorses in Malaysia. The stakeholders that offered the recommendations, during interviews for this report, are noted in square brackets. Recommendations that are not associated with stakeholders are the authors own suggestions.

1. Include all species of seahorses within the Fisheries Act 1985 and Wildlife Conservation Act 2010. [KeTSA, DOFM, SFC, Department of Fisheries Sabah]. Doing so would support:

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<sup>74</sup> <https://conservewildcats.org/wp-content/uploads/sites/5/WildCats/ProjectReports/Malaysia/MYCATFinalreport2006-07.pdf>

- the protection of wild seahorses from unsustainable direct/targeted harvesting and moving toward sustainable live trade using aquaculture bred seahorses. While most seahorses in Malaysia are obtained as bycatch, listing seahorses in the Fisheries Act & WCA would help prevent a flurry of direct harvesting for the purpose of aquaculture and its development. Though this would not act to constrain incidental catch and its eventual export, it would indicate to other agencies the importance of seahorse conservation which could extend a psychological shift of the mindset on how the country view seahorses.
- development of best seahorse aquaculture practices with strict guidelines for any captive bred releases.
- development of seahorse fishery monitoring within the National Fisheries Data – such that landed seahorses are weighed separately from other taxa and noted as a separate group within the National Fisheries Statistics. Right now, they are included among the “trash fish” category.

For seahorses to be included in the Fisheries Act 1985 and WCA 2010, research needs to be carried out to identify and demonstrate the need for the protection of seahorses within the country and to establish an early baseline to be the main driver in understanding the current reality/ threats on seahorses locally. Subsequently all relevant agencies, direct and indirect, should come together to establish a working SOP using the findings of the baseline as a basis to include seahorses within the Fisheries Act and WCA.

2. Increase all stakeholders’ awareness of seahorse trade and conservation [all MAs, SAs, EAs and NGOs]
  - The CITES and non-CITES Authorities who are responsible for a specific region should work together to implement CITES, especially at markets and traditional medicine shops.
  - The current lack of awareness of the seahorse import / export among stakeholders has contributed to the overall lack of enforcement and proper monitoring. This could be solved by creating a training programme for all the judges, prosecutors and enforcers.
  - The importance of seahorses environmentally should be translated to the ground for effective implementation of all monitoring actions, especially within EAs.
  - More data on what is happening on the ground needs to be collected to provide very strong evidence to the MAs or wildlife department that is in charge. This initiative will allow for the proper implementation of regulations on the ground.
  - Engaging citizen science as a recommended approach to raise public awareness such as iSeahorse ([www.iseahorse.org](http://www.iseahorse.org)).
3. Formation of a seahorse national advisory panel [KeTSA]
  - This is to centralize and facilitate decision making on all matters pertaining seahorses and to minimize overlapping jurisdictions for the effective use of resources.
  - This would also serve as the SA to identify and study known seahorse hot spots for effective monitoring and possible MPAs.
  - To include all related NGOs and academics working on seahorses as an effective working council.
4. It would be extremely beneficial to separate jurisdiction over extraction from that dealing with species and habitat conservation [DOFM]
  - As stated above, the government should reconsider placing protection-based management under an independent agency to increase efficiency and communication. See comments on “all in one governance” approach of DOFM under Section 4.7, above.
5. To address the main pressure on seahorses, the government must reduce pressures from bottom trawling and other nonselective gear. They could start by enforcing existing laws that preclude trawling near shore.

6. It would be recommended to introduce species-specific protection zones for seahorses similar to that for sea cucumbers in Langkawi, Kedah. This can be implemented in identified seahorse dense areas which are not accorded any protection status at present.

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## 5. The Philippines

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### 5.1 Background

The Philippines was a major known exporter of seahorses in international trade prior to the listing of seahorses on CITES Appendix II (Pajaro & Vincent 2015). Seahorse exploitation in the country became illegal in 2004 due to a blanket prohibition on the fishing or collecting of all CITES-listed species without any distinction among the Appendices (Foster et al. 2019a), but fisheries and trade have continued (Christie et al. 2011, Foster et al. 2019a, Pajaro & Vincent 2015). A revision of the national fisheries legislation in 2015 has created an opportunity for legal take and trade in seahorses in the spirit of their listing on CITES Appendix II (Foster & Apale 2016a).

### Seahorse fisheries in the Philippines

Philippines fisheries catch millions of seahorses in both target and non-target fisheries. The first investigation into the international trade in syngnathids in 1993 and 1995 suggested that at least 3.5 tonnes (~1.3 million individuals), and as much as 11 tonnes (~4.1 million individuals), of dried seahorses were traded per annum (Vincent 1996). Fisheries and trade surveys carried out across the Philippines in the early 2000s documented seahorse catches in 20 provinces across the Philippines (Pajaro & Vincent 2015). Survey data were extrapolated to infer that fishers in the survey areas landed an estimated 5 million seahorses (2 – 8 million) annually. A more recent, post-CITES, survey of the Philippines seahorse fishery and trade was carried out in 2019 in 17 coastal provinces across the country. Scaling up catch rates (catch per unit effort, CPUE) to annual catch estimated a total national catch of ~1.7 million individual seahorses per year across the surveyed gear type/province combinations (Foster et al. 2019a).

In the 2000s study, the vast majority of seahorses (~4.2 million individuals) were caught by small-scale fishers targeting seahorses, collecting them by hand while free or compressor diving or in scoop or push nets (Pajaro & Vincent 2015). An estimated 800,000 seahorses were also caught each year as bycatch in trawls, push nets or beach seine nets that targeted shrimp, prawn and pelagic fishes; about 70% of the documented bycatch was caught by trawls (Pajaro & Vincent 2015). The 2019 study also found compressor diving to be a primary source of seahorse landings in the Philippines; compressor fishers were estimated to catch more than all other gear types combined, landing approximately 913,000 seahorses per year (54% of the total estimated catch; Foster et al. 2019b). This was more than micro-trawls (~260,000 individuals), push nets (217,000 individuals) and spear/skin divers (~214,000 individuals) combined (Foster et al. 2019a). It should be noted that compressor diving, trawl, purse seines and drift gill net are illegal fishing activities in the Philippines (Bacalso & Wolff 2014, Selgrath et al. 2018).

Seahorse catches in the Philippines were sold either live or dried based on the availability of a buyer and the prices offered (Foster et al. 2019a, Pajaro & Vincent 2015). While targeted fishing was the only source for the live trade, it also supplied the dried trade, whereas bycaught seahorses mainly supplied the dried trade.

Seahorse exploitation in the Philippines became illegal in 2004, but fisheries continued. Seahorse fisheries in the Philippines were not regulated at a national level prior to 2004. The ban was an unintended consequence of the global CITES Appendix II listing for seahorses, which meant that fishing and trade of seahorses in the Philippines became an illegal activity (as reviewed in Foster & Apale 2016b). The ban resulted from Republic Act (RA) 8550 Section 97 which imposed a blanket prohibition on the fishing or collecting of all CITES-listed species on all Appendices (Christie et al. 2011, Foster & Apale 2016a;). It is unclear how the sudden ban on seahorse extraction and export changed actual fishing practices on the ground – but Project Seahorse



research carried out after 2004 revealed that fisheries and some trade for seahorses have continued illegally through the ban under RA 8550, with supply routes remaining active (e.g. Foster et al. 2019a and as reviewed in Foster & Apale 2016b).

### **Seahorse trade from the Philippines**

The Philippines was a major known exporter of seahorses in international trade prior to the CITES listing. Trade surveys at the start of this century estimated Philippines annual exports of dried seahorses at 4 million seahorses (2 – 6 million) (Pajaro & Vincent 2015). The volume estimates from fisher and buyer surveys were comparable and received further validation from official data collated by BFAR at export destinations. Official trade data from importers also show the Philippines to be an important source for dried seahorses prior to the domestic ban (Pajaro & Vincent 2015). Import data obtained from Hong Kong Special Administrative Region of China (hereafter Hong Kong SAR) alone showed average annual imports of 3.1 million dried seahorses (range 1.5-6.2 million) from the Philippines between 1998-2004. Dried seahorses were most commonly exported from the Philippines for TCM, usually to Mainland China, Hong Kong SAR, Singapore, and Taiwan Province of China (Pajaro & Vincent 2015).

Turn of the century trade surveys also suggested that the Philippines exported hundreds of thousands of live seahorses each year (~400,000 individuals) based on interviews with buyers and exporters, supplemented by limited official data – although fisher surveys suggested trade volumes to be nearly twice as high (Pajaro & Vincent 2015). Available information recorded the main destinations for live seahorses from the Philippines as the USA, Taiwan Province of China, Japan, Hong Kong SAR, and Europe (in descending order by volume).

Export of seahorses from the Philippines became illegal in 2004 under RA 8550 Section 97, but the 2019 trade survey revealed that the dried seahorse trade has continued in large numbers (Foster et al. 2019a). CITES records, other Customs data and a trade survey in Hong Kong SAR also suggest that dried seahorse trade from the Philippines continued after the ban. CITES official data reported ~1,700 individual seahorses as exported from the Philippines in 2005 (Foster et al. 2019a). Reported exports then mostly ceased as the 2004 national ban on seahorse capture took effect, with just 750 individuals reported across all years thereafter. Most CITES trade records for the Philippines after 2005 were dried trade reported by the United States as seized (source code I) and for commercial purposes (purpose code T), suggesting the exports were not accompanied by necessary or valid export permits under CITES, or as wild (source code W) for scientific purposes (purpose code S). Two further records from the Philippines existed in the Hong Kong SAR database post-CITES: 2006 (56,000 individuals) and 2010 (14,000 individuals; Foster et al. 2019a). Further, traders surveyed in Hong Kong SAR in 2017 reported the Philippines as the second most important source of dried seahorses in trade (Foster et al. 2019b).

### **The New Fisheries Code: Republic Act 10654 or the Amended Fisheries Code of 1998**

The Philippines Fisheries Code was revised in 2015 to address illegal, unreported and unregulated (IUU) fishing, and also to strengthen protection of endangered marine species in the country (Foster et al. 2016, Official Gazette 2021a). The Amended Fisheries Code intent is aligned with CITES regulations which allows export where science proves it is not harming wild populations (Foster & Apale 2016a).

According to the Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR), the designated CITES Management Authority (MA) for aquatic and marine species in the Philippines, the fisheries and trades of Appendix II and III listed species will only be re-opened when scientific assessments prove that these activities can be done sustainably as per CITES obligations (Foster & Apale 2016a). This means that scientific assessments, such as CITES non-detriment findings (NDFs), are required to establish the levels at which exploitation and trade can occur without detriment to wild populations before fisheries and trades of CITES Appendix II and III listed species can be re-opened (Section 102b, Foster & Apale 2016a). The species-specific legislation (i.e. Fisheries Administrative Order) that would govern the take and trade of the marine species should be based on scientific studies, and involve extensive stakeholder

consultation and notification (Foster & Apale 2016a).

### **This study**

At the 18<sup>th</sup> meeting of the Conference of the Parties to CITES (CoP18), Parties noted challenges in implementing the Appendix II CITES listing for seahorses (CITES CoP18 Doc. 72). These included challenges with making NDFs, monitoring trade, and enforcing established trade controls, *inter alia*. Parties also adopted a set of Decisions that would move them toward effective implementation of the Convention for trade in seahorses (Decisions 18.228-18.233).

Acting as the IUCN SSC Specialist Group for Seahorses, Pipefish and Seadragons (SPS SG), Project Seahorse conducted a study to analyse Appendix II implementation and enforcement mechanisms for seahorses at national level for Parties that have trade bans/suspensions and key importers. This study included the Philippines as a CITES Party with a trade ban for seahorses but where trade persists. The current study documents a trade ban for seahorses in the Philippines, how such controls are being implemented, and provides information on the roles of various government agencies in implementation. The study also highlights strengths and challenges and provides recommendations for improving the implementation mechanisms in the Philippines.

## **5.2 Methods**

Charity Mae Apale is Filipino biologist based at the Zoological Society of London (ZSL)-Philippines. She began working with ZSL-Philippines in 2013 as a project coordinator, building a network of community scientists to contribute to Project Seahorse's initiative "iSeahorse", supporting national implementation of CITES for seahorses and contributing to community-based marine protected area establishment. As a result of her efforts, the national government invited her to become a member of the Philippine Aquatic Red List Committee. In 2016, she started managing another project at ZSL-Philippines, leading a team to establish the second seahorse sanctuary in the country. She earned a Master of Philosophy in Conservation Leadership at the University of Cambridge, UK, in 2018, completing a thesis focused on the Philippines' illegal wildlife trade. At the time of writing, Ms. Apale is back in the Philippines managing the pangolin conservation program of ZSL-Philippines.

This study took place in December 2020 to February 2021. Ten respondents were interviewed to elicit information for this report (Table 5.1). Due to the COVID-19 pandemic, all interviews were carried out remotely via phone calls, text messages, Zoom sessions and e-mails. The majority of the respondents were representatives from the Philippines CITES Management Authority, but two were from different organizations that served as outsider's perspective. A list of guide questions or topics was developed to make sure that the key points were all discussed.

**Table 5.1.** List of respondents with their associated positions and organisations interviewed for this study.

<b>POSITION</b>	<b>ORGANISATION / INSTITUTION</b>
Point Person, CITES MA for Aquatic Species	CITES – MA, SA and Enforcement Bureau of Fisheries and Aquatic Resources (BFAR)
Officer-in-Charge of the Aquatic Wildlife Regulations Section	CITES – MA BFAR-CITES / Fisheries Regulatory and Quarantine Division (FRQD)
Fishing Regulations Officer II	CITES – MA BFAR
Former Team Leader of BFAR Quick Response Team / Fishery Law Enforcement Officer	CITES Enforcement Focal Point
Chief – Fisheries Inspection and Quarantine Division	BFAR – Fisheries Resource Protection & Law Enforcement Section
Scientist II	CITES - SA National Fisheries Research and Development Institute (NFRDI)
Executive Director	NGO Large Marine Vertebrate
Associate Scientist - Aquaculture Department	IGO Southeast Asian Fisheries Development Centre
Head – Enforcement Team	CITES MA and Enforcement Focal Point for Palawan
Head – Permitting Section	CITES MA for Palawan
Head – Species and Habitat Management Section	CITES MA for Palawan

Further information was obtained from previous interviews carried out in 2018 in support of identifying the gaps and factors affecting wildlife law enforcement, seizure data recording and seizure data reporting in the Philippines (Apale 2018, Table 5.2). In the Philippines, seahorses are considered part of wildlife (Candeze Mongaya, Policy Consultant – Rare, personal communication, 5 February 2021). Thus, the Apale (2018) study provided crucial information about the implementation and enforcement mechanisms of the management of seahorses in the country.

**Table 5.2.** List of in-country leaders and key management personnel of Philippines CITES Management Authorities and Enforcement Focal Points, and wildlife consultant interviewed for Apale (2018).

POSITION	ORGANISATION / INSTITUTION
Environmental Protection Unit	CITES – Enforcement Focal Point Bureau of Customs – Enforcement and Security Services
Environmental Crime Division	CITES -Enforcement Focal Point National Bureau of Investigation
Maritime Group	Philippine National Police
Consultant	TRAFFIC – Philippines
Enforcement Team	CITES – MA and Enforcement Focal for Palawan Palawan Council for Sustainable Development Staff

## 5.3 The Actors

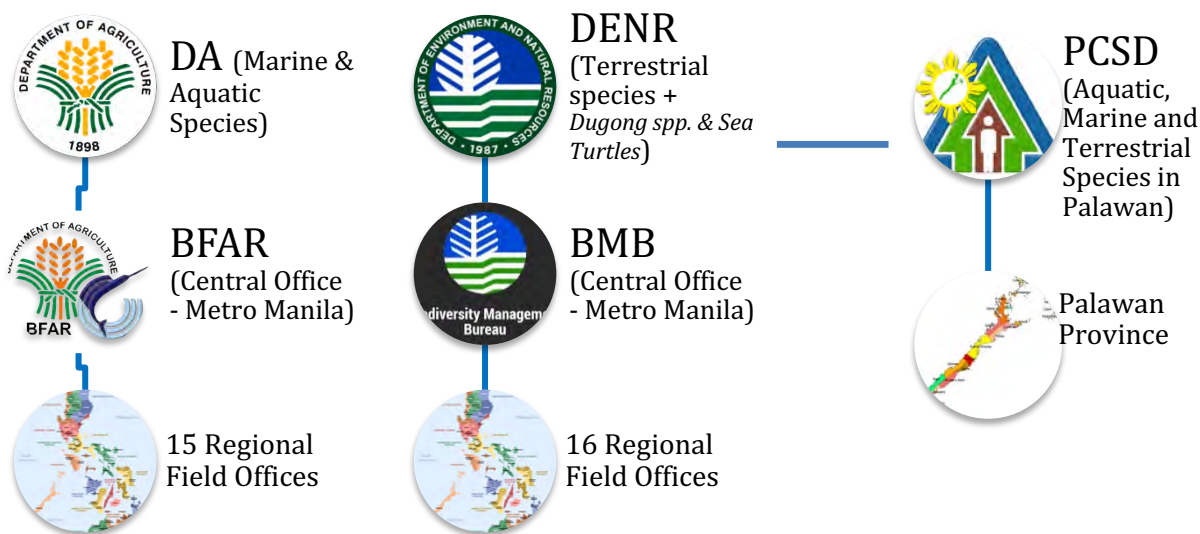
### National Legislation and Philippines CITES Authorities

The national legislation supporting CITES implementation in the Philippines includes: 1) Republic Act 9147 called the Wildlife Resources Conservation and Protection Act; and 2) the Republic Act 10654 called An Act to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (RA No. 8550 as amended by RA No. 10654 - hereafter referred to as the Amended Fisheries Code). These national laws include prohibiting trade in violation of the Convention, penalties for such trade, and providing for the confiscation of illegally traded specimens (DENR 2020).

### CITES Management Authorities

Under the RA 9147, the designated **CITES Management Authorities (MAs)** are the Department of Environment and Natural Resources-Biodiversity Management Bureau (DENR-BMB) for terrestrial wildlife, the Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR) for aquatic and marine species, and the Palawan Council for Sustainable Development Staff (PCSDS) for wildlife species found in the Province of Palawan (Figure 5.1).

This distinct natural heritage of Palawan led to the creation of the PCSDS. Palawan is the southwestern most large island of the Philippines and was described by UNESCO, in 2018, as the Philippine’s ‘last ecological frontier’. It still retains more than 50% of its original forest cover and has the highest remaining mangrove cover in the country (Mallari et al. 2011). Palawan is home to two UNESCO World Heritage sites, and is a hotspot of biodiversity (Forderer & Langer 2019). The PCSDS is mandated to have jurisdiction over all the terrestrial, aquatic and marine species in the Province of Palawan pursuant to Republic Act No. 7611 called the Strategic Environmental Plan (SEP) for Palawan Act. The SEP provided for the adoption of comprehensive frame-work for the sustainable development of Palawan compatible with protecting and enhancing the natural resources and endangered environment of the province (PCSDS 2021). Aside from the SEP for Palawan Act, Sections 19.1 to 19.4 of the Joint DENR-DA-PCSD Administrative Order No. 01 also vested PCSD as the CITES Management Authority for aquatic/marine wildlife species in the province of Palawan.



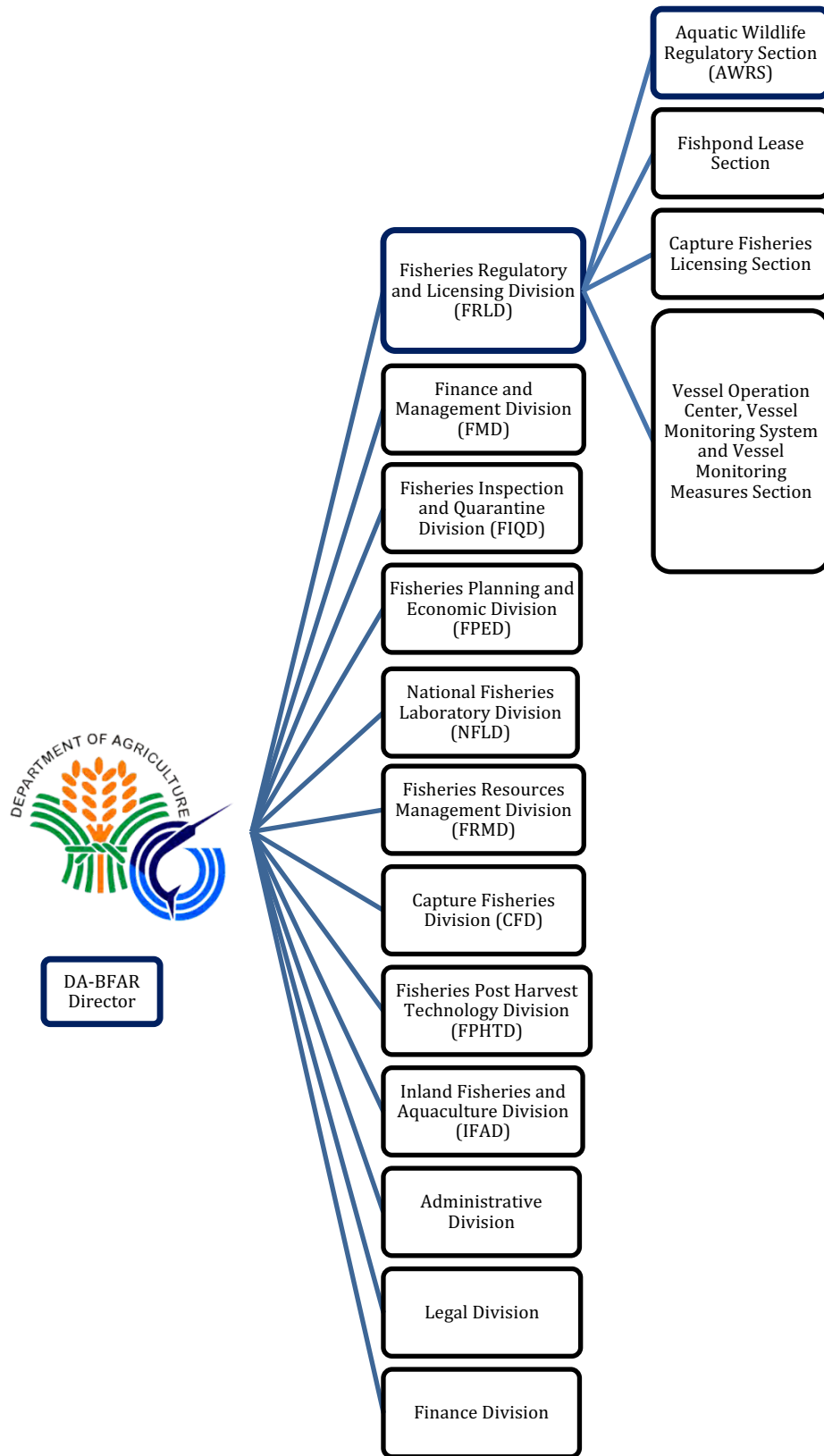
**Figure 5.1.** The Philippines CITES Management Authorities. The first lines of each column are the executive departments, except for the PCSD which is an attached agency of the DENR. The second lines of each column are the bureaus, which are the agencies of their respective departments. The third lines signify the coverage or the regional offices (presence) of these bureaus. Adapted from Apale (2018). *Legend: DA: Department of Agriculture; BFAR: Bureau of Fisheries and Aquatic Resources; DENR: Department of Environment and Natural Resources; BMB: Biodiversity Management Bureau; PCSD: Palawan Council for Sustainable Development.*

### ***The Department of Agriculture, Bureau of Fisheries and Aquatic Resources and its regional offices***

The Philippines is a republic with a presidential form of government wherein power is equally divided among its three branches: executive, legislative and judicial. The executive branch, which carries out and enforces laws, is composed of the President and the Vice President who are elected by direct popular vote and serve a term of six years. The Philippine Constitution grants the President the authority to appoint his Cabinet. These executive departments form a large portion of the country's bureaucracy. The Department of Agriculture (DA) is one of these departments and is responsible for the promotion of agricultural and fisheries development and growth (DA 2021). The DA is composed of several bureaus – a bureau is any principal subdivisions of the department performing a single major function or closely related functions. The Bureau of Fisheries and Aquatic Resources (BFAR) is one of these bureaus and is responsible for the development, improvement, law enforcement, management and conservation of the country's fisheries and aquatic resources (DA-BFAR 2021). The regional offices of BFAR were established according to law defining field service areas and these shall implement laws, policies, plans, programs, rules and regulations of the department or bureau in the regional area (Official Gazette 2021a).

Another important national law supporting CITES implementation for the aquatic wildlife in the country is the Fisheries Administrative Order (FAO) No. 233 Series of 2010 (DA-BFAR 2010). FAO No. 233 designates the key actors within the Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR) as CITES Management Authorities (MAs) and Scientific Authorities (SAs) for Aquatic Wildlife. It designates the DA-BFAR Director, the Chief of BFAR-Fisheries Regulatory and Quarantine Division (FRQD) and the Chief of BFAR-Fisheries Quarantine and Wildlife Regulation Section (FQWRS) as the three CITES MAs for aquatic wildlife. It further specifies that The Regional Fisheries Inspection and Quarantine Service in all 15 regional field offices (Figure 5.1) shall assist the CITES MAs in the performance of the designated Philippines CITES MA for aquatic wildlife functions.

After undergoing a series of reorganisations (not reflected in FAO No. 233), the BFAR-FRQD is now called the BFAR-Fisheries Regulatory and Licensing Division (FRLD). BFAR-FQWRS became the Aquatic Wildlife Regulations Sections (AWRS) and was moved to be a Section under BFAR-FRLD (Janire Miravite, Officer-In-Charge-BFAR-AWRS, personal communication, 23 February 2021; Figure 5.2). The functions of BFAR-AWRS include to: 1) formulate and implement policies and procedures on the issuances, conversions, transfers and renewals of fishpond lease agreements, issuances of permits and clearances for fishery trade, and issuances of special/gratuitous permits for the exploitation of fishery resources for experimental or research purposes; 2) conduct quarantine activities of all imported and exported fish and fishery/aquatic products; and 3) document and authorize the movement or trading of fish and fishery/aquatic products; etc. (DA-BFAR 2021). As such, BFAR-AWRS implements CITES-related aquatic activities for the Philippines, although within BFAR-AWRS there is only one person appointed as the CITES MA for Aquatic Species in the country.



**Figure 5.2.** The different divisions under DA- Bureau of Fisheries and Aquatic Resources (BFAR) and the different sections under the Fisheries Regulatory and Licensing (FRLD). Boxes in dark blue are the key actors (DA-BFAR Director, FRLD-AWRS) designated as PH CITES Management Authorities through FAO 233.

### CITES Scientific Authorities for aquatic species

The designated CITES Scientific Authorities (SAs) for marine and aquatic species are DA-BFAR, the University of Philippines (UP) Marine Science Institute, UP Visayas and the National Museum (Figure 5.3). The National Fisheries Research and Development Institute (NFRDI) of the Department of Agriculture is also designated as a scientific advisory body for Aquatic Wildlife under FAO 233. For example, the DA-BFAR and DA-NFRDI published the first “Napoleon Wrasse (*Cheilinus undulatus*) “Mameng” Philippine Status Report and National Plan of Action 2017-2022” and conducted the first regional non-detriment finding (NDF) for *Cheilinus undulatus* (Nañola et al. 2021).

Another set of key actors are pegged as scientific advisors for marine and aquatic wildlife conservation in the Philippines (CITES SA respondent). Fisheries Administrative Order (FAO) No. 233 was promulgated to create the Philippine Aquatic Red List Committee (PARLC) to develop the criteria for the determination of threatened aquatic wildlife and their classification as critically endangered, endangered, vulnerable or other internationally accepted categories (BFAR 2010). The PARLC output will be a National Aquatic Wildlife Red List which will be used in turn as the basis for formulating regulations such as the FAOs and BFAR Administrative Circular (BAC) for specific species (Foster & Apale 2016a). An FAO or BAC for seahorses is a precursor to the reopening of legal take and trade to ensure it remains sustainable (Foster & Apale 2016a). The PARLC is composed of international and local scientists and experts who are invited as resource persons in the preparation of the Philippine Aquatic Wildlife Red List. ZSL-Philippines, which has been working on seahorse conservation in the Philippines for more than two decades, originally as Project Seahorse Foundation for Marine Conservation, was invited to be a member of the PARLC.



**Figure 5.3.** The Philippines CITES Scientific Authorities for aquatic and marine species.  
 Legend: DA-BFAR: Department of Agriculture-Bureau of Fisheries and Aquatic Resources; PARLC: Philippine Aquatic Red List Committee; MSI – Marine Science Institute, University of the Philippines.

### CITES Enforcement Focal Points

The CITES Enforcement Focal Points (EFP) for the Philippines are the DA-BFAR, the PCSDS for Palawan Province, the Environmental Crime Division of the Department of Justice-National Bureau of Investigation (DOJ-NBI), Environmental Protection Unit of the Department of Finance-Bureau of Customs (DoF-BoC) (DENR 2020) (Figure 5.4). Aside from DA-BFAR and PCSDS, these agencies are combatting the illegal wildlife trade, including terrestrial, aquatic and marine species, with Wildlife Act as their main basis. The DOJ-NBI has its own division called Environmental Crime Division which is mandated to investigate/take on environmental and wildlife cases. Meanwhile, the DoF-BOC’s Environmental Protection Unit is mandated to monitor and control on all import and export cargoes, landed or stored in piers, airports, terminal facilities, including container yards and freight stations for any illegally traded wildlife.



Further, FAO 233 mandates DA-BFAR to train and form Aquatic Wildlife Enforcement Officers (AWEOs) and Aquatic Wildlife Traffic Monitoring Units (AWTMUs). Members of these units are from other agencies, which are designated by the Philippine National Police, Armed Forces of the Philippines, DOJ-NBI, Philippine Coast Guard and other law enforcement agencies. These fisheries regulatory law enforcers are also trained on CITES enforcements - BFAR has already trained 700+ law enforcers all over the country. However, according to a CITES Enforcement Focal Point respondent, BFAR really needs to strengthen its enforcement – they consider the bureau lacks sufficient people to enforce the laws throughout the country’s municipal and national waters. Though there are 700+ trained individuals all over the country, enforcement is still a huge gap due to institutional challenges such as prioritization, lack of technical expertise, job security of wildlife law enforcers, among others – these are discussed further below in Section 5.7.

In the Palawan Province specifically, the PCSDS created Wildlife Traffic Monitoring Units (WTMUs) pursuant to Section 33 of RA 9147 and Section 9 of PCSD Administrative Order No. 12. WTMUs are deployed at strategic air and seaports, transshipment and hotspot areas to ensure strict compliance and effective implementation of existing wildlife laws, rules and regulations, including CITES.



**Figure 5.4.** The Philippines CITES Enforcement Focal Points. The first lines of each column are the executive departments. The second lines of each column are the bureaus, which are the agencies of their respective departments. The third lines signify the coverage or the regional offices (presence) of these bureaus (DILG-PNP) and the different environmental units (DOF-BoC and DOJ-NBI). Adapted from Apale (2018). Legend: DOF-BoC: Department of Finance-Bureau of Customs; DOJ-NBI: Department of Justice-National Bureau of Investigation; DILG: Department of the Interior and Local Government; PNP: Local Government-Philippine National Police.

### Prioritization, culture, collaboration, and data reporting challenges among agencies/offices

According to the respondents, CITES MA has the final authority and any decisions on CITES implementation are made at the national level. However, some respondents confirmed that PARLC members tend to influence the decision-making process of the CITES MA, particularly on which species should be prioritized for management efforts. Prioritization of species is usually dependent on the availability of funds, which is one reason PARLC members – some of which have accessed funds from other donors – are able to influence the decisions of the CITES MA. An example situation is the Philippine guitarfish. Though the CITES MA doesn’t have any data on this species, the Philippines became a proponent during CoP18 because of a donor/PARLC member-led funding opportunity (PH national expert respondent).

Agency culture and a resulting lack of collaboration among agencies/offices were also observed as challenges in CITES implementation in the Philippines. During interviews carried out in support of Apale (2018), respondents from CITES EFPs shared that some divisions within agencies do not prioritize wildlife crime, including marine species, and do not treat it as a serious crime. As a consequence, enforcing wildlife laws is just a second priority next to enforcing laws of other commodities such as drugs or human trafficking.

A lack of inter-agency collaboration is also a problem in the Philippines. Some national agencies are being selective in which offices to collaborate with due to the lack of trust among agencies (Apale 2018). This is based on their assumptions on issues regarding intelligence information sharing such as data leakage that might hamper their law enforcement operations. There are even allegations that some government officials have connections with illegal traffickers. Indeed, additional information about the relationship between the national agencies and regional offices provided by interviewees in support of Apale (2018) included a lack of regular coordination about law enforcement activities and issues about fraudulent practices in the regional offices. Reported fraudulent practices included strong ties between illegal wildlife traffickers and government offices; there were several IWT cases in the country in which politicians and even high-ranking police officers were involved as wildlife illegal traffickers (Apale 2018).

Aside from the lack of trust, a CITES EFP respondent expressed that their agency does not usually coordinate with a particular office due to 'slow processing of law enforcement raid supporting documents,' (e.g., search warrants; Apale 2018).

Another challenge in CITES implementation in the Philippines is data reporting (Apale 2018). There is no regular submission of seizure data or apprehension reports from the regional offices to the central government agencies. In theory, these offices are mandated to comply to the monthly reporting requirements but consolidation of data is not commonly practiced.

## 5.4 History of trade research and CITES activity in the Philippines

2002 – All seahorse species (*Hippocampus* spp.) listed on CITES Appendix II.

2004 – CITES listing implemented in May.

Information on exploitation, consumption and trade in seahorses in the Philippines has been gathered from:

- First surveys: the first investigation into the international trade in syngnathids in 1993 and 1995 (Vincent 1996).
- Second surveys: the second investigation into the Philippines seahorse fisheries and trades in September 1998 and from April 1999 to March 2001 (Pajaro & Vincent 2015).
- Third surveys: the third investigation into the Philippines seahorse fisheries and trades in May-July 2019 (Foster et al. 2019a).
- Focused research activities: extensive semi-structured interviews, fisher completed logbooks, and participatory mapping carried out by Project Seahorse during the past 20 years.

Information from the first and second surveys, as well as focused research activities has been summarized in Foster & Apale (2016b). The report from the third surveys is available as Foster et al. (2019a).

Likewise, a review of seahorse biology and ecology in the Philippines can be found in Apale & Foster (2016).

2016-17 – A Project Seahorse study investigated the illegal trade of seahorses, among the first taxa of marine fishes to come under global trade restrictions (Foster et al. 2019b). To investigate global compliance, 220 interviews were conducted with traders in Hong Kong SAR, the largest entrepôt for dried seahorses. Traders reported obtaining dried seahorses from many countries with bans or suspensions on seahorse exports.

**Traders reported the Philippines as supplying the second highest number of dried seahorses imported into Hong Kong SAR at that time.** Almost all dried seahorses in Hong Kong SAR (95%) were reportedly imported from source countries that had ended legal exports, indicating a widespread lack of enforcement.

## **5.5 Nature of export bans/suspensions**

### **Fisheries legislation and seahorse CITES listing**

Seahorse fisheries in the Philippines were not directly regulated at a national level prior to 2004, although fisheries legislation that aimed to control gears that catch seahorses may have helped (e.g., ban on trawling within 15 km of the coastline; DA-BFAR 1998).

Seahorse exploitation in the Philippines became illegal in 2004. An unintended consequence of the global Appendix II listing for seahorses on CITES in 2002 was that fishing and trade of seahorses in the Philippines became an illegal activity (Foster & Apale 2016a). This was the result of Republic Act (RA) 8550 Section 97 which imposed a blanket prohibition on the fishing or collecting of all CITES-listed species without any distinction among the Appendices (DA-BFAR 1998). Section 97 provided that ‘it is unlawful to fish or take rare, threatened or endangered species as listed in the CITES.’ This was a much stricter national implementation of the CITES Appendix II listing for seahorses, which allowed trade to continue as long as it was sustainable, legal and monitored (Foster & Apale 2016a).

It is unclear how the sudden ban on seahorse extraction and export changed actual fishing practices on the ground. According to Christie et al. (2011), however, seahorse gathering continued and potentially increased since local/regional enforcement officials were not interested in enforcing a then-unpopular ban. Christie et al. (2011) also pointed out that the unintended consequence that resulted from the CITES listing left officials feeling unprepared to implement the ban. Further, Project Seahorse research revealed that fisheries and some trade for seahorses have continued illegally through the ban under RA 8550, with supply routes remaining active (Foster et al. 2019a, O’Donnell et al. 2012). Furthermore, Hong Kong SAR traders interviewed in 2017 reported the Philippines as the second most important source of the seahorses they had for sale (Foster et al. 2019b). Illegal fishing continued because there was little enforcement, seahorses commanded a high price on the international legal market and fishers had few alternative sources of income (O’Donnell et al. 2012).

Although seahorse catch and trade remain illegal to this day, the revision of the Philippines Fisheries Code in 2015, as RA10654, restored the potential for legal seahorse fisheries and trade in and from the Philippines if scientific assessments show such activities to be sustainable (Foster & Apale 2016a, Foster et al. 2019a). The Amended Fisheries Code is intended to move fisheries toward sustainable exploitation and improve the Philippine government’s compliance on CITES export regulations that govern the marine species listed in Appendices II and III (Foster & Apale 2016a). The new Section 102b of the Amended Fisheries Code states seahorse fisheries and trades (and those of other Appendix II and III listed aquatic species) will only be re-opened when scientific assessments have informed legislation that govern take and trade at sustainable levels (Foster & Apale 2016a).

### **Potential re-opening of the trade**

According to CITES MA respondents, the Amended Fisheries Code provides the opportunity to open legally the seahorse trade if scientific assessments prove that the population from the wild is viable for commercial purposes and that extractive activities can be done sustainably. A lack of financial resources is a key limiting factor in conducting such scientific assessments, such as a non-detriment finding (NDF) study; CITES SAs do not have funds to prioritize this. CITES MA respondents confirmed that if NGOs, such as Project Seahorse/ZSL Philippines, have the resources and the technical capacity to conduct such studies, this can be done in a collaboration with CITES SAs particularly the NFRDI. Such a comment speaks to the oft documented reliance of governments on external sources of funding when it comes to implementing CITES

at a national level (e.g., Foster & Vincent 2021).

### Steps to re-open the trade

The first step to re-open the trade is to conduct a defensible NDF for seahorses. The PARLC, that serves as scientific advisory, was convened in 2017. ZSL Philippines sits as a member as the national seahorse expert. PARLC members have the authority to push forward species-related conservation efforts. They can serve as the co-leads to conduct scientific assessments together with PH CITES SAs, and can collaborate with BFAR Regional Offices to support scientific studies, for example by gathering data in their respective jurisdictions (PH CITES MA respondent).

After the Fisheries Code was amended in 2015, Project Seahorse and ZSL Philippines, together with the DA-BFAR, co-organized a scientific consultation forum entitled “Building Philippines’ capacity for eventual implementation of CITES for seahorses and other aquatic species” in March 2016. The goal of the forum as was to increase national capacity for the eventual implementation of CITES for Appendix II listed aquatic species under the newly revised fisheries law in the Philippines (Foster & Apale 2016a). Project Seahorse developed the framework for making NDFs for seahorses (Foster & Vincent 2016), and this was used during the forum. The framework guided participants to evaluate the pressures facing seahorse in the country, the utility of existing management measures for addressing those pressures, and to identify gaps in both knowledge and management (Foster & Apale 2016a). One output from the workshop was a clear action plan to move towards effective CITES implementation for seahorses in the Philippines (Foster & Apale 2016a), and DA-BFAR’s main deliverable was to convene the PARLC and assess the status of Philippines’ seahorse species in the wild.

If the NDF result for seahorses proves that exploitation and trade can occur at levels that are not detrimental to the survival of seahorse species in the wild, this data will be used by the PARLC/CITES SA to support DA-BFAR to establish legislation on the collection and trade of seahorses as the second step. The third step is to develop a Fisheries Administrative Order (FAO) or DA-BFAR Administrative Circular (BAC) for seahorses. This is a precursor to the reopening of legal take and trade under the Amended Fisheries Code Section 102b, and should set the terms for take and trade to ensure it remains sustainable. According to PH CITES MA respondent, it would take at least two years to process an FAO. PARLC members can also assist in DA-BFAR to develop the FAO.

Another essential step to re-opening the legal seahorse trade will be to fix the enforcement problems that currently exist. An NDF might suggest that some trade is possible, but it will need to be constrained to sustainable levels. Furthermore, the CITES MA will have to prove legal acquisition before issuing export permits for any seahorses – which means the seahorses cannot be caught using illegal fishing gears or in protected spaces. At present, the vast majority of seahorses caught in the Philippines are obtained using illegal fishing gears. The latest trade survey indicated that the majority of seahorses are landed by compressor divers (*paaling*), which is an illegal form of fishing (Foster et al. 2016). Other key active fishing gears that catch seahorses are also illegal, such as trawl, purse seines, Danish seines, and drift gill net (Amended Fisheries Code or RA 10654). Section 95 of RA 10654 states that it is unlawful to use these active fishing gears in municipal waters, bays and other fishery management areas such as marine protected areas.

### Potential management responses for seahorses

Conducting the NDF is only the first step in re-opening the trade. CITES Parties need management plans in order to grant export permits for species included in Appendix II (Foster & Vincent 2016). Developing a good management plan is to ensure that proposed export of the seahorses will not harm wild populations (Foster & Vincent 2016). The Philippines CITES Management Authority can consider several management measures options that may benefit seahorses, either species-specific (i.e., minimum size limit (MSL) and leaving pregnant males) or generic (i.e., permanent, no-take Marine Protected Areas and gear restrictions) (Foster & Vincent 2016). The CITES MA respondents were aware that an effective management plan will need to be

developed for the trade to be re-opened and acknowledged that they need the technical assistance of the PARLC members to develop it.

Implementation of an adaptive management plan, however, is another huge next step. Even if seahorse fisheries and trade were re-opened, DA-BFAR would still have to manage the take and trade for sustainability and ensure seahorses are sourced using legal gears. A CITES Enforcement Focal Point respondent stressed that municipal waters are under the jurisdiction of the local government units (LGUs). DA-BFAR needs the strong commitment of LGUs to implement and enforce the management plan and its management measures such as MPAs and minimum size limits. Prior to the national ban on seahorse trade and fishery, an association of small-scale fishers in the Getafe, Bohol (central Philippines) decided to adopt a 10-cm voluntary MSL for seahorses to protect against overfishing (Martin-Smith et al. 2004). This initiative was supported and eventually enforced by the LGU of Getafe.

***Republic Act 7160 or the Local Government Code and Municipal Waters, The Department of Interior and Local Government, Local Government Unit***

**The Local Government Code**

The Republic Act 7160 was enacted in 1991 which establishes the system and powers of the local government in the Philippines: provinces, cities, municipalities and barangays. Further, the national government provides for a more responsive and accountable local government structure instituted through a system of decentralisation whereby local government units shall be given more authority, responsibilities and resources (Official Gazette 2021b).

**The Department of Interior and Local Government (DILG) and Local Government Units (LGUs)**

The DILG is the executive department of the Philippine government responsible for promoting peace and order, ensuring public safety and strengthening local government capability aimed towards the effective delivery of basic services to the citizenry (Republic Act No. 6975; The LawPhil Project 2021). Further, the DILG is mandated to have a general supervision on local government units (LGUs). The LGUs oversee local governance in 81 provinces, 144 cities, 1490 municipalities and 42,028 barangays/villages across the country (Official Gazette 2021a). The Local Government Code, further, was enacted to provide for a more responsive and accountable local government structure through establishing the LGUs.

**Municipal Waters**

According to the Local Government Code, LGUs are mandated to protect the municipal waters under their respective jurisdictions. Municipal waters include ‘marine waters between two lines drawn perpendicularly to the general coastline from points where the boundary lines of the municipality or city touch the sea at low tide and a third line parallel with the general coastline and fifteen (15) kilometres from it’ (RA 7160; Chan Robles 2021).

According to one CITES MA respondent, the government is looking into breeding and production of seahorses in captivity – which they touted as a potential management option in support of seahorse conservation. However, there is no actual concept developed yet since the idea is still in an early stage. It is imperative the government consider whether and how increasing culturing activities will reduce pressure on wild populations, else their efforts will amount to nothing more than a supply option for trade. An increase in culturing activities *might* benefit wild seahorses if done by local communities as an alternative to fishing, and if it leads to incentives for protecting wild populations. Furthermore, the release of captive animals has the potential to severely damage existing wild seahorse populations and so must be approached carefully.<sup>75</sup> The respondent did mention about the captive-breeding concept of arowana as a reference; the Asian Arowana

<sup>75</sup> Releases should adhere to the CTSG’s globally recognised, comprehensive guidelines for re-introductions and other conservation translocations, available in nine languages (<https://iucn-ctsg.org/policy-guidelines/conservation-translocation-guidelines/>).

species is listed under CITES Appendix I, however, CITES agrees to captive-breeding, importation and exportation of registered farms at restricted level (Dawes 2001, Lee 2009). The respondent, further, informed that DA-BFAR would appreciate if PS/ZSL PH can provide technical inputs. This means that DA-BFAR definitely needs the technical assistance of PARLC members in developing the proposed technology.

## 5.6 Understanding of seahorse fisheries, trade and bans/suspensions

### 5.6.1 What do respondents understand/know about seahorse fisheries and trade?

All respondents knew that it is illegal to collect, possess and trade seahorses in the Philippines and they were also aware that underground trade exists in the country. A few respondents also reported that seizures of shipments of dried seahorses had appeared in media outlets (see Section 5.6.6. for details of seizures).

When asked about the leading cause why people are involved in the illegal trade of seahorses, a majority of the respondents expressed that poverty is the major factor. The high-profit margins and the high prices paid for seahorses offer a lucrative business for people. A CITES MA respondent confirmed that one (1) kilogram of dried seahorse is worth the amount of 75 kilograms of *bangus* (*Chanos chanos*, an important food fish in the Philippines) or six (6) racks of rice. Some of the study respondents also expressed concern that the lack of enforcement has been a major factor in why the illegal trade of seahorses, and of wildlife in general, still exists. A CITES Enforcement Focal Point respondent confirmed that DA-BFAR alone cannot properly enforce the law. The respondent further explained that the CITES MA needs the help and commitment of the LGUs to protect their respective jurisdictions.

A study conducted by Apale (2018) identified major gaps and challenges in implementing national laws that could benefit seahorses in the Philippines. According to Apale (2018), the lack of technical expertise among the CITES MA and Enforcement Focal points, the lack of enforcement capacity due to job security issues of wildlife law enforcers, corruption, and overlapping bureaucracy are the identified main gaps and factors affecting wildlife law enforcement in the Philippines. What is interesting is that there were several illegal wildlife trade cases in which government officials, politicians and even high-ranking police officers were involved as wildlife traffickers (Apale 2018).

### 5.6.2. What is respondent awareness and use of existing tools and information for seahorses?

Most of the study respondents attended the 2016 consultation forum on implementation of CITES for seahorses in the Philippines conducted by Project Seahorse and ZSL Philippines in 2016 (Foster et al. 2016). They were, therefore, aware of the existing tools and information such as seahorse trade/fisheries studies, ID guides and the NDF framework. However, several of those who participated were no longer familiar with the process of the NDF framework. Other respondents, particularly from PCSDS, said that they are using IUCN Red List and CITES Checklist of species as references since these documents contain information of wildlife species including seahorses.

### 5.6.3 Seahorse export/import paths

No specific information was provided by study respondents on seahorse trade. Some respondents, however, briefly mentioned that seahorse catching and trading still exist in the Visayas Islands, central Philippines. As for the end-users, a CITES MA respondent confirmed that Chinese use seahorses mainly for traditional Chinese medicine, while Japanese and Koreans eat seahorse as food. Although respondents knew little about seahorse fisheries and trades, these activities have been recently documented in a seahorse trade study carried out by Project Seahorse, together with ZSL Philippines, in 2019 (Foster et al. 2019a, see background for additional details). The results of this study were fed back to CITES Authorities and other government representatives on July 31, 2019.

Meanwhile, the PCSDS confirmed that the office doesn't have any data on the legal transport or export of seahorses in Palawan Province. They have data on apprehensions involving seahorses (see Section 5.6.5.), but details on the trade routes were not included in their database.

#### 5.6.4. Seahorse conservation status and regulations

Fisheries Administrative Order No. 233 Series of 2010 mandated DA-BFAR to create the Philippine Aquatic Red List Committee (PARLC) for the determination of threatened aquatic wildlife and their classification as critically endangered, endangered, vulnerable based on scientific assessments. The PARLC was convened in 2017 to set the taxa priorities to be included in the assessment and seahorse species were included in the list. ZSL Philippines became a member of PARLC and as part of the sub-committee leading as national experts in seahorses. Due to the limited funds of PARLC, however, the assessment of seahorses was put on hold and other species will be assessed first. On prioritizing the species assessments, PARLC selected species endemic to the Philippines to be assessed first (Myrtle Arias, PARLC Member, personal communication, 8 February 2021). As for seahorses, there is no definite timeline yet, though ZSL Philippines has already submitted a proposal for seahorses to be assessed and this includes all ten species found in the Philippines: *Hippocampus barbouri*, *H. bargibanti*, *H. comes*, *H. denise*, *H. hystrix*, *H. kelloggi*, *H. kuda*, *H. pontohi*, *H. spinosissimus*, and *H. trimaculatus*.

According to a PH CITES SA respondent, PARLC has received PhP13M (~\$270,00 USD) from DA-BFAR for the secretariat to operate in 2021-2022, including 9-10 scientific assessments. The assessments were scheduled for 2020, but there were delays in the implementation due to the COVID-19 pandemic and these are rescheduled in 2021.

#### 5.6.5 Other relevant laws and regulations

In the seahorse trade study conducted in 2019 (Foster et al. 2019a), fishers reported catching seahorses using ten different gear types, of which four are illegal (those in italics): the most common gear type reported was spear/skin diving, followed by bottom set gill nets, other gears included *compressor divers*, *otter trawls*, *floating gill nets*, micro-trawls, push nets, fish traps, gleaning, and *seine nets*. The Amended Fisheries Code provided fisheries legislation that aimed to control illegal gears that catch seahorses within the municipal waters, including trawling, purse seines, Danish seines, compressor diving (*paaling*), and drift gill net.

In a move to strengthen the protection of the 26,000 square kilometres of municipal waters from destructive bottom trawling, in particular, the DILG and the DA-BFAR signed a Joint Memorandum Circular (JMC) on the ban on bottom trawl within the municipal waters (DILG 2018). According to Oceana Philippines (2019), a great feature of this JMC is its provisions on the decommissioning of trawling gears and livelihood assistance for bottom trawler owners, operators, crew, or fish workers of municipal bottom trawlers as long as they register as fisherfolk in the LGU. The JMC is taking in effect and its now in the transition phase. A paper published in 2020 presented that the number of commercial trawlers has decreased during the last three decades due to the increase of operation costs and various trawling restrictions in the country (Suuronen et al. 2020). However, the total number of municipal trawlers is poorly known (Suuronen et al. 2020). This reflects that there is a gap in monitoring the number of municipal trawlers in the Philippines.

Since fishery activities in municipal waters are under the jurisdiction of the LGUs, DILG Chief in 2018 reprimanded the LGUs that they should be more proactive in monitoring and regulating their municipal waters or be held liable for non-compliance (DILG 2021). There are still reports in 2019, however, that commercial fishing boats (those greater than 3 gross register in tons and using active gears such as trawls, ringnets, Danish seines or purse seines) – whose fishing methods are very destructive to spawning grounds – were still visible inside municipal waters in some parts of the central Philippines (PNA 2019). The Philippines really needs to step up in protecting its municipal waters and the LGUs are the main bodies responsible for implementing and enforcing the national law.

Section 101 of the Amended Fisheries Code also states that it is illegal to fish in marine protected areas (MPAs), fishery reserves, refuges or sanctuaries as declared by the DA-BFAR or the local government units (LGUs). In 2014, Cabral et al. reported that there were 1,800 MPAs in the Philippines, of which 1,620 were local/community-based MPAs. Most Philippine MPAs are very small in size; half of the MPAs in the

Philippines have sizes of less than  $<1 \text{ km}^2$  (Cabral et al. 2014). In 2010, 90% of all MPAs for which spatial data were available had a total area of  $<1 \text{ km}^2$ , such that just 0.5% of municipal waters and 2.7-3.4% of coral reef area in the Philippines was protected in no-take MPAs (Weeks et al. 2010). No-take MPAs may conserve seahorses through protecting natural habitats and removing fishing pressures and damaging processes, such as destructive fishing and demersal seine netting (Curtis et al. 2007, Harasti et al. 2014, Marcus et al. 2007). Though a study conducted by Yasue et al. in 2012 shows that MPAs had no significant effect on seahorse densities, seahorse size did show a reserve effect. Seahorses found inside the MPAs were slightly larger as compared to those found in the distant unprotected fishing areas (Yasue et al. 2012). However, a study conducted by Ursua (2017) suggested that seahorse natural populations could recover through proper management of natural habitats such as minimizing human disturbance and preventing the taking of seahorses. The study on resource enhancement of seahorses in Molocaboc Island, Sagay Marine Reserve, Philippines, showed that 'the natural seahorse stocks in 2016-2017 was increasing, compared with that of the previous years (2012-2015)' (Ursua 2017).

#### 5.6.6. Seahorse seizures

Respondents did not provide substantial information on seizure data. Apparently, the Regional BFAR Offices collect their own seizure data or apprehension reports but this information is not regularly transmitted to the central office (Apale 2018). The DA-BFAR does not have a centralised database for wildlife crime statistics (Apale 2018). It could have been easier and offers an unparalleled opportunity to analyse the illicit trade if data collection, recording and administration of information pertaining to related IWT crimes are established (Apale 2018, Foster et al. 2016, Shepherd et al. 2016). Further, Apale (2018) presented that submitting trade reports to CITES is not a priority because of the belief that MAs are not held accountable and there are no penalties imposed by CITES for non-complying Parties.

The PCSDS, however, provided information that there were three (3) incidents of seizures involving seahorses according to its database of PCSD Apprehensions from 2014-2020. Details were only provided for one seizure. In 2014, on 17 January, 77 kg of *Hippocampus* sp. (~29,000 individuals, species ID not provided) was seized together with other marine species such as triton (marine snail shells), shark's fin, and marine turtle scutes. The PCSDS reported that the seized items are under the custody of the PCSDS evidence custodian while the cases are prosecuted in the court.

Media reports provide evidence of seizures in the absence of official data. For example, in 2018 a shipment of seahorses worth PHP 3.6 million (75,000 USD) was seized at the port of Zamboanga, a city in the southern part of the Philippines (Philippine Daily Inquirer 2018). Another apprehension was conducted in 2019 wherein 229 kilos of dried seahorses were seized together with 2,588 kilos of dried pangolin scales and 531 kilos of dried sea turtle scutes in Puerto Princesa City, Palawan (Mangosing 2019). According to another article (The Freeman 2020), dried seahorses intercepted at the Mactan Cebu International Airport were estimated to value PHP 1.7 million (35,300 USD). However, the violators only paid the fine of PHP 15,000 (312 USD). The paid fine is not consistent with the provision of penalties under the Amended Fisheries Code. The Code, under Section 102b, stated that the DA-BFAR shall penalize the offender with a fine equivalent to three (3) times the value of species or three hundred thousand pesos (PHP 300,000) to three million pesos (PHP 3,000,000), whichever is higher.

Seized seahorses are not initially disposed. If a criminal or administrative case is filed, the confiscated seahorses will serve as evidence (CITES EFP respondent). Once the IWT cases are dismissed or closed, such as the case of seahorses seized in Cebu City (The Freeman 2020), BFAR disposes the dried seahorses through burning.

CITES official data contained 20 records of seahorses supposedly exported by the Philippines and seized by the importing Party (data downloaded 2020 September 14 from [www.trade.cites.org](http://www.trade.cites.org)). All records for seahorses related to the Philippines were reported by importing Parties; 18 were reported by the United



States across the years 2005-2018, one by Spain and one by Portugal – both in 2005. All but one of the seized records were of dried seahorses, for commercial or personal purposes.

## **5.7 Challenges and opportunities**

The Philippines has not implemented the CITES listing for seahorses because their former domestic fisheries regulation banned the extraction and trade (domestic or international) of any CITES listed marine species, including seahorses (Foster et al. 2019a). Exploitation and trade have continued nonetheless – field visits and surveys among importers in other countries revealed that fisheries and trade for seahorses continued illegally without monitoring or regulation (Foster & Apale 2016b, Foster et al. 2019a, 2019b). The revision of the national fisheries law in 2015, however, has provided an opportunity to potentially re-open seahorse fisheries and trade if they can be regulated for sustainability (Foster & Apale 2016a). For that to happen, Filipino Authorities need to assess the conservation status of seahorses in the Philippines, develop a seahorse management plan, re-open legal fisheries and trades in a precautionary manner, and subsequently monitor and manage them in support of sustainable populations. They must also address the significant impact of illegal fishing gears on national seahorse populations – to ensure legal sourcing and sustainable extraction. The following are challenges and opportunities identified during the course of this study, as they relate to moving ahead with implementing CITES for seahorses in the Philippines.

### **Challenges**

There are several challenges and gaps identified in this study. Further, the study conducted by Apale (2018) provided an in-depth analysis on the gaps and factors affecting wildlife law enforcement, seizure data recording and seizure data reporting in the Philippines of relevance to seahorses.

1. DA-BFAR does not have internal plan for seahorses. They are relying on external catalysts, such as PARLC members, to provide funding and expertise to carry out the National Red List Assessments and lead on development of a management plan/NDF. External expertise can be found, and both local and international NGOs have expressed willingness to support in this respect, but the reliance on external funding is a roadblock to moving the Philippines' seahorse trade toward sustainability.
2. DA-BFAR and the PCSDS have several mandates which means that people working at the agencies are focused on numerous priorities simultaneously. Unless it's a personal priority for someone working at the agency, championing seahorse conservation will not be a top priority. Thus, external factors are needed to push the conservation agenda for seahorses.
3. A lack of technical expertise of the CITES MAs and EFPs on species identification was observed. This is evident in the seizure data that Apale (2018) received from the different agencies. Though most of the taxa were identified down to species level, there were seized items that were recorded in common or local names, such as the seahorses. Likewise, the information provided by the PCSDS in their database only contained the common name and quantity of the seized seahorse. The data from the government are not reliable, thus there is a need to augment it with information from other sources such as online news articles (Apale 2018).
4. DA-BFAR's existing policies, according to PH CITES MA respondents, are anti-poor and very restrictive. This was the case when the Philippine Government imposed a total ban on seahorse fisheries and trade in 2004. There was no proper consultation on the ground and a perceived failure to recognise that there were small-scale fishers for whom seahorses contributed an important portion of their overall earnings (Foster & Apale 2016b). Respondents recommended that PH CITES MA should review existing policies and to move towards achieving conservation while at the same time creating business opportunities for Filipinos. According to Malayang et al. (2020), the fisheries policy in the Philippines should involve "offering fish catchers with alternative means to derive income that would give them higher marginal returns to efforts compared to fishing in order to ease their propensity to engage in IUU (fishing), over-scaling catch rates to unsustainable levels, or violate access regulations."
5. By amending the Philippine Fisheries Code in 2015, the government has set a clear intention to combat IUU fishing and IWT problems in the country. However, even if the Amended Fisheries Code has more "teeth", it is still not proving as effective as it was intended to be since there are huge gaps in the implementation and enforcement mechanisms.

6. DA-BFAR's law enforcement team focuses mainly on IUU fishing practices under the Amended Fisheries Code but DA-BFAR still lacks the capacity to enforce Philippine fisheries laws such that illegal fishing continues. The Philippines is an archipelago and, according to a PH CITES Enforcement Focal Point respondent, the enforcement team lacks human resources, technical expertise and financial resources to enforce the huge area under its jurisdiction. Apale (2018) further identified the lack of law enforcement capacity (as per Bennett 2010) as one of the main challenges in CITES implementation. If seahorse fisheries and trade were re-opened, DA-BFAR would still have to manage the take and trade for sustainability and ensure seahorses are sourced using legal gears. The latest seahorse trade survey indicated that the majority of seahorses are landed by compressor divers, which is an illegal form of fishing (Foster et al. 2019a). This would need to be addressed in any management plan.
7. CITES Enforcement Focal Points lack capacity to pay adequate attention to addressing illegal wildlife trade – instead they prioritise human and drug trafficking which are also part of their mandate. The inability to control illegal trade in dried seahorses will severely hamper DA-BFAR's and PCSDS's efforts to constrain trade to a level that is not detrimental to wild populations.
8. In relation to the lack of capacity to enforce the Philippine fisheries and wildlife laws, the CITES MAs and other relevant enforcement agencies in the Philippines are also dealing with an institutional systems capability problem – the job security of wildlife law enforcers (Apale 2018). A majority of the frontline employees at the national agencies are under short-term/temporary employment practices such as 'Endo,' 'Job Order (JO)' and 'Contract of Service (COS)'. The temporary employment usually lasts less than six months to one year. However, there are also current JO employees who have been in service for at least five years but never promoted to receive a regular employment contract (Apale 2018). As an example, within one CITES MA only three of more than 20 staff were under regular employment and the rest were under JOs (Apale 2018). This form of unstable contractual employment affects the sustainability of the law enforcement program of the agencies. Job commitment of the trained or deputised law enforcers is compromised and there are limitations on work performance because it is not guaranteed that their current JOs will be renewed after the contract ends.
9. The existing judicial system of the country is a main challenge in combatting wildlife crime in the Philippines (Apale 2018). Environmental cases do not always progress smoothly, and take time, usually from three to five years. Often the task of investigating, apprehending offenders and attending court hearings is left to the wildlife law apprehending officers. The processes to mitigate and adjudicate cases of environmental crime are time-consuming and the apprehending officer is required to attend the court hearings. Further, the apprehending officer must always coordinate with and assist the prosecutor to ensure availability of evidence (DENR 2010). Additionally, the apprehending officers are under JOs and there were several cases for which officer contracts were not renewed. Due to the unavailability of the apprehending officers, most of the environmental cases were dismissed (Apale 2018).

## Opportunities

Despite noting numerous challenges, the respondents still commented on some opportunities that can be tapped to improve the CITES implementation for marine and aquatic species in the Philippines, including seahorses. The Amended Fisheries Code served its purpose as a deterrent for IUU fishing in the country due to setting higher penalties for violators and tightening rules on fishing in Filipino waters, particularly on commercial fishing (Oceana 2015), and including taking of rare, threatened or endangered species. In 2020 alone, DA-BFAR collected 40 million Philippine pesos as penalties (Dennis Calvan, Fisheries Consultant, personal communication, 8 January 2021). The Amended Fisheries Code established the Fisheries Management Fund from the administrative fines and penalties imposed under this code. A certain percentage is exclusively utilized for the research and development activities of NFRDI, which includes funding the PARLC activities (PH CITES SA respondent). This is a good opportunity for CITES MA to prioritise commercially important species for scientific assessments such as seahorses, corals and sea cucumbers (PH CITES SA respondent).

In terms of addressing illegal fishing issues in the Philippines, that impact seahorse wild populations and their habitats, there is an opportunity for the LGUs to strengthen their efforts in combatting IUU fishing given that the Amended Fisheries Code is already providing the teeth for them to better protect their jurisdictions. Re-opening seahorse fisheries could also create an environment that incentivizes compliance with fisheries laws, and where legal fishers put pressure on illegal fishers who would be threatening their now legal, livelihoods.

Seahorse culture was presented by the CITES MA, SA and seahorse expert respondents as another opportunity for seahorse conservation and management, however – as mentioned above – it is not at all clear how increasing a supply of cultured seahorses would support wild seahorse conservation. On the one hand, increasing the supply of cultured seahorses does not usually lead to a decrease in fishing pressure unless it is very carefully planned to do just that, and is coupled with very tight enforcement of fishing rules/regulations, and 2) releasing cultured seahorses into the wild has a much higher potential to hurt wild populations than to help them. The Southeast Asian Fisheries Development Center (SEAFDEC) Aquaculture Department conducted a community-based hatchery for seahorses in Molocaboc Island at Sagay Marine Reserve in Central Philippines. The main goal of the project was for resource enhancement of seahorses by developing release and monitoring strategies (Ursua 2017). According to Ursua (2017), releasing hatchery-reared juveniles could enhance the recovery of the seahorse population and density. She also expressed that the technology developed could be used as a baseline for the proposed seahorse culture if this would be an option moving forward. It is unclear, however, if the release strategies proposed followed best practices set by the IUCN SSC Conservation Translocation Specialist Group (CTSG). The IUCN expert group notes that the release of captive animals has the potential to severely damage existing wild seahorse populations and so must be approached carefully. Proper releases are lengthy, complex and expensive processes that require preparatory and follow-up activities, and should not be attempted without guaranteed long-term financial, political and local support. PH CITES MA respondents also recommended seahorse culture to address the domestic and international demands for the live seahorse trade. But as mentioned above, while seahorse culture could increase supply for the domestic and international live seahorse trade, it would not in itself reduce demands on wild populations unless it led to a corresponding reduction in fishing pressure. DA-BFAR doesn't have a concrete plan yet on how to implement and manage a sustainable seahorse culture, and has asked for the technical assistance of PARLC members in developing the proposed technology.

If seahorse trade were to be re-opened in the Philippines, there would be ways in which the CITES PH MAs and EFPs could try to manage the trade sustainably. According to Foster et al. 2019a, 95% of the estimated annual catch in the country was targeted, with fishers selecting which seahorses they catch. In theory, target fisheries are easier to manage since there are already existing management tools that can be adapted such as minimum size limits (MSL), leaving pregnant males, establishing community-based no-take MPAs, etc.; the existence of target fisheries should also facilitate the use of quotas as a management tool, which are more complicated to implement in bycatch fisheries (Foster & Vincent 2016, Foster et al. 2019a). In reality, these precautionary management efforts are already identified in the Action Plan developed during the consultation forum in 2016 co-organized by PS, ZSL PH and DA-BFAR and attended by the CITES MAs, SAs and EFPs, and other local experts representing seahorses and their habitats (coral, mangroves, seagrasses) (Foster & Apale 2016a). The identified actions should allow the Philippines to develop and implement an adaptive management plan for seahorse exploitation and trade (Foster & Apale 2016a).

With respect to MPAs specifically, several studies have suggested that no-take MPAs had positive effect on seahorse size and wild populations (Ursua 2017, Yasue et al. 2012). Thus, community-based MPAs centred on seahorse hotspots must also be considered an opportunity. The Action Plan (Foster & Apale 2016a) already identified MPAs as a tool for limiting extent of fishing pressure on seahorses – it was agreed that LGUs should improve enforcement of existing MPAs (mostly centred on coral reefs) while at the same time expanding/improving coverage of MPAs to include seagrass beds and mangrove forests.

Another opportunity in support of implementing CITES for seahorses is to conduct fisheries dependent monitoring of seahorses in target fisheries through the National Stock Assessment Program (NSAP) of NFRDI (Foster & Apale 2016a). The NSAP program of NFRDI primarily aims to develop standardized, specific and time-series information on capture fisheries for the management of the Philippines' marine resources in major fishing grounds (Flores et al. 2019). NSAP enumerators are based in all the coastal provinces of the Philippines and they have the ability to monitor wild seahorse catches once the trade will be re-opened.

## 5.8 Conclusions and recommendations

The Philippines was confirmed as a major exporter of dried and live seahorses in international trade prior to the CITES Appendix II listing in 2002. Philippine national law (Fisheries Code RA 8550 Section 97) banned the gathering and trading of all CITES-listed species without any distinction among the Appendices. The CITES listing was deferred to come into effect 18 months thereafter, seahorse fisheries in the country then became illegal in 2004. Despite the blanket prohibition, seahorse gathering continued with seahorses entering an illegal trade.

In 2015, the Fisheries Code RA 8550 was amended to serve as a significant deterrent against illegal fishing practices in the Philippines. The Amended Fisheries Code Sec 102b was revised also to strengthen protection of endangered marine species and critical conservation areas, based on the precautionary principle and an ecosystem-based approach to fisheries management. With the Amended Fisheries Code, seahorse fishing and trade might be re-opened when scientific assessments, such as NDFs, prove that these activities can be done sustainably.

DA-BFAR needs assistance from scientists and experts to implement the Amended Fisheries Code Sec 102b, thus convening the PARLC in 2017 to serve as an advisory body and to produce the National Aquatic Wildlife Red List. PARLC members, such as ZSL Philippines, can influence which species to prioritise as part of its advocacy. This means that ZSL Philippines and Project Seahorse can assist BFAR or CITES MA and SA in conducting NDFs for seahorses if funds are available.

### Moving Forward

1. A workshop and consultation forum co-organised by Project Seahorse, the Zoological Society of London-Philippines and the DA-BFAR in March 2016 developed an Action Plan titled "Toward CITES implementation for seahorses in the Philippines," (Foster & Apale 2016a). DA-BFAR should revisit the plan. Completing the actions will allow the Philippines to develop and implement an adaptive management plan for seahorse exploitation and trade in the country, and as such will ensure future exports of seahorses do not damage wild populations. Broad actions (which were broken down into small, achievable steps) included: deploying a minimum size limit (MSL) for seahorses in target fisheries as one component of adaptive management plan; strengthening LGU enforcement of no-take MPAs as a tool for limiting extent of fishing pressure on seahorses in the Philippines; expanding coverage of MPAs in seagrass beds and mangroves; generating long-term monitoring of seahorse catches; and reducing the impacts and extent of IUU fisheries and trade on seahorses such as through gear restrictions.
2. With the Amended Fisheries Code, DA-BFAR's intention is to move the trade of seahorses toward sustainability and the first step is to conduct an NDF study for seahorses. The DA-BFAR and the NFRDI conducted the first regional NDF for humphead wrasse (*Cheilinus undulatus*). ZSL Philippines and Project Seahorse, as national experts and members of PARLC can collaborate with DA-BFAR to conduct NDF for seahorses, though DA-BFAR will need to prioritise funding for the assessment.
3. Should the government wish to consider seahorse culture and releases, it is imperative they ensure that 1) culture will lead to real and enduring reductions in fishing pressure on wild populations (and not just end up supplementing supply), and 2) releases follow best practices set by the IUCN SSC Conservation Translocation Specialist Group (IUCN SSC Conservation Translocation Specialist Group 2013).

4. To address the IWT of seahorses in the Philippines, the CITES MA and enforcement agencies need to strengthen their efforts in enforcing the wildlife laws. DA-BFAR should develop an adaptive management plan to benefit seahorses in the Philippines. It could include conducting effective information, education and communication campaigns regarding seahorse IUU and IWT. Other innovative approaches should also be considered by the government including the recommendation of Foster et al. (2019b) to look into numerous technological surveillance projects such as the satellite-based surveillance system used by Global Fishing Watch (<https://globalfishingwatch.org/>).
5. The issue of job security is an institutional problem in the country. The current administration must address the JO issues and directly deal with different stakeholders such as the workers/labour unions, government agencies, etc. to come up with the best solution. Dealing with job security issues could potentially create a better culture of commitment among the wildlife law enforcers. If the employee retention rate is addressed, the sustainability of the capacity-building trained wildlife law enforcers could also be addressed (Apale 2018).
6. Creation of the Department of Fisheries and Aquatic Resources. Creating an independent department means strengthening the institutional capacity of the people leading and managing the agency. In 2017, DA only allotted 11% of its annual appropriated budget to the fisheries program of the BFAR (DBM 2017), which is lower than the proposed and requested amount by the bureau. The failure to secure the requested annual budget has affected the financial plan of BFAR in relation to implementing the Amended Fisheries Code. When the Fisheries Code was amended, BFAR proposed investing in technology for intensified surveillance capacity. If BFAR became a national department agency, it could maximise its potential to plan and manage its financial resources to address distinct problems and issues related to fishery sector and CITES implementation for aquatic and marine species.
7. LGUs should strengthen their efforts to enforce the Amended Fishery Code in order to safeguard their respective jurisdictions to address IUU fishing in the country. One strategy in which the LGU can maximise is to strongly engage local communities in tackling IUU fishing in the Philippines. Several studies found out that community-based interventions can complement national/LGU-led law enforcement efforts if local people are motivated to protect their natural resources (Archer et al. 2020, Cooney et al. 2017, Roe & Booker 2019). In reality, the LGUs have the option to create Barangay Fisheries and Aquatic Resources Management Councils (BFARMCs) based on the FAO No. 196 of 2000 from DA-BFAR. The Philippine governance has undergone several paradigm shifts with several fishery policies developed to involve fisherfolk in resource management (Almazan & Vargas 2016). One of BFARMCs functions is to assist the LGU in the enforcement of fishery laws, rules and regulations in municipal waters. If BFARMCs are well empowered, they will serve as key factor in helping manage local resources.

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## 6. Thailand

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### 6.1 Background

Thailand has long been the biggest exporter of wild, dried seahorses, exporting approximately 88% of the total numbers reported for the whole world in the CITES database (Foster et al. 2016). Since 2009, Thailand has been involved in the CITES Review of Significant Trade (RST) process for four species (*Hippocampus kelloggi*, *Hippocampus kuda*, *Hippocampus spinosissimus*, and *Hippocampus trimaculatus*) to determine whether its exports of 3.0–6.5 million seahorses/year (Foster et al. 2016) were detrimental to wild populations. Because Thailand could not make positive NDFs for its large export volumes, Thailand's trade in these four species was considered to raise Urgent Concern in the RST process (Foster 2016, Foster & Vincent 2021).

In 2012 and 2014, CITES issued Thailand with formal recommendations to address its challenges in making positive NDFs for the four seahorse species under RST (full list in Annex II of Foster 2016). As a precautionary measure, Thailand responded to the CITES recommendations by suggesting a maximum export volume (1,500 kg) to exporters (R. Phoosawat, DOF, pers comm); CITES Appendix II species are commonly regulated through nationally specific export quotas (Challender et al. 2015). Such a quota, though not mandatory, sought to ensure export levels did not increase while additional support for an NDF was undertaken. This quota was only 10% of previous export volume, and was considered by the Thai CITES Management Authority to be the maximum sustainable yield of seahorses in Thailand based on fisheries independent trawl surveys (R. Phoosawat, DOF, pers comm, see also Section 6.6.4 below).

Thailand made good progress against many recommendations, but was not on track to complete them all within the agreed timeframe. Therefore, as an interim measure, Thailand decided to cease the export of *Hippocampus* spp. In January 2016 until further notice (CITES 2016a). Thailand was, therefore, eliminated from RST for the four species. Thailand must obtain agreement from the Secretariat and AC Chair for any proposed change in this suspension, providing a justification.

Thailand's export suspension has effectively halted all legal export of seahorses from the country. There is evidence, however, that illegal trade in dried specimens has continued (Foster et al. 2019). This study investigates implementation and enforcement mechanisms at a national level for seahorses. It aims to generate recommendations to assist Thailand's CITES Authorities in improved implementation of the Convention for seahorses, in support of Decisions adopted by all Parties at CoP18.

### 6.2 Methods/Strategy

Dr. Petch Manopawitr has over 20 years of experiences working in biodiversity conservation, environmental protection and sustainability with both national and international organizations in Thailand and Southeast Asia. He has worked with WCS Thailand as Deputy Director (2001-2008), WWF Thailand as Conservation Director (2012-2014), IUCN as Deputy of Southeast Asia Group (2014-2018) and currently serves as technical advisor for ZSL Thailand, WCS Thailand and the Department of Marine and Coastal Resources on the issue of marine protected areas and marine conservation. He received his Ph.D. from Department of Geography, University of Victoria, Canada in 2019, and his dissertation was on the design of a resilient MPA network on the Andaman coast of Thailand.

This study took place from February to August 2021, with further interviews and follow up in November 2021. To collect information for this report, Dr. Manopawitr interviewed a senior official in the Ministry of



Natural Resources and Environment (1) and key government officials in the Department of National Parks, Wildlife and Plant Conservation (n = 3), Department of Fisheries (n = 8), and Department of Marine and Coastal Resources (n = 2). He also interviewed key seahorse researchers in universities (n = 3), one of whom is a member of the IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group (Table 6.1). Some interviews were carried out in person, but due to the COVID 19 pandemic, most interviews were necessarily conducted remotely by phone (Table 6.1).

Information from interviews was supplemented with a literature review based on government reports and publications.

**Table 6.1.** Affiliation of respondents interviewed for this report, including form of interview and information provided.

Stakeholder group	Affiliation	# people interviewed	Form of interview	Information provided
CITES Management Authority	Department of National Parks	3	By phone	Law enforcement, DNP measure in marine parks
CITES Management Authority	Department of Fisheries	1	In person	Overall situation, research and monitoring, IUU
CITES Scientific Authority	Department of Fisheries	7	In person, group meeting	Overall situation, research and monitoring, impact of trade suspension, CITES implementation, law enforcement, outreach
Government	Ministry of Natural Resources and Environment (MONRE)	1	In person	Overall situation, CITES implementation, law enforcement
Government	Department of Marine and Coastal Resources (formerly part of Department of Fisheries)	2	By phone	Captive breeding program, resource monitoring
Academia	Chandrakasem Rajabhat University	1	By phone	Overall situation, research aspect, impact from trade suspension
Academia	Burapha University	1	By phone	Overall situation, research aspect, impact from trade suspension
Academia	Kasetsart University	1	By phone	Thailand Red List, overall situation, research aspect

## 6.3 The Actors

### Management Authorities:

Thailand has two CITES Management Authorities; The Department of National Parks, Wildlife and Plant Conservation (DNP, กรมอุทยานแห่งชาติ สัตว์ป่า และพันธุ์พืช) and the Department of Fisheries (DOF, กรมประมง).

Thailand ratified CITES on 21 Jan 1983. On 23 Jan 1984, The Royal Forest Department (RFD – กรมป่าไม้), which was later reformed to DNP and RFD, designated DOF as the MA for fish and marine species and the Department of Agriculture as the MA for plants.

DNP is an agency of the Ministry of Natural Resources and Environment (กระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม). DNP has a mission to conserve, promote, and restore wildlife and plant species in natural areas by managing both terrestrial and marine protected area in the form of national parks and wildlife sanctuaries. DNP conducts research and develops knowledge to support sustainable management of forest resources and biodiversity. DNP is mandated under the Wild Animal Conservation and Protection Act (B.E.2562; พระราชบัญญัติสงวนและคุ้มครองสัตว์ป่า พ.ศ.2562; latest revision 2019)<sup>76</sup> and the

<sup>76</sup> [https://www4.fisheries.go.th/local/index.php/main/view\\_blog2/55/89699/506](https://www4.fisheries.go.th/local/index.php/main/view_blog2/55/89699/506)

National Park Act (B.E.2562). DNP is also responsible for establishing measures and standards on conservation management and utilization of forest and wildlife including CITES-listed species. According to the Head of the CITES Office in DNP, decisions regarding marine species would be assigned to DOF, but DNP as a main Management Authority can review, offer opinion, and have the final say.

For marine fishes and aquatic fauna, The Fisheries Resources Management and Measures Division of DOF (กองบริหารจัดการทรัพยากรและกำหนดมาตรการ), within the Ministry of Agriculture and Cooperatives (กระทรวงเกษตรและสหกรณ์), is the principal agency that makes decisions about CITES implementation. The Fisheries Resources Management and Measures Division is responsible for conducting research to determine appropriate management measures of fisheries resources in accordance with scientific findings and fisheries laws as well as other relevant legislations. The Division regulates, examines, and issues fisheries permits for both in country and out of country operations. The Division also coordinates with other agencies to regulate workers on fishing boats in accordance with the laws and offers guidance to fisheries provincial committees to resolve conflicts in fisheries.

### **Scientific Authority:**

The Fisheries Resources Conservation and Convention Group (กลุ่มคุ้มครองพันธุ์สัตว์น้ำตามอนุสัญญา) within the Fisheries Resources Management and Measures Division of DOF, is the CITES Scientific Authority of Thailand for marine fishes and aquatic fauna. The Fisheries Resources Conservation and Convention Group is responsible for conducting research on the trade of rare and threatened aquatic species to determine measures to regulate and examine import and export of those species in accordance with the Wild Animal Conservation and Protection Act, CITES and other Conventions, agreements and legislations. The Group is mandated to control, inspect, and issue permits and licenses in accordance with the Wild Animal Conservation and Protection Act, CITES and other Conventions, agreements and legislations. The Group is specifically responsible for CITES implementation including producing legal practice manuals, providing guideline and issuing permits and licenses in accordance to CITES.

### **Enforcement Focal Points:**

The Fish Quarantine and Fishing Vessel Inspection Division (กองตรวจสอบเรือประมง สัตว์น้ำและปัจจัยการผลิต), under DOF, is the CITES Enforcement Focal Point of Thailand for marine fishes and aquatic fauna. The Fish Quarantine and Fishing Vessel Inspection Division is responsible for research and issuing permits or certificates on Import - Export and transit of aquatic animals or fisheries products/production, in accordance with fisheries and other related laws. The Division is mandated to enforce laws in accordance with international trade agreements and other related laws such as Customs regulations and the Wild Animal Conservation and Protection Act, including control, prevention, and suppression of aquatic animal trade.

Because of limited human resources in the Fish Quarantine and Fishing Vessel Inspection Division under DOF, law enforcement for aquatic animals under CITES also involves other CITES Enforcement Focal Points, namely the Royal Customs Department, Natural Resources and Environmental Crimes Suppression Division of the Royal Thai Police Bureau, and DNP. For example, DNP is in charge of marine national parks and has checkpoints along the coast and major transits and operates under Wild Animal Conservation and Protection Act which covers CITES-listed species (all CITES species are included as “regulated species” under the Wild Animal Conservation and Protection Act – see Section 6.6.5).

### **Other relevant agencies**

The main missions of the Department of Marine and Coastal Resources (DMCR, กรมทรัพยากรทางทะเลและชายฝั่ง) are to conserve, restore, and manage marine and coastal resources for the sustainability of Thai marine waters to strengthen the social and economic stability of the country. DMCR is responsible for research, conservation and restoration of marine and coastal resources, including rare and

threatened marine life. DMCR does not have official role under CITES but serves as a technical working group and provides technical services upon request (e.g., coral or cetacean species identification).

DMCR is playing an increasingly important role in marine species conservation relevant to CITES implementation. For example, it can propose species for inclusion under the Wild Animal Conservation and Protection Act. Its mandate is to monitor marine resources outside marine parks (DNP is responsible for monitoring inside MPAs), but DMCR has also started to designate marine protected areas under its own purview.

### **Coordination**

In 2016, DOF set up a national committee to oversee the CITES implementation for trade in significant species, which would include seahorses (based on the fact Thailand was deemed to pose Urgent Concern for some species during the CITES Review of Significant Trade (RST), see also Section 6.4), and the progress towards CITES implementation (DOF Notification 1187/4/2016 and subsequently revised by DOF Notification 785/2018). According to DOF officials, the committee could decide to end the seahorse trade suspension and move toward export regulations, if DOF could present data showing that the trade wouldn't deleteriously affect wild populations. The committee consists of 20 members from senior management level in DOF, a representative from DMCR, a representative from Burapha University's Institute of Marine Science, and is chaired by designated Deputy Director-General of DOF and advised by the Vice Minister of the Ministry of Agriculture and Cooperatives.

The committee has the mandate to:

- 1) Determine study plans on the conservation status of aquatic fauna with significant trade according to CITES regulations.
- 2) Consider relevant implementation measures and monitor outcomes including corrective measures according to CITES regulations.
- 3) Follow up with Fisheries Management Plan and Program Monitoring Plan for CITES listed aquatic fauna species.
- 4) Monitor, assess and analyse problems and barriers including corrective measures and report to CITES Secretariat.
- 5) Set up relevant working groups as needed.
- 6) Implement other tasks as assigned.

## **6.4. History of trade research and CITES activity in Thailand**

1994-1995 – Dr. Amanda Vincent (Project Seahorse) carries out first ever research on seahorse fisheries and trade in Thailand (Vincent 1996). Thailand was found to be a major source of seahorses for international trade, exporting to Mainland China, Taiwan Province of China, and Hong Kong Special Administrative Region of China (hereafter Hong Kong SAR). Customs data from Mainland China and Taiwan Province of China, and anecdotal evidence from Hong Kong SAR, suggested that Thailand exported about 15 tonnes (~5.5 million individuals) of seahorses annually.

1998–1999: Seahorse fisheries and trade in Thailand assessed by interviewing participants at many levels of the trade and corroborating those surveys with official trade documents (Perry et al. 2010). Seahorses were found to be landed primarily as trawl bycatch. Thailand's estimated catch of 6600 kg year<sup>-1</sup> (~ 2.5 million individuals) apparently far exceeded domestic consumption (~520 kg year<sup>-1</sup> = 190,000 individuals). Thailand imported seahorses from and exported to other Asian nations. Trade surveys indicated that Thailand exported at least 5000 kg annually (similar to the estimation of catch), but national Customs records reported 10 500 kg year<sup>-1</sup> in exports (~1.9 million individuals), supported by official import records from Hong Kong SAR and Taiwan Province of China which indicated that Thailand was the source of up to 11 400 kg year<sup>-1</sup> (4.2 million individuals). Fishers and traders in many regions of Thailand reported decreasing availability of seahorses, raising conservation concerns. These apparent declines, in combination with

substantial domestic consumption, point towards the challenges that Thailand faced in establishing sustainable levels of exports under CITES.

2002 – All seahorse species (*Hippocampus* spp.) listed on CITES Appendix II.

2004 – CITES listing implemented in May.

2009 – Thailand was included in the CITES Review of Significant Trade (RST) as a range State for *H. kelloggi*, *H. kuda*, and *H. spinosissimus*.

2011 – Thailand was included in the CITES Review of Significant Trade (RST) as a range State for *H. trimaculatus*.

2011-2012: A study surveyed seahorse trade on the east coast of the Gulf of Thailand (Laksanawimol et al. 2013). Fishers and primary traders were interviewed at 23 fishing ports, docks, and villages along the east coast of the Gulf of Thailand from March 2011 through November 2012. Live seahorses were obtained solely from artisanal fisheries and were mainly supplied for domestic, public, and home aquaria through primary and secondary traders. Live trade comprised four species, *H. kuda*, *H. mohnikei*, *H. spinosissimus*, and *H. trimaculatus*. The majority of seahorse trade was in dried specimens, originating mainly from non-selective trawlers in middle scale fisheries which operated in waters of the 15–50 m depth range, often within the range of seahorse habitats using squid and shrimp trawlers. Three species, *H. kuda*, *H. spinosissimus*, and *H. trimaculatus*, were found in the dried trade. Dried seahorses were mainly exported to other Asian countries such as Mainland China, Taiwan Province of China, and Hong Kong SAR for use in traditional Chinese medicine.

2012 – CITES RST deemed Thailand as posing Urgent Concern for *H. kelloggi*, *H. kuda*, and *H. spinosissimus* and issued 11 recommendations to move permitted exports toward sustainability (AC26, March). In the CITES Trade Database for 2004-2011, Thailand was reported as source of 99, 66, and >99% of wild exports of *H. kelloggi*, *H. kuda*, and *H. spinosissimus* globally.

2013 – Collaborative workshop for making non-detriment findings (NDFs) for seahorses in Thailand (Burapha University, Bangsaen from 10-12 June). The workshop aimed to bring together Thai stakeholders, including CITES Authorities, Department of Marine and Coastal Resources (DMCR), Department of National Parks (DNP), and colleagues from universities and non-governmental organizations, to do four things:

- share and elicit available knowledge on seahorse biology, fisheries, trade, conservation and management;
- discuss techniques in marine science research (e.g., mark-recapture, hotspot mapping, population viability models);
- provide a platform to facilitate ownership and input into design of a step-by-step framework for developing an adaptive management programme and undertaking NDFs;
- design programmes to monitor catch landings (and effort) as a proxy for population assessments, taking into account different gear types and means of extraction.

A full workshop report is on the CITES website<sup>77</sup>. In support of the workshop, an ID guide for Southeast Asian Seahorses was produced and made available in Thai (simplified<sup>78</sup> / complete<sup>79</sup>).

<sup>77</sup> <http://www.cites.org/sites/default/files/common/com/ac/27/E-AC27-Inf-09.pdf>

<sup>78</sup> <https://projectseahorse.org/wp-content/uploads/2021/06/SeahorseIDposter.Thailand.2013Oct.pdf>

<sup>79</sup> [https://projectseahorse.org/wp-content/uploads/2021/06/iSeahorse\\_Underwater\\_SH-SE-Asia\\_Guide\\_Thai\\_LowRes\\_1.0.pdf](https://projectseahorse.org/wp-content/uploads/2021/06/iSeahorse_Underwater_SH-SE-Asia_Guide_Thai_LowRes_1.0.pdf)

2014 – CITES RST deemed Thailand of Urgent Concern for a fourth species, *H. trimaculatus* and issued seven recommendations to move permitted exports toward sustainability (AC27, April). In the CITES Trade Database for 2004-2011, Thailand was reported as source of more than 99% of wild exports of *H. trimaculatus* globally.

2012-2014 – At the request of the CITES Secretariat, the Department of Fisheries developed a collaboration with Project Seahorse (acting as the IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group) to access resources and expertise that could help Thailand meet CITES recommendations and move its trade toward sustainability (NRCT Project I.D.0002/1306). The results of the collaboration enabled Thai Authorities to implement four of the research recommendations from the CITES RST process:

Loh et al. 2016: Species in wildlife trade: socio-economic factors influence seahorse relative abundance in Thailand. The study sought to locate seahorse hotspots in Thailand, places where seahorses are still abundant, and determine factors that could be used to predict seahorse hotspots. Because seahorses have economic value, the study included socio-economic parameters in addition to environmental parameters. From underwater surveys, 46 seahorses from three species were spotted at 13 of 46 sites, with *H. spinosissimus* most commonly observed. The highest seahorse densities were found off Chonburi province within the Gulf of Thailand. Seahorse density and presence were not significantly associated with habitat type, while access to market was the strongest predictor. Seahorses were less abundant in areas with a seahorse market, presumably because proximate seahorse resources in these areas are attractive commodities to extract for fishers. Intense fishing activity has already greatly impacted seahorse populations in Thailand, potentially obscuring natural habitat preferences and leading to population declines.

Aylesworth et al. 2017a: Effects of indiscriminate fisheries on a group of small data-poor species in Thailand. The study estimate that annual catches were more than threefold larger than previously documented, approximating 29 million individuals from all gears. Three fishing gears – two commercial (otter and pair trawl) and one small-scale (gillnet) – caught the most individuals. Results from port sampling and a vulnerability analysis confirmed that *H. kelloggi*, *H. kuda*, and *H. trimaculatus* were the three species (of seven found in Thai waters) most susceptible to fishing. Small-scale gillnets captured the majority of specimens under length at maturity, largely due to catches of juvenile *H. kuda* and *H. trimaculatus*. The finding indicated that Thailand should focus its management efforts on the fisheries with the dominant catch of these species (commercial otter trawls and small-scale gillnets).

Aylesworth et al. 2017b: Generating spatial data for marine conservation and management. This study compared four methods for inferring species distributions of seahorses: the use of (i) fisher interviews; (ii) government research trawls; (iii) scientific diving surveys; and (iv) citizen science contributions. The authors analyzed these four datasets at the genus and individual species levels to evaluate our conclusions about seahorse spatial occurrence, diversity of species present and the cost effectiveness of sampling effort. They found that fisher knowledge provided more information on this data-poor fish genus at larger spatial scales, with less effort, and for a cheaper price than all other datasets. One drawback was that fishers were unable to provide data down to the species level.

Aylesworth et al. 2017c: Seahorses (*Hippocampus* spp.) as a case study for locating cryptic and data-poor marine fishes for conservation. The study used the authors' experience searching for seahorses in Thailand to evaluate two search strategies for marine conservation: (1) determining relative abundance, and (2) searching for presence/absence with detection probabilities. Fieldwork indicated that using the presence/absence framework was more likely to lead to inferences that seahorses could be found in the site than when using the relative abundance framework. This realization would support a commonsense approach, where presence/absence with detection probabilities is centrally important to marine conservation planning for cryptic and or data-poor marine species.

Aylesworth & Kuo 2018: Reporting time period matters: quantifying catch rates and exploring recall bias from fisher interviews in Thailand. Using interview data from fishers in Thailand, the authors investigated (1) how the time period for which fishers report their catch rates (e.g., per day or month) correlates with annual catch estimates, and (2) the potential of recall bias when fishers reported multiple catch rates. They found that the annual catch estimates of fishers who reported on a shorter

time period (haul, day) were significantly higher than those reported on a longer time period (month, year). This trend held true when individual fishers reported over multiple time periods, suggesting recall bias. By comparing fisher reports with external data sets, the authors identified that the mean across all reports was most similar to other data sources, rather than any time period.

Kuo et al. 2018: Changes in the trade of bycatch species corresponding to CITES regulations: the case of dried seahorse trade in Thailand. The researchers carried out 203 semi-structured interviews with traders to estimate the economic scale of Thai seahorse trade, and compared perceived changes with official trade datasets. Even though most seahorses were incidentally caught, dried seahorses were estimated to be worth US\$26.5 million per year for Thai fishers. While official data shows the export volume decreased after the implementation of CITES listing in 2005, respondents did not report a similar trend. However, the prices of seahorses were reported to be increasing.

Aylesworth et al. 2019: Realities of offering advice to governments on CITES. Through a case study, the authors placed themselves in the role of the government of Thailand, facing obligations to seahorses (*Hippocampus* spp.) under the CITES. These obligations include ensuring that its exports of seahorses do not damage wild populations. They applied a CITES-approved framework (which two of the authors had developed) to evaluate the risks of such exports to two seahorse species. They based the analysis on information in published and grey literature, local knowledge, citizen science data, results of government research, and expert opinion. The study determined that to meet CITES obligations, exports of both species would need to be prohibited until more precautionary adaptive management emerged. The risk of any exports of *H. trimaculatus* was above a tolerable level because of a lack of appropriate management to mitigate risks. In contrast, the risk of any exports of *H. kuda* could become tolerable if monitoring were put in place to assess the species' response to management. The process the authors developed for Authorities to determine risk in response to CITES guidelines was challenging to implement even without the need for government to consider social implications of conservation action. Despite the imperfections of the risk evaluation, however, it still served to support adaptive management.

2016 – Thailand was considered to have met or partially met 10 of 11 CITES recommendations for *H. kelloggi*, *H. kuda*, and *H. spinosissimus* (at the 67<sup>th</sup> meeting of the CITES Standing Committee – SC67, September). However, as an interim measure, Thailand decided to cease the export of *Hippocampus* spp. in January 2016 until further notice. Thailand was, therefore, eliminated from RST at SC67 for *H. kelloggi*, *H. kuda*, and *H. spinosissimus*. Thailand must obtain agreement from the Secretariat and AC Chair for any proposed change in this suspension, providing a justification.

2016-2017 – A Project Seahorse study investigated the illegal trade of seahorses, among the first taxa of marine fishes to come under global trade restrictions (Foster et al. 2019). To investigate global compliance, 220 interviews were conducted with traders in Hong Kong SAR, the largest entrepôt for dried seahorses. Traders reported obtaining dried seahorses from many countries with bans or suspensions on seahorse exports. **Traders reported Thailand as supplying the highest number of dried seahorses imported into Hong Kong SAR at that time.** Almost all dried seahorses in Hong Kong SAR (95%) were reportedly imported from source countries that had ended legal exports, indicating a widespread lack of enforcement.

2017 – Thailand was considered to have met or partially met three of seven recommendations for *H. trimaculatus* (SC69, November). However, as an interim measure, Thailand had already decided to cease the export of *Hippocampus* spp. in January 2016 until further notice. Thailand was, therefore, eliminated from RST at SC69 for *H. trimaculatus*. Thailand must obtain agreement from the Secretariat and AC Chair for any proposed change in this suspension, providing a justification.

## 6.5 Nature of export bans/suspensions

There is a long-standing export ban on wild live seahorses from Thailand. DOF reported to CITES in 2012 that “The export of live *Hippocampus* spp. caught in Thai waters was prohibited since 1998” (DOF report to the CITES Secretariat mentioned in SC63 Doc14, CITES 2013). Research for this report suggests this is in line with the Thai Goods Export and Import Act B.E. 2522 พระราชบัญญัติการส่งออกป็นอกและการนำเข้ามาในราชอาณาจักรซึ่งสินค้า (1979),<sup>80</sup> which according to a legal officer at DOF prevents the live export of all wild-caught marine fishes and snakes including sea snakes.

On 25 December 2015, DOF issued a notification that it was suspending export of seahorses from 1 January 2016 until further notice. The notification did not specify the scope of the export suspension, but DOF respondents, interviewed for this report, clarified it to apply to international export of **dried** specimens of all species.

DOF explained that the export suspension should help to reduce exporter demand, since exporting seahorses will be difficult, and the potential risks would outweigh any benefits to their business.

The notification cited the reason for the suspension as a lack of information with which to implement the CITES Appendix II listing. Discussions with DOF for this report indicated that while it tried to comply with CITES up to a point, the risk of a CITES-imposed trade suspension was too high and so it decided to suspend exports. The main challenge from their perspective is a lack of capacity to fulfill the requirement for NDFs. DOF respondents considered that further study is required to ensure the seahorse trade is sustainable and does not harm the wild populations before the suspension can be lifted. However, according to respondents consulted for this report, such research has not yet been initiated.

As the suspension was declared by a DOF notification, it can also be changed under authority of DOF. Since they have set up the national committee to assess the progress of this issue (see Section 6.3), any decision to lift the suspension would need to pass through this committee. For example, if DOF decided that it wanted to reopen the trade, they would present information to the committee for approval. The Director General of DOF could then issue a new notification about the change.

## 6.6 Understanding of seahorse fisheries, trade and bans/suspensions

### 6.6.1. What do respondents understand/know about seahorse fisheries and trade?

No one interviewed for this report really offered new insights about seahorse fisheries or trade. There had apparently been no further efforts to document or monitor seahorse fisheries or trade specifically since Project Seahorse collaborations in 2012-2014 (see Section 6.4). Seahorses are now monitored as part of the annual fisheries resource monitoring program (see Section 6.7), but no results on seahorses monitoring have yet been summarized or publicized.

With respect to fisheries, all respondents recognized that seahorses in Thailand are mainly caught by trawlers as bycatch, and some also noted they are obtained as bycatch in small-scale fisheries.

With respect to trade, DOF respondents reported that there was an unknown level of illegal trade, because trade suspensions for seahorses were hard to enforce. That said, they considered that exports volumes had declined since the suspension, such that the level of illegal trade was not a large volume. They questioned the validity of Project Seahorse trade research based on interviews, but they were not monitoring the trade to probe the results.

When asked about the consequence of the suspension on seahorse exporters, DOF felt that it had not affected their business much as they exported many species – and had continued to export other species to Chinese markets such as sea cucumbers and gecko. One respondent from academia reported that since the trade had

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<sup>80</sup> <https://www.fisheries.go.th/management/weblaws/EXPORT1.pdf>

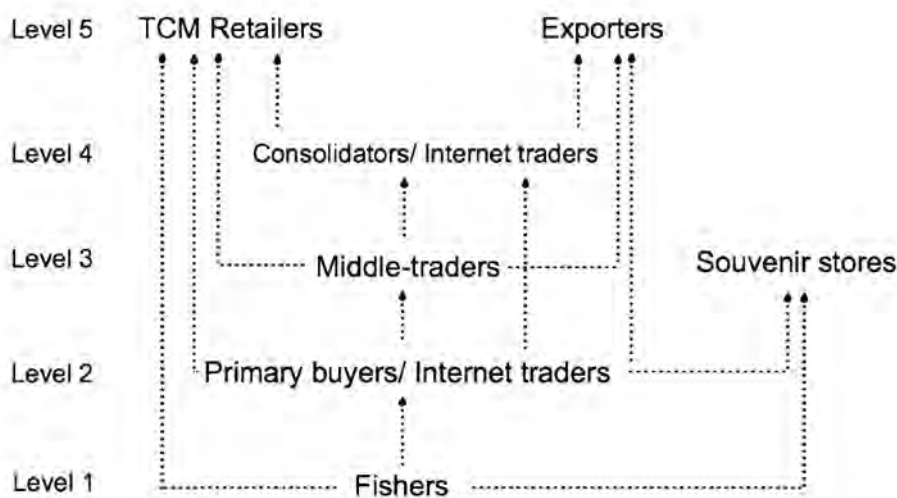
gone underground it was much harder to monitor and collect data. Even though domestic trade is not suspended, mid-level traders are still more cautious about talking to researchers. It should be noted, however, that there is not much domestic consumption of dried seahorses in Thailand except in Bangkok’s Chinatown, and so most seahorses entering the supply chain are likely destined for export.

**6.6.2. What is respondent awareness and use of existing tools and information for seahorses?**

The number of in-country seahorse experts in Thailand is very limited (fewer than five) and only seahorse experts and key government agencies were aware of existing tools and information for seahorses (e.g., NDF framework, trade/fisheries studies and ID guides). DOF reported that it considered the NDF framework to be very data intensive and challenging to fulfil in data poor environment. The management agencies interviewed for this report suggested that the NDF framework should be more streamlined and practical. Such challenges may represent major barriers to lifting the trade suspension.

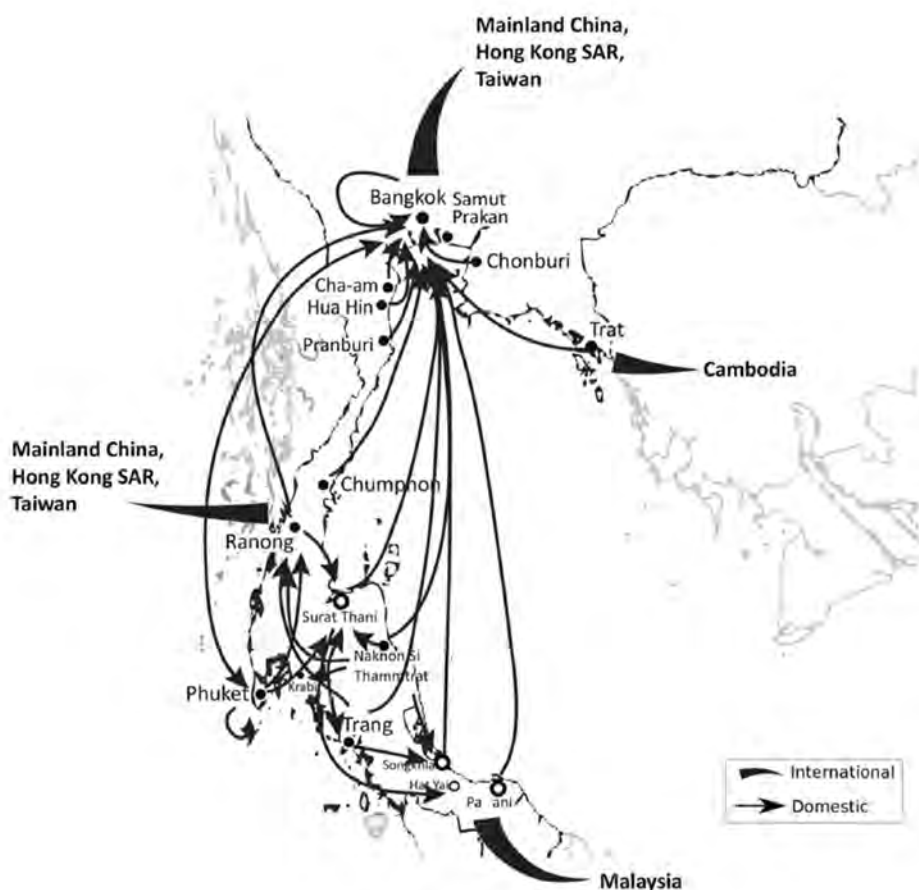
**6.6.3. Seahorse export/import paths**

Respondents for this study didn’t offer any information about seahorse trade routes, but past research gives insight into the path of seahorses out of Thailand. Kuo et al. (2018) categorized the respondents according to their role in, or involvement with, the seahorse trade, including fishers, buyers, consolidators (wholesalers), domestic retailers, exporters, government officials, and other experts. Fishers and traders were further categorized into different trade levels (Figure 6.1). For example, fishers who caught seahorses directly were defined as “level 1”, collectors that bought directly from fishers were “level 2”, and so on. Potential trade routes for dried seahorses in Thailand as deduced from trade interviews is available in Figure 6.2.



**Figure 6.1.** Dried seahorse trade structure in Thailand. Arrows indicate the direction of trade flow, from oceans to export (Kuo et al. 2018).





**Figure 6.2.** Potential trade routes for dried seahorses in Thailand as deduced from trade interviews (Kuo et al. 2018).

Fish Quarantine and Fishing Vessel Inspection Division under DOF has 27 major checkpoints throughout the country (Figure 6.3). Their mandate is to serve as control centers for fishing vessels entering and exiting the area, according to the fisheries law. The Division office is responsible for research, prevention and suppression of illegal catch, and ensuring catch and aquatic products are in compliance with relevant laws. Officials at checkpoints analyse information related to control and inspection of fishing vessels and aquatic products. They monitor import/export of aquatic animals and in-country illegal trade both at the border and road checkpoints. Technically, they are the frontline to check for illegal export/smuggling of seahorses. These checkpoints play a crucial role in effective law enforcement which should support enforcement monitoring regarding the seahorse export suspension.



**Figure 6.3.** Locations of 10 major checkpoints of the Fish Quarantine and Fishing Vessel Inspection Division under DOF. Zone 1 (Chiang Rai), Zone 2(Nong Khai), Zone 3 (Bangkok), Zone 4 (Sraekaw), Zone 5 (Samut Sakhon), Zone 6 (Prachuap Khiri Khan), Zone 7 (Surat Thani), Zone 8 (Songkhla), Zone 9 (Satun), Zone 10 (Phang Nga).

#### 6.6.4. Seahorse conservation status and regulations

##### Conservation status

Thailand has a National Red List and all species of the seahorse were classified as Vulnerable (Vidthayanon 2005):

- Hippocampus comes*
- Hippocampus histrix*
- Hippocampus kelloggi*
- Hippocampus kuda*
- Hippocampus mohnikei*
- Hippocampus spinosissimus*
- Hippocampus trimaculatus*

The recent Thailand Red List assessment (2021 per communication with Vidthayanon) has classified *H. kuda*, *H. spinosissimus*, *H. trimaculatus* as EN and the rest as VU. The updated National Red List is scheduled to launch in 2022.

##### Regulations

There are no seahorse specific regulations in Thailand outside the export suspension discussed in Section 6.5. That said, DOF has implemented a trade rule in the past, and – according to documents submitted to CITES in response to the RST, and confirmed by DOF respondents interviewed for this report – has also explored the idea of rules around seahorse extraction.

#### *Trade management:*

DOF officials interviewed for this study reported that before the trade suspension, and in response to the RST, the Thai CITES Authorities implemented a total export quota of 1500 kg (~550,000 individuals). They explained that, in 2015, DOF informed CITES that there were only 9-10 companies exporting dried seahorses as part of their business. Most of these companies also exported other marine and wild-caught products e.g., sea cucumber, dried gecko, earthworm, orchid. DOF respondents confirmed that the companies were consulted and informed about the quota. Such a quota sought to ensure export levels did not increase while additional support for an NDF was found. This quota was only 10% of Thailand's previously reported export volume, and was considered by DOF as the maximum sustainable yield of seahorses in Thailand. The quota was supposedly in place for just one year before DOF declared the export suspension.

#### *Fisheries management:*

During interviews for this report, DOF respondents shared that they did some fisher education and outreach in response to the RST, around encouraging fishers to follow two direct seahorse management measures. The first is that fishers return any seahorse smaller than 10 cm back to the sea. They further provided information to the first level traders about only buying seahorses greater than 10 cm. Their aim was to ensure that seahorses smaller than 10 cm are not involved in the trade, as per the advice in CITES Decision 12.54.<sup>81</sup> The second measure was encouraging fishers to return pregnant males back to the sea. DOF reported that this measure would be familiar to many fishers since Thailand has similar recommendations related to pregnant crabs. It is unclear if these measures were ever implemented by fishers or if they are still being encouraged. It must also be highlighted that these measures are not pragmatic for trawled seahorses (Foster & Vincent 2016), which is the main method of seahorse capture in Thailand.

After the export suspension was declared, DOF was reported in the media declaring a suspension on target fishing of seahorses (see Section 6.6.6. for details), though it was never implemented. This would, however, have little impact on seahorse conservation as almost all catch is incidental.

### **6.6.5. Other relevant laws and regulations**

#### **Wild Animal Conservation and Protection Act (1992, latest revision 2019)**

The common approach for providing protection to native species is listing them under Wild Animal Conservation and Protection Act (พระราชบัญญัติสงวนและคุ้มครองสัตว์ป่า พ.ศ.2562; latest revision 2019).<sup>82</sup> There are three categories of species under this Act:

1. Reserve species – only 19 species, some of which are extinct, but possessing parts is illegal.
2. Protected species – “a wild animal which is essential for the ecosystem or of which the population has a tendency to decrease to the extent likely to affect the ecosystem, as provided in this Act.”
3. Regulated species – “a wild animal which is afforded protection under the Convention on International Trade in Endangered Species of Wild Fauna and Flora and any other wild animal necessitating appropriate control measures, as provided in this Act.”

DMCR has played a key role in adding a number of marine species to be protected by the Act. In recent years, DMCR has been successful in adding four more marine endangered species to the list of “reserved species” (the highest categories for protection) and 16 marine species to the list of “protected species”.<sup>83</sup>

DMCR had proposed all seven seahorse species found in Thailand to be designated as protected species, which would make it illegal to catch, possess, or sell specimens. DOF did not support the idea because most seahorses are obtained as bycatch, and the penalties to those fishers would be unfair. This same argument has been used against listing sharks as protected species as well.

<sup>81</sup> <https://cites.org/sites/default/files/eng/notif/2004/033.pdf>

<sup>82</sup> [https://www4.fisheries.go.th/local/index.php/main/view\\_blog2/55/89699/506](https://www4.fisheries.go.th/local/index.php/main/view_blog2/55/89699/506)

<sup>83</sup> <https://www.bangkokpost.com/thailand/general/1489430/12-more-threatened-marine-species-now-on-protected-list>  
[https://thainews.prd.go.th/th/website\\_th/news/print\\_news/WNEVN6012220010007](https://thainews.prd.go.th/th/website_th/news/print_news/WNEVN6012220010007)

A joint committee between DMCR and DOF concluded that further study is needed both in protected areas and fisheries areas, as well as fishing gears that cause bycatch of seahorse. There is no plan to carry out the research, but discussion with respondents for this report suggested it can be mobilized. Respondents from DNP, DMCR, and prominent marine conservationists supported the idea for seahorses to become protected species.

One challenge is that there are no comprehensive implementing regulations in support of this Act, because the details such as the list of regulated species would need to be specified in the ministerial regulations. The ministerial regulations were supposed to be finalized within two years of the Act being enacted. This was scheduled to be the end of November 2021 but the draft has not been finalised by DNP.

### Other regulations

Thailand's Ministry of Natural Resources and Environment and Ministry of Agriculture and Cooperatives have several spatial and temporal management measures that afford protection for seahorses, including marine protected areas, trawl exclusion zones, and fishery seasonal closures.

The ability of these measures to reduce pressures on seahorses depends on the species distribution. For example, a study that applied the NDF framework for seahorses to two species revealed that Thailand's designated spatial and temporal gear restrictions could—if well implemented—mitigate risks for *H. kuda* but not *H. trimaculatus* (Aylesworth et al. 2019). All documented sightings of *H. kuda* occurred inside at least one of the marine management areas. Just 8% of sightings occurred within national parks, but this may have reflected limited sampling effort in these areas. All sightings for *H. kuda* occurred in designated no-trawl zones, and 74% of sightings were in areas with seasonal fishing closures, which specifically address gillnets, the main fishing pressure on this species. On the other hand, no existing management measures mitigated risks for *H. trimaculatus*. Only 6% of 556 sightings of *H. trimaculatus* occurred inside all managed areas combined, and 2% of sightings occurred in national parks or areas with seasonal fishing closures. Just 3% of sightings occurred in the no-trawl zones (spatial gear-restricted area).

### Marine Protected Area

Thailand has established protected areas covering 18,136 km<sup>2</sup> of coastal and marine areas and about 5.6% of the total marine area. Excluding all fishery management zones, the latest MPA coverage and the gap towards the 10% CBD target are shown in Table 6.2. Of the total MPA area, about 31% would be classified as no-take area by law (i.e., marine national parks, IUCN Category II) and this area accounts for only 1.76% of the total marine area. In fact, many marine national parks in Thailand allow fishing activity, rather than being no-take areas (Lunn & Dearden 2006). The country still needs to protect an additional marine and coastal area of 14,212 km<sup>2</sup> to reach the CBD target of at least 10% of coastal and marine areas, and the target is changing to 30% by 2030.

DMCR's relatively new Marine and Coastal Resource Promotion Act (2015; พระราชบัญญัติส่งเสริมการบริหารจัดการทรัพยากรทางทะเลและชายฝั่ง พ.ศ. 2558)<sup>84</sup> offers a lot of opportunity to create additional MPAs. DMCR's 10-year MPA target (2016-2025) listed 35 MPAs with a total area of 14,330 km<sup>2</sup> to be established. By design, DMCR MPAs would likely be multiple-use areas rather than no-take zones. Nevertheless, there will be measures and regulations to ensure resource use in the MPA is sustainable. There is a need for Thailand to scale up its MPA coverage as well as expand strict protection areas throughout the country.

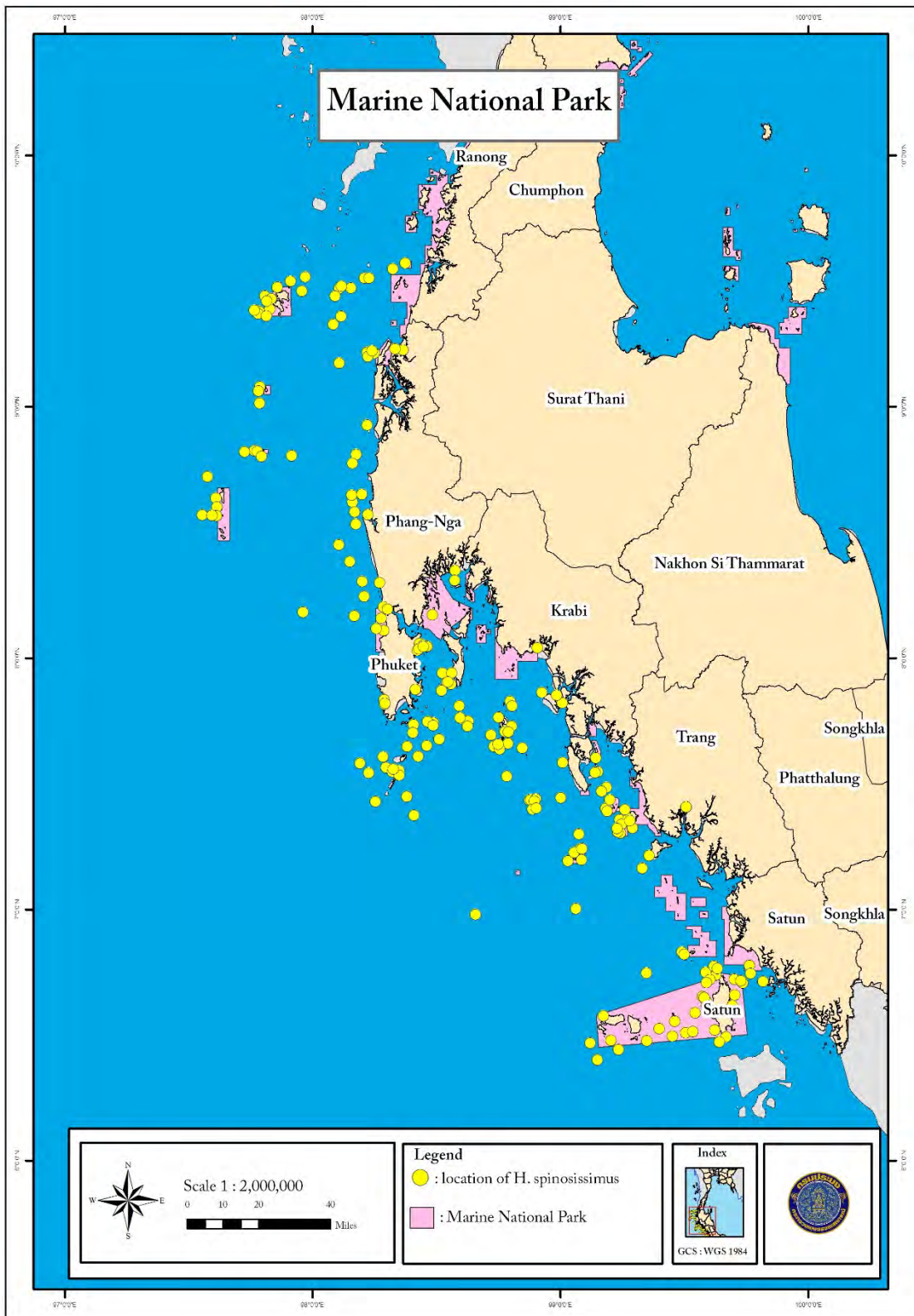
<sup>84</sup><https://www.dmcr.go.th/detailAll/11145/doc/81/>; <https://www.dmcr.go.th/detailAll/22210/nws/85n>

**Table 6.2.** Thailand MPA coverage and the gap towards 10% Aichi Target (DMCR 2021)

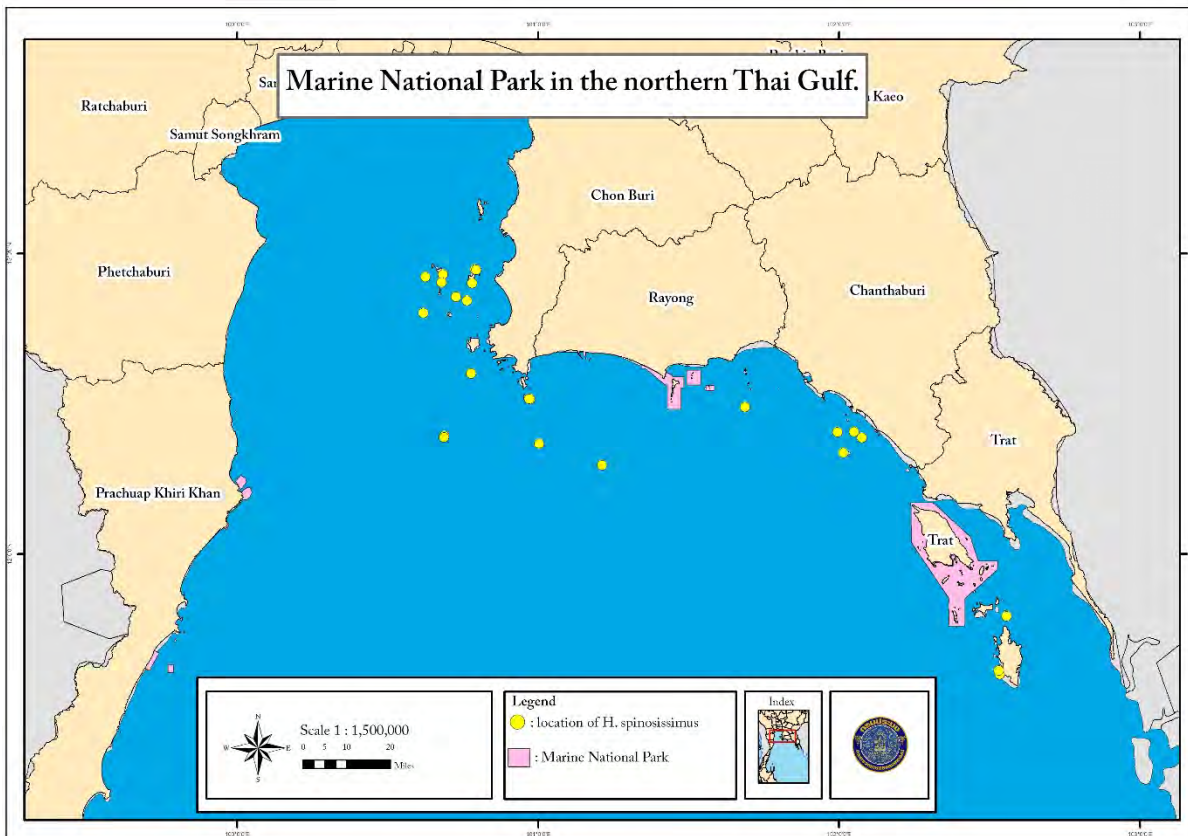
Type	No.	Area (km <sup>2</sup> )	Coastal and Marine Area	IUCN Categories
National Park (DNP)	22	6,440	5,716	II
Non-hunting Area (DNP)	6	1,536	1,138	IV
Mangrove Conservation Area (DMCR)	160	2,304	2,304	IV
Biosphere Reserve (MONRE)	1	246	246	IV
Species Conservation Area (DoF)	56	167	167	IV
Environmental Protection Area (ONEP)	6	14,974	9,530	VI
Total Area			19,101	
Actual area excluding overlapped jurisdiction			18,136	
Thailand's Exclusive Economic Zone (EEZ)			323,488	
Current MPA coverage			5.6%	
Target of 10% MPA			32,348	
Additional Area needed to reach 10%			14,212	

\*This classification excluded 25 Fisheries Management Areas with total area of 50,814.94 km<sup>2</sup>

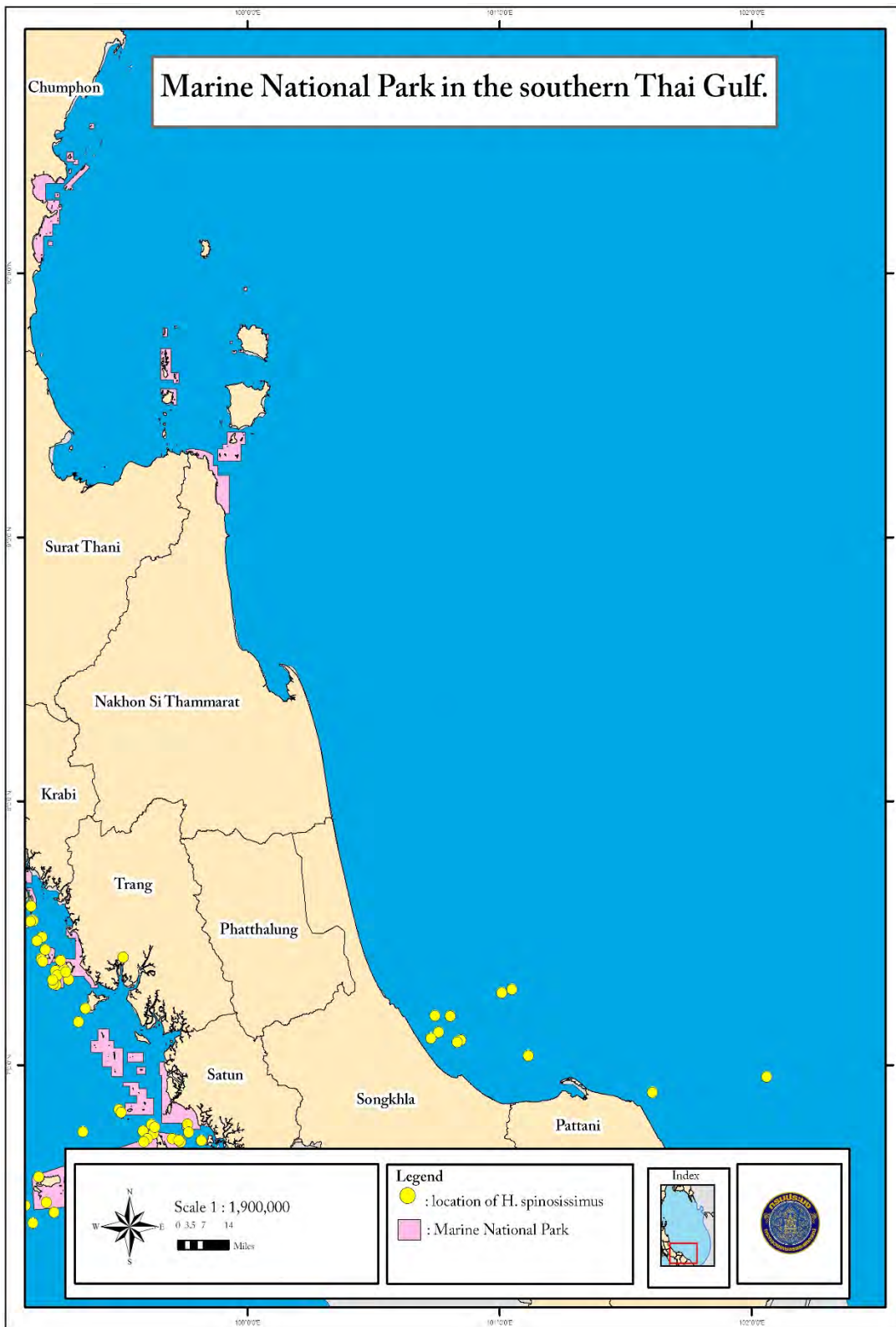
Thailand's National Parks in marine areas (Figures 6.4, 6.5 and 6.6) include coral reef, seagrass, mangrove, and soft bottom areas, all of which are known habitats for seahorses. Within the National Parks no commercial fishing and small-scale fishing are allowed, although small-scale fishing does take place and is typically overlooked. These maps were created during collaborative research between DOF and Project Seahorse. They show the known distribution of one seahorse species based on government trawl surveys, scientific surveys and citizen science contributions. Maps for other species can be found at Aylesworth 2016, Aylesworth et al. 2019, CITES 2015).



**Figure 6.4.** Thailand's marine national parks on the Andaman Sea and documented locations of *Hippocampus spinosissimus* based on DOF research trawls, scientific surveys carried out by Project Seahorse and community science contributions to iSeahorse.org (Project Seahorse/DOF research reported in SC66 Doc 31.1 Annex 3, CITES 2016c).



**Figure 6.5** Thailand's marine national parks in the upper Gulf of Thailand and documented locations of *Hippocampus spinosissimus* based on DOF research trawls, scientific surveys carried out by Project Seahorse and community science contributions to iSeahorse.org (Project Seahorse/DOF research reported in SC66 Doc 31.1 Annex 3, CITES 2016c).



**Figure 6.6.** Thailand's marine national parks in the Southern Gulf of Thailand and documented locations of *Hippocampus spinosissimus* based on DOF research trawls, scientific surveys carried out by Project Seahorse and community science contributions to iSeahorse.org (Project Seahorse/DOF research reported in SC66 Doc 31.1 Annex 3, CITES 2016c).



### *Trawl Exclusion Zones*

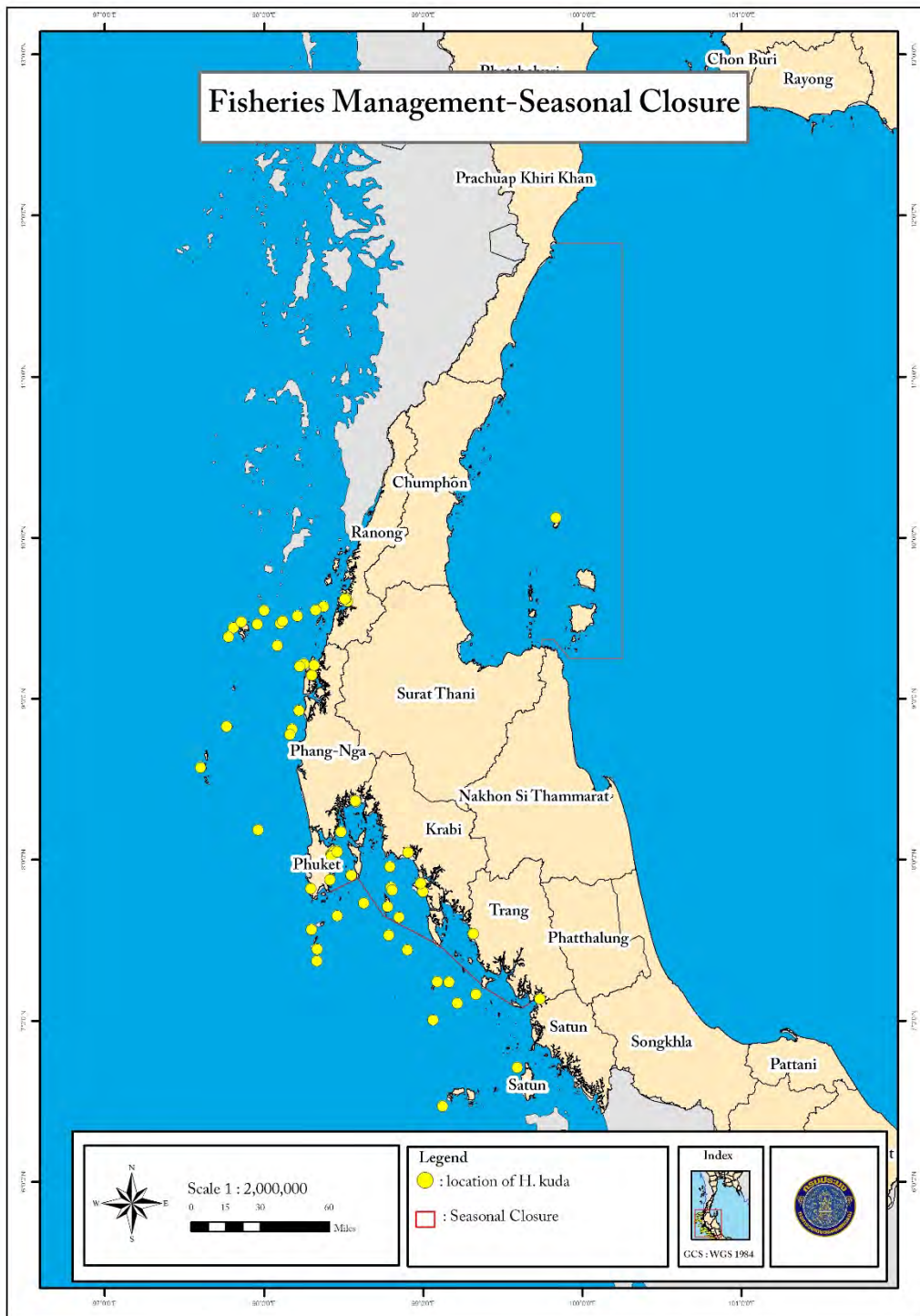
The recent Royal Ordinance for Fisheries B.E. 2558 (2015; พระราชกำหนด การประมง พ.ศ. 2558)<sup>85</sup> prohibits bottom trawlers and pushnets from fishing within 5.4 km of the shoreline. This measure set aside the coastal areas for small-scale fishers throughout the Gulf and Andaman coasts. Enforcement of this measure has been strengthened by the fact that all large fishing vessels (larger than 30 gross tons) must carry a Vessel Monitoring System that is monitored by the Fisheries Monitoring Centre under the Department of Fisheries and Thailand Maritime Enforcement Coordinating Centre. Data on the effectiveness of the trawl exclusion zones was not made available for this report.

### *Seasonal Closures*

The Thai Department of Fisheries has implemented three seasonal closures aimed at protecting spawning and recruitment of juvenile fishes in key areas. The seasonal closures are located in Phang-nga Bay, in the Upper Gulf of Thailand, and from Prachuap Khiri Khan south to Surat Thani Bay (Figure 6.7). The seasonal closure in Phang-nga Bay is from 1 April to 30 June and applies to all commercial and small-scale fishers. The seasonal closure in the upper Gulf of Thailand applies to all commercial fishers and is from 1 July to 30 August. The seasonal closures off Chumphon and Prachuap Khiri Khan also apply to all commercial fishers but from 15 February to 15 May. During these times, small-scale fishers would be allowed to continue operating in the upper Gulf of Thailand and the impact on seahorse bycatch is not well understood. The reduced fishing effort from commercial fishers during seasonal closure periods may (or may not) help with conservation of seahorses; its effectiveness could not be determined because there is no effective seahorse-specific monitoring program.

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<sup>85</sup><https://www.fao.org/faolex/results/details/en/c/LEX-FAOC159730>; [https://www4.fisheries.go.th/file\\_footer/20160517105511\\_file.pdf](https://www4.fisheries.go.th/file_footer/20160517105511_file.pdf). The Second Royal Ordinance for Fisheries 2017 (พระราชกำหนดการประมง (ฉบับที่ 2) พ.ศ. 2560) was produced to clarify several issues, including some definitions and terms e.g., the definition of commercial fisheries, in order to prevent loopholes in which commercial fishing vessels could disguise as small-scale fishing boats: [https://www4.fisheries.go.th/local/file\\_document/20190620155834\\_1\\_file.pdf](https://www4.fisheries.go.th/local/file_document/20190620155834_1_file.pdf)



**Figure 6.7.** The Phang-nga Bay and Prachuap Khiri Khan Seasonal Closures for fishery management and documented locations of *Hippocampus kuda* based on DOF research trawls, scientific surveys carried out by Project Seahorse and community science contributions to iSeahorse.org (Project Seahorse/DOF research reported in SC66 Doc 31.1 Annex 3, CITES 2016c).

### *Additional Fisheries Management Measures*

Several provincial fisheries management measures may afford protection to seahorses and their habitats. In Samut Sakorn province, no dredges are allowed. In Trang province there are several locations where fishing is not allowed in seagrass areas. No boats with surrounding lights (e.g., squid and anchovy boats that use lights to attract squid/fish) or shellfish dredges are allowed in Trat province. Beam trawls are not allowed to operate in Chonburi province. Shellfish dredges and surrounding nets (i.e., purse seines) are also prohibited off Prachuap Khiri Khan. Effectiveness of these management measures largely depends on the cooperation between small-scale fisher groups and DOF officials. Under the new legislations for both DMCR and DOF, each province is required to formulate a provincial committee to oversee fisheries and marine and coastal resource issues. This committee is composed of various government agencies as well as civil society organisation members.

This has further encouraged more organised structure and cooperation among community-based conservation groups and small-scale fishers. This kind of multi-stakeholder group has taken advantage of improved and timely communication channels for example, the messaging application such as LINE, to exchange and share useful information among group members. This information exchange allows timely reporting of illegal incidents and improve compliance because the report is often evidence-based accompany with photos taken by group member or associates. If no action was taken, the idea is that the evidence can be shared with reporters, who in turn would use public pressure to encourage government action.

### *Enhancement of habitat*

DoF, DMCR, and the Royal Thai Navy have installed artificial reef units in numerous locations in the Andaman and the Gulf of Thailand. The artificial reefs are intended to protect coastal fishing grounds from encroachment by trawlers and also provide additional habitat for juvenile fishes. Research by the DOF and Project Seahorse in 2016 has identified at least one of these artificial reefs as having one of the highest densities of seahorses in all of Thailand. Many of the other DOF artificial reefs could be acting to enhance areas around Thailand as habitat for seahorses. However, the positive outcomes of artificial reef are not conclusive since the improved abundance may result from the new habitats drawing fish from surrounding areas, thereby concentrating and not enhancing the numbers. Furthermore, the concentration of fish on artificial reefs may make for easier fishing and lead to depletions if not carefully monitored. In the practical manual for artificial reef formation by DOF (2016), post monitoring and evaluation is strongly recommended. This monitoring program should be strengthened to guide further management action and ensure positive outcome for seahorse and biodiversity.

### *New Fisheries Management Legislation*

Thailand endorsed a new Royal Ordinance for Fisheries in November 2015 in an attempt to reform its fishing laws and combat IUU fishing. In April 2015, the European Union announced that Thailand was in breach of its illegal, unreported, and unregulated (IUU) fishing regulations, and imposed an IUU yellow card on the Thai government (Wongrak et al. 2021). Thailand was given a set timeframe to comply with its measures else the EU impose further sanctions, such as prohibiting Thailand from exporting fishery products to EU countries. In response, Thailand has issued many new policies and regulations related to trawlers. The Marine Fisheries Management Plan 2015-19 (FMP; แผนการบริหารจัดการประมงทะเลของประเทศไทย พ.ศ. 2563-65)<sup>86</sup> details what actions and management measures are required to implement Thailand's Marine Fisheries Policy of transforming what is now essentially an open-access fishery into a limited-access fishery based on balancing fishing effort with the productivity of the resources in a bid to achieve maximum sustainable yield (MSY).

According to the DOF FMP document, the first priority is to remove all unlicensed bottom trawlers and ban all push netters from operating. As part of this process, the DOF completed a census of all fishing registered boats by province and gear type in 2015, totaling 42,512 boats. Of these registered boats, 4,087 were bottom

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<sup>86</sup> <https://www4.fisheries.go.th/index.php/doffile/fkey/ref81798>

trawlers. Estimates of illegal (unlicensed) trawlers and push netters totaled 2,051 vessels. The elimination of these vessels would decrease the fishing effort by 12.90 million hours of fishing effort, or 35.6% of present level. Thailand is working to remove these vessels from operation through three measures aimed to increase surveillance – port-in-port out inspections, VMS, and coordination of patrol vessels and local community.

As part of the new fisheries measures, Thailand created the port in-port out system, where boats must check-in with authorities before they come into the port to unload catch and before they leave the port for fishing. At this check-point, numerous documents, crew and the boat itself are inspected to ensure compliance with the many regulations relating to operation. The following documents are checked: boat registration, fishing license registration, fishing gear on board the boat, labour (crew) certifications, safety equipment, captain's license, engineering license, and several others. The new Royal Ordinance, including the beginning of port-in port-out measures went into effect May 1<sup>st</sup> 2016, but boats were given a 2-month grace period (until July 1<sup>st</sup>) to ensure all the paperwork was in order. All boats not in compliance with all paperwork are not allowed out to fish. No data were available on how well the system was working.

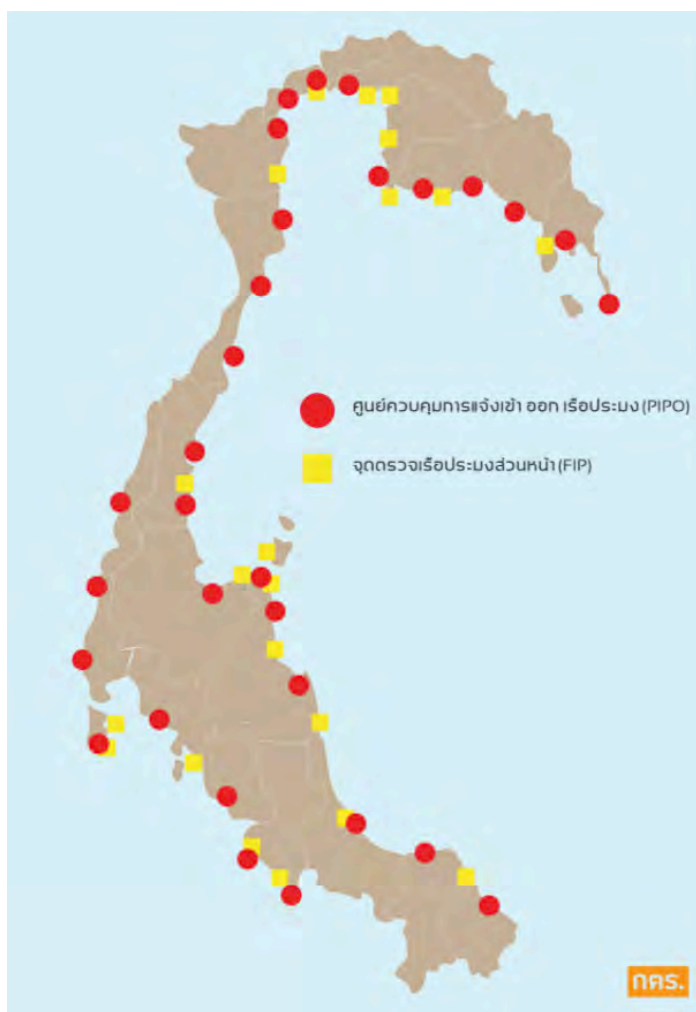
As part of the new Royal Ordinance, all vessels over 30 m in length are also required to have a vessel monitoring system (VMS) in place. The Department of Fisheries is currently updating its capacity to administer the VMS system and is working to install VMS on all vessels from 20-30 m in length. The VMS warns of the risks of vessels entering the prohibited area such as National Parks or Seasonal Closures, and will help ensure compliance and enforcement of these management measures.

The final enforcement measure is coordination of patrol vessels and local community. This is to help strengthen and build programs of community-based management where a community can play an important role in monitoring and surveillance for illegal activities in coastal waters.

Under the National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing: NPOA-IUU, Thailand has put in place mechanisms to regulate fishing activities including improving fishing laws and regulations, introducing vessel monitoring and traceability systems and strictly enforcing the laws. According to DOF respondents interviewed for this report, the plan has resulted in significantly improved capacity for DOF e.g., improved Monitoring Control and Surveillance Center (MCS) that aligned with IPOA-IUU, 30 new Port In-Port Out Controlling Center (PIPO) centers, and 21 new Forward Inspection Point (FIP) (Figure 6.8).

Since the FMP was implemented, Thailand's efforts to tackle IUU fishing have been recognized by the Food and Agriculture Organisation (FAO) and the European Union (EU). Indeed, the EU dropped the yellow-card status in 2019 after finding the country had aligned its legal and administrative systems with its international obligations to fight IUU fishing.

Thailand's efforts to address its IUU issues have been documented to have an impact on the social sustainability of its fishing industry (addressing issues such as forced or indentured labour; Wongrak et al. 2021), but a lack of available data means it is still unclear whether it has improved the environmental sustainability of Thai fisheries.



**Figure 6.8.** Locations of 30 new Port In-Port Out Controlling Center (PIPO) centers (in red) and 21 new Forward Inspection Points (FIP, in yellow) along the Thailand's coastline.

#### 6.6.6. Seahorse seizures

According to DOF, there have been no seizures of seahorses since 2015. The two last major seizures were on 1 April 2014 at Suvarnabhumi Airport, Bangkok (9 kg of dried seahorse) and on 31 August 2015 at Chiang Saen port on the Mekong River, Chiang Rai province on the shipping route to China (49 kg of dried seahorse). DOF shared that intercepting illegal exports is very challenging because seahorses are easy to conceal.

Although domestic trade is not suspended, in January 2018 a seafood stall in Pattaya was reported selling seahorse kebabs to Chinese tourists for 150 baht apiece.<sup>87</sup> The food stall was initially ordered to stop selling grilled seahorses and had been shut down after photos surfaced on social media. The vendor reported that she had been selling the seahorses for the past month and bought seahorses for 80 baht apiece from a medicine shop in Yaowarat (Bangkok's China Town).

The incident in Pattaya led DOF to announce to the media that commercial fishing of seahorses would be banned within a month (January 2018).<sup>77</sup> According to Deputy DG of DOF, Umaporn Pimolbutr, “the department plans to issue a ban on fishing for seahorses in all Thai waters soon.”<sup>78</sup> Another article reported that the proposed ban would be declared under Section 71 of the Emergency Decree on Fisheries 2015, and allow the Thai authorities to close loopholes used to capture wild seahorses for commercial gains or for fishing trawlers to stockpile incidental catches of seahorses to sell as an ingredient in Chinese medicine.<sup>88</sup> However, in the first article, Umaporn stated that the ban would only apply to target fishing, “They can only

<sup>87</sup> <https://www.bangkokpost.com/thailand/general/1400930/seahorse-kebabs-spur-fishing-ban>

<sup>88</sup> <https://www.nationthailand.com/in-focus/30337148>

sell them if they are caught accidentally”.<sup>77</sup> Thus it is unclear how the ban would support seahorses which are primarily caught as bycatch. However, no formal announcement has been made until now.

## 6.7 Challenges and opportunities

### Challenges

During interviews, DOF respondents reported that the key challenge they face in implementing CITES for seahorses lies in the limited capacity of the CITES Management and Scientific Authorities to conduct a detailed study of seahorse populations, which DOF sees as an important baseline for NDF to allow sustainable trade. However, it should be noted that there exists a great deal of baseline information on seahorses in Thailand (see Section 6.4), which has been applied in an NDF context (Aylesworth et al. 2019). While new information would help to advance an NDF, Thailand would also need to set up long term monitoring of seahorse populations, catches and trade, in support of adaptive management.

DOF considers that imposing the export ban on seahorses has been a good first step to reduce the demand for dried seahorses within and outside Thailand, but follow-up actions for corrective measures have been slow due to limited capacity of the CITES Authorities. It is unclear how Thailand’s export suspension may have reduced demand in key consumer markets outside Thailand. Indeed, research shows that trade into Hong Kong SAR, in particular, is ongoing in spite of trade suspensions in Thailand and other historically important source countries for dried trade (Foster et al. 2019).

The existing NDF framework for seahorses has proven to be challenging to implement by the responsible Authority. Currently, all responsible officials feel they are doing their best, but that the level of information needed to fulfil their CITES obligations is very intensive. Other fisheries improvement measures, especially corrective measures regarding IUU, may have been beneficial to seahorse conservation, but its direct effectiveness is largely unknown due to the lack of an effective seahorse-specific monitoring program. Currently, there is no dedicated researcher or staff in DOF working on seahorses. There is an urgent need to build capacity within the country to fulfil information gaps and then apply the information to advance policy.

Although DOF says it has prioritized law enforcement for CITES implementation, trade is still operating at some levels according to an academic researcher interviewed for this report, who has been in touch with local vendors. According to the researcher, most vendors do not specialize on seahorse trade but would collect them as long as there is a market and buyer. However, information is largely unknown and unreported. The researcher reported that the vendors have become much more cautious at giving out information due to the illegality. Essentially, the suspension has sent the trade underground. DOF confirmed that no export permits have been issued and no information on trade has been collected since 2016. DOF reported that enforcement of the suspension is very challenging because dried seahorses are easy to be smuggled through various means.

It is important to note that the major threats to Thai seahorses are bycatch from trawling and illegal trade. Addressing bycatch remains a very challenging task because it requires cross-sectoral integration of information on the biological, socio-economic and political context of local fishery.

## **Opportunities**

### **Monitoring**

Currently, DOF reports that it is engaged with monitoring seahorses in two ways, but no data or reports are available. Robust execution of the landings monitoring, in particular, would present an opportunity to understand how existing management measures are serving seahorses and what other efforts might be needed to ensure conservation of wild populations across species.

First, DOF continues to collect seahorse data during quarterly research trawls throughout the Gulf and Andaman coasts. DOF reported that they use the results from the surveys to update the seahorse distribution maps from spatial data on seahorses, determine quarterly and annual catch rates, species composition, sex ratios, and revise estimates of biomass.

Under DOF, five Marine Fisheries Research and Development Centers are involved with research surveys and data collection:

1. Upper Gulf
2. Central Gulf
3. Southern
4. Eastern Gulf
5. Andaman Sea

Ongoing monitoring of seahorse CPUE is executed with standard otter board trawls from five research vessels. The research vessel operated four times in January, March, May, and July every year at pre-determined locations in both the Andaman and Gulf Coasts. Results from the 2010 surveys have been reported to CITES in the past (CITES 2016b), but more recent results were not provided for inclusion in this report. The data from 2010 were used to estimate the combined total biomass of seahorses in Thailand (across both the Gulf of Thailand and the Andaman Sea). It was extrapolated to be ~10 tonnes based on a sample size of 87 seahorses (of three species) (CITES 2016c).

Second, DOF has reported that it monitors landing sites quarterly, for major gears that catch seahorses, on the Gulf and Andaman Coasts, with details reported to CITES in 2013 (CITES 2016b). DOF reported that they would “analyze these data every year to monitor the status of the stock”, but to date no results are available from these surveys.

### **Public awareness**

Thailand has a good track record in public campaigns to change consumer perspective and nature of trade in marine species, as in the case of removing parrotfish off supermarket shelves.<sup>89</sup> Other successful campaigns have included removing shark fin from hotel and restaurant menus,<sup>90</sup> and closing sensitive areas for restoration due to over-tourism, such as Maya Bay in Had Nopparattara-Mu Ko Phi Phi National Park<sup>91</sup> and the closure of Ko Tachai in Mu Ko Similan National Park.<sup>92</sup> These measures would not have succeeded without public mobilisation. Similarly, DOF respondents suggested that an effective public awareness campaign on seahorse conservation should be carried out to create an enabling environment to address the larger issue of bycatch from trawling whose impact is not limited to seahorses.

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<sup>89</sup> <https://www.bangkokpost.com/thailand/politics/422387/campaign-takes-parrotfish-off-3-supermarkets-shelves>  
<https://www.asiaone.com/five-thai-supermarkets-remove-parrotfish-shelves-o>

<https://aseanow.com/topic/749547-five-supermarkets-remove-parrotfish-from-shelves-thailand/>

<sup>90</sup> <https://www.bangkokpost.com/thailand/politics/347008/blue-list-for-bangkok-shark-fin-free-hotels>

<sup>91</sup> <https://newsinfo.inquirer.net/1516316/thailands-famous-maya-bay-to-be-open-to-tourists-from-jan-1>

<sup>92</sup> <https://www.cnn.com/travel/article/thailand-koh-tachai-island-closed/index.html>

## Community engagement

Outside formal marine protected areas, site-based, community-driven conservation for seahorses has been promoted through community-based ecotourism such as the case of Ban Thong Tom Yai in Chumporn province where seahorse watching in the wild has been promoted as tourism attraction.<sup>93</sup>

This approach should be promoted at seahorse hotspots (areas of high density) e.g., Ko Racha in Phuket and Ko Pai in Chonburi to encourage local livelihood as well as promoting citizen science. Biodiversity-based tourism has gained traction as part of national policy on Bio-Circular-Economy policy<sup>94</sup> to promote green recovery. Species like seahorses could be integrated as attraction to promoted species conservation at the site-level to divert species from direct exploitation. The increased engagement could also put pressure on DOF to put more resources into addressing the threats to seahorses from unsustainable exploitation and illegal trade. UNDP is preparing a GEF-funded proposal on mainstreaming biodiversity-based tourism to support sustainable tourism development in Thailand. The project is scheduled to be implemented in 2022.



**Figure 6.9.** Seahorse has been used as flagship species for ecotourism activity in Baan Thong

### *NPOA for seahorses*

DOF has recently developed Thailand's National Plan of Action (NPOA) for Conservation and Management of Sharks. The NPOA lays out five key measures: 1) create a database of information on biology, ecology, fisheries, and utilization of sharks in Thai waters; 2) assess the sharks' status and threats to sharks from fisheries and habitat degradation; 3) develop knowledge and capability relating to sharks management for relevant officers; 4) establish conservation measures and fisheries and trade controls on sharks consistent with international rules, regulations, and obligations; and 5) establish a network of stakeholders involved with management and conservation of shark resources.

DOF's collaboration with the Project Seahorse has resulted in important and detailed information necessary to develop an NPOA for seahorses (NPOA-Seahorses). The NPOA-Seahorses would serve as a framework for conservation actions including research, capacity-building, site-based conservation measures and cooperation among stakeholders and inter-agency collaboration.

<sup>93</sup> <https://7greens.tourismthailand.org/responsible-attraction-en/ชุมชนบ้านท้องตมใหญ่/?lang=en>

<sup>94</sup> <https://thaiembdc.org/2021/05/21/thailand-activates-the-bcg-model-for-a-sustainable-recovery-from-covid-19/>



### *Inter-agency cooperation*

Thailand's experience in addressing IUU has proven that inter-agency cooperation and coordination is fundamental. Addressing issues faced by seahorses would require a similar approach. Thai Maritime Enforcement Command Center (MECC) under Maritime Enforcement Act (2019; พระราชบัญญัติการรักษามลประโยชน์ของชาติทางทะเล พ.ศ.2562),<sup>95</sup> in which DOF is an office for operations, could serve as a coordinating body. MECC is chaired by the Prime Minister of Thailand and operated in cooperation with DOF, DMCR, Customs Department, Marine Department, Thai Navy, and Marine Police. DMCR could support seahorse research and conservation along the coastal, especially in their proposed marine protected areas. DNP could play a key role in seahorse monitoring within marine national parks including for small-scale catch in surrounding areas. The Customs Department, Thai Navy, and Marine Police can all play a significant role in supporting law enforcement and monitoring illegal trade of seahorses.

### *MPAs / exclusion zones*

Thailand needs to urgently expand its marine protected areas to protect an additional marine and coastal area of 14,212 km<sup>2</sup> to reach the CBD target of at least 10% of coastal and marine areas. The “post-2020 biodiversity framework” for conserving and restoring nature under the Convention of Biological Diversity that integrates many objectives included in the U.N.'s sustainable development goals and the Paris Climate Agreement, has called for the need to protect at least 30% percent of the ocean by 2030. Under the Marine and Coastal Resource Promotion Act (2015), DMCR has planned to establish 35 new MPAs with a total area of 14,330 km<sup>2</sup> over the next decade. There is a need for Thailand to scale up its MPA coverage as well as expand strict protection areas throughout the country.

### *Addressing bycatch and non-selective fishing gear*

Since 2016, recognizing the importance of responsible and sustainable fisheries, DOF, as a Competent Authority (CA) has been undergoing an organizational restructure programme so that its internal structure corresponds directly with the needs of the Fisheries Act (2015). Bycatch is a serious problem and a major obstacle to transforming Thai fisheries toward sustainability. Given the single most serious threat to seahorse is bycatch from trawling, seahorse could be a flagship species for DOF to address larger sustainability issues of Thailand's fisheries sector.

## **6.8 Conclusions and recommendations**

All respondents for this report were very willing to cooperate and indicated a desire to address the issues facing seahorses in Thailand. Gaps in action remain because seahorses are not a priority issue compared to the many other pressing issues imposed on the CITES Management and Scientific Authorities. The trade suspension is seen as the most convenient corrective measure as opposed to implementing the NDF framework. The Management Authority is clearly in need of capacity boost but very willing to cooperate.

There has been strong interest in adding seahorses to the protected species list under the Wild Animal Conservation and Protection Act by DNP and DMCR. Being protected species would help raise public awareness about the species and help prioritise the species for effective protection including law enforcement regarding the international trade. That being said, it would make all catch and trade illegal – which would be a real challenge to enforce in Thailand given that the vast majority of seahorses are caught in non-selective fishing gears such as trawls and gillnets (Aylesworth et al. 2017a). Fishers could discard the seahorses, but their chance for survival after capture is very low (especially for those caught in trawls) – and this would have limited conservation benefit for Thailand's seahorse populations (Foster & Vincent 2016). Effectively enforcing the Wild Animal Conservation and Protection Act in support of seahorse conservation would require eliminating non-selective gears wherever seahorses occur.

Based on the challenges uncovered for this report, it seems DOF would do better to move toward adaptive management of seahorse fisheries and exports – ensuring sustainability and legality. However, Deputy

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<sup>95</sup> <http://www.thai-mecc.go.th/Board/history>

Permanent Secretary of MONRE commented that DOF should follow up with all corrective measures before lifting the suspension or moving toward sustainable use. Therefore, surveillance and law enforcement should be strengthened at all levels to ensure effectiveness of trade suspension measures. Study of seahorse populations inside and outside protected areas should be conducted including the impact of harmful fishing gears. Thailand's effort to resolve IUU issue has proven that when the issue is prioritised the government can mobilise the resources necessary and efficiently resolve the issue in timely manner.

## Recommendations

The following recommendations are generated by the author in response to the information obtained during interviews for this report, and his own experience with marine conservation in Thailand.

**Research and monitoring:** Since DOF is not fully capacitated to improve the required information to complete an NDF framework, collaboration with other research institutes or universities is strongly encouraged. DMCR and DNP could also play an important role in monitoring seahorse populations in their MPAs. DOF should encourage university partners to conduct research on seahorse trade and the whole supply chain to understand the current situation for adaptive management. If the illegal trade continues unabated, DOF could consider lifting the suspension and move toward sustainable export where monitoring and regulation are more practical.

**Law enforcement:** Effective law enforcement is needed to improve enforcement/compliance for seahorse trade suspension. Thai Maritime Enforcement Command Center (MECC), with DOF as one of operation offices, could serve as a coordinating body in cooperation with the Customs Department, Marine Department, Thai Navy and Marine Police. DNP, as the main CITES Authority, has a law enforcement operation focused on illegal trade of CITES-listed species.

**Capacity building:** The Fisheries Resources Management Measures Division of DOF, as a CITES Management Authority and Scientific Authority for marine fish and aquatic fauna, is responsible for research to determine appropriate management measures of fisheries resources in accordance with scientific findings and fisheries laws as well as other relevant legislation. DOF needs to build and expand the Division's capacity to collect information and complete NDFs for seahorses. The Fish Quarantine and Fishing Vessel Inspection Division of DOF is the CITES Enforcement Focal Point of Thailand for marine fishes and aquatic fauna. This Division is charged with law enforcement in accordance with International Trade agreements and other related laws that include control, prevention and suppression of illegal aquatic animal trade. The Division has been strengthened to address IUU issues and fishing regulations, and should be able to focus its attention more on seahorse trade regulations if prioritised. Such prioritization will depend on external pressure from within (e.g., public pressure) or outside (e.g. CITES) Thailand.

**Action plans:** With support from international partners (e.g., Project Seahorse and the IUCN SSC Seahorse, Pipefish and Seadragon SG), DOF should develop a National Plan of Action for seahorses (NPOA-Seahorses). The plan would serve as an overall framework for conservation action including research, capacity-building, fisheries regulation, area-based conservation measures and cooperation among stakeholders and inter-agency collaboration. The plan would help communicate and educate policy makers, traders and the wider public about actions needed to address seahorse conservation including the issue of bycatch.

**Demand reduction campaign:** Thailand's CITES Management Authority recommended that the demand reduction campaign for seahorse consumption should be implemented in the consuming countries and jurisdictions (especially Mainland China and Hong Kong SAR) or targeted at Chinese tourists traveling to Thailand to help reduce the demand from source countries.

**Enforce existing laws and document their impacts:** Since 2015, Thailand has put in place some important. Initiatives to address IUU fishing and move its fishing sector toward sustainability. In many cases,

implementing these initiatives (e.g., the expanded trawl free zones) would support seahorse conservation to a certain extent. However, a robust monitoring plan is required to document effectiveness for Thai seahorses.

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## 7. Vietnam

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### 7.1 Background

Seahorses have long been used in and traded from Vietnam for traditional Chinese medicine, and more recently (starting in 2004) they were traded internationally as live animals for aquaria. Before 2019, all seahorses could be harvested and traded freely in Vietnam as they were not listed in any list of protected species, though since 2004 import and exporting of seahorses needs to follow the regulation of CITES. From 2007 to 2011 Vietnam applied and setup an annual quota for exporting live seahorses that originated from captive breeding facilities under CITES Code F with an annual quota of 77,000 live *Hippocampus kuda* for all facilities. In 2013, CITES recommended an export suspension on *Hippocampus kuda* through the Review of Significant Trade. Vietnam responded in 2018 with a zero quota for all seahorse species – suspending all legal trade – at which point CITES lifted its suspension on *H. kuda*.

Vietnam's suspension of legal exports was quickly followed with new protections for seahorses in Vietnam. Since March 2019, the harvest of all *Hippocampus* species is regulated in Vietnam as five of six native seahorses were listed as protected species under Government Decree no. 26/2019/NĐ-CP. According to the newly issued Decree, seahorse (*Hippocampus* spp.) is listed in group II of the Decree – they can only be exploited for scientific purposes, to provide parent stock for breeding operations or for international cooperation purposes, and there are restricted times and sizes for harvest as well. The Decree shows a strong commitment from Vietnam for protection of seahorses.

Official data report that CITES permits have only been issued for live trade in two species of seahorse from Vietnam: *Hippocampus kuda* and *H. comes* (Vietnam CITES MA seahorse trade data, extracted in 2020). Recent trade research, however, identified that five seahorse species were harvested and traded in Vietnam – *H. trimaculatus*, *H. spinosissimus*, *H. kuda*, *H. kelloggi*, and *H. histrix* (Foster et al. 2017). *Hippocampus spinosissimus* was the second most observed species in trade, but is missing from the current regulations. The remaining species found in Vietnam, *H. mohnikei*, is included under Government Decree no. 26/2019/NĐ-CP but is listed under a synonym as *H. japonicus*. Project Seahorse has recent photographic evidence that this species is landed by fishers on Phu Quoc Island, though the catch appears to be highly seasonal.

Historically, seahorse is a bycatch product in Vietnam and there have been very few efforts to catch them on purpose (Foster et al. 2017). The seahorse trade, however, seems quite common in local fishery markets and traditional medicinal districts in big cities such as Ho Chi Minh City, Hanoi, Hue and Da Nang. Traditionally only a small proportion of seahorses was used for medicinal purposes in domestic markets; most of the caught volume were exported to east Asian countries for traditional Chinese medicine preparation. In last 15 years, Vietnam exported live *H. kuda* with CITES permits for aquarium purpose to European and North America markets (VFA 2012). However, exporting *H. kuda* from Vietnam was suspended in 2013 as Vietnam did not sufficiently provide information requested by CITES in support of the Review of Significant Trade. Then, in 2018 CITES removed the trade suspension after Vietnam declared its intent to suspend exports of wild specimens of *H. kuda* until further notice. Indeed, CITES Vietnam has confirmed that they suspended international trade in all seahorse species at this time by establishing zero export quotas. The CITES suspension, followed by Vietnam's own suspension, has effectively halted all legal export of seahorses from the country. However, the illegal trade in dried specimens has continued (Foster et al. 2017).

In addition, illegal transit of seahorses from other countries seems to have emerged. For instance, in May 2017, Vietnam Customs seized a shipment of more than one ton of dry seahorse being illegally imported into

Hai Phong Seaport after transiting in Hong Kong Special Administrative Region of China (hereafter Hong Kong SAR). The final destination of the shipment was Vietnam, however according to Hai Phong Customs the seahorses would be soon shipped to China had they not been intercepted. In the Vietnamese case, the legal trade has effectively halted because of the trade suspension, however, illegal trade has and will continue, becoming more sophisticated and harder to spot.

## 7.2 Methods

The author of this report, Dr. Nguyen Manh Ha, is a reputable biologist in Vietnam and Indochina region on protected areas and wildlife conservation. He also has extensive experience in wildlife trade and combatting wildlife crimes in the region. In the last 20 years, Dr. Ha has been intensively involved in the planning and management of Vietnam's protected area system and involved in the development of Vietnam's key laws and policies on biodiversity and forestry in the country including: Forest Protection and Development law (2003), Biodiversity law (2008), Forestry law (2017), and Fishery law (2017). In last 5 years he has actively worked to support Government of Vietnam, Justice Sector, Enforcement Bodies, and NGOs to improve natural resource governance, biodiversity conservation, protected areas management, and especially to counter wildlife and forest crimes. He has led more than 20 research and conservation projects focused on endangered species such as small and large cat (*Felidae* spp.), primate, endangered ungulates and threatened marine species such as the sea turtles, seahorses and other CITES listed marine species in Indochina. In addition, Dr. Ha actively participates in graduate programs of the National University, Hanoi as a lecturer in biodiversity and protected area management and as a supervisor for graduate students.

This study took place in April 2020 to November 2020. Dr. Ha gathered all information related to seahorse fishing and trade in Vietnam in the last five years through published and unpublished sources.

He also interviewed the following key informants:

- 3 representatives from Vietnam CITES Management Authority
- 5 representatives Scientific Authorities
- 3 representatives Vietnam Fishery Administration
- 2 fishery experts
- 6 Customs officers
- 2 formal seahorse captive breeding facilities owners
- 5 key seahorse traders
- Total = 26 people interviewed

As the conversations were mostly about the unreported and unregulated trade, all respondents requested that their names be kept confidential so that they could share information more freely.

## 7.3 The Actors

In Vietnam, there is one CITES Management Authority (CITES MA). The Vietnam CITES MA has two offices: main office located in Hanoi (capital, Northern) and the second office located in HO Chi Minh city (Southern). CITES MA has a total of 9 officers, none of which have a fishery or marine background.

Vietnam also has 4 CITES Scientific Authorities (SA). Among the four, three of them (Vietnamese Academy of Forest Sciences/*Viện khoa học lâm nghiệp Việt Nam*; Research Institute for Marine Fisheries (RIMF)/*Viện Nghiên cứu Hải sản*; and Vietnam University of Forestry/*Trường Đại học Lâm nghiệp*) are under the Ministry of Agriculture and Rural Development (MARD/*Bộ Nông nghiệp và Phát triển Nông thôn*). The other is an independent institution (Institute for Ecology and Biological Resources – IEBR/*Viện Sinh thái và Tài nguyên Sinh vật*). Among of the four, one institution specializes on marine and aquatic fisheries (RIMF).

Vietnam CITES MA and SAs work closely and meet at least twice per year, with other meetings called as needed. However, according to CITES tradition, the main power is assigned to the CITES MA, and CITES SAs have only supporting or advisory roles. There appears to be room to improve communication and information sharing between the MA and SA. For example, according to CITES regulation, SAs should receive copies of CITES permits and the country's annual CITES implementation report to the CITES Secretariat, but implementation of this regulation has been inconsistent.

The Fishery Administration (FA/Tổng cục Thủy sản) under MARD makes decisions and strategizes for marine fisheries management and exploitation in Vietnam, but the decisions often focus on the most frequently caught fish, ones that have high national value (such as tuna), and species of international concern for which Vietnam is under pressure to resolve fishing problems or management issues (such as marine turtles, sharks, or more recently, seahorses).

The national specialized authority responsible for enforcement on the oceans is called the Marine Surveillance Department/Kiểm ngư Việt Nam which is a department under FA (equivalent to Forest Rangers under the Vietnam Administration of Forestry). The department has river and marine patrol boats and monitoring equipment to implement their tasks. At the provincial and ground level, the Provincial Fishery Departments are responsible for enforcing national and international fisheries laws and regulations.

The CITES MA and the FA only meet and discuss if there are issues with importing/exporting of CITES listed fishery species or just before the CoP, when both of them need to meet and discuss about CoP and including a new species or up/down listing a fishery species in the CITES list. Generally, the coordination is not frequent, just case by case.

Implementation of CITES regulations is not only the role of the CITES MA and SAs, however. The enforcement on the ground largely depends on specialized enforcement bodies. They include:

- Forest Protection Department/Cục Kiểm lâm (Forestry Administration/Tổng cục Lâm nghiệp, MARD);
- Department of Fishery Surveillance/Kiểm ngư Việt Nam (FA, MARD);
- Customs (Ministry of Finance/Bộ Tài chính);
- Environment Police/Cục Cảnh sát phòng, chống tội phạm về môi trường (Ministry of Public Security/Bộ Công an);
- Border Guard/Bộ đội Biên phòng (Ministry of National Defense/Bộ Quốc phòng);
- Coast Guard/Cảnh sát biển (Ministry of National Defense); and
- Market Surveillance Department/Tổng cục Quản lý Thị trường (Ministry of Industry and Trade/Bộ Công Thương).

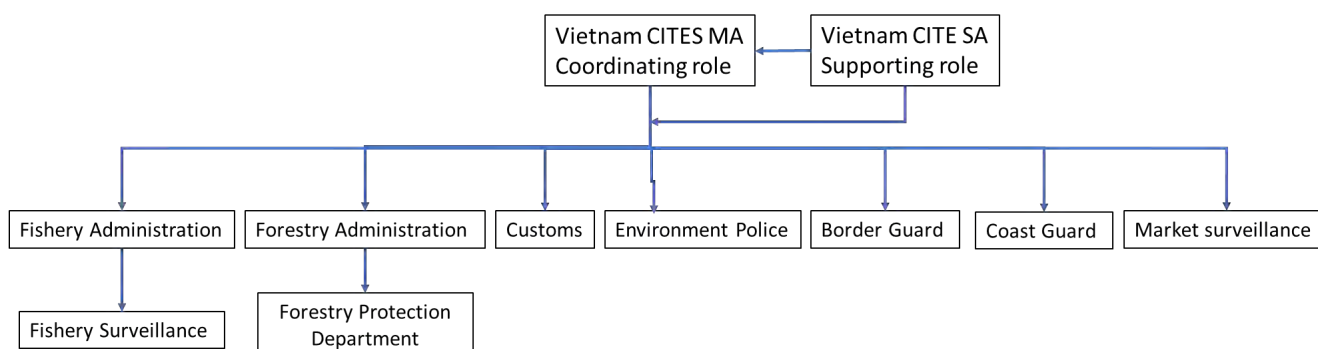


Figure 7.1. CITES implementation structure in Vietnam.

### **Forest Protection Department - Vietnam Administration of Forestry (VNFOREST)**

The main function of the department is monitoring forest protection efforts, and monitoring and conservation of terrestrial endangered species that are mentioned in the government's list of protected species. The department is the key Authority for the implementation of CITES and national laws on wildlife.

### **General Department of Vietnam Customs, Ministry of Finance**

Customs is a body of the Ministry of Finance. Customs Vietnam is the key force that helps to implement CITES as they control all import and export procedure. The Customs only operates in key national and international checkpoints in the border area and designated ports for import and export of goods.

### **Department of Environment Police, Ministry of Public Security**

Alongside with the Forest Protection Department, the Environment Police is the main force that has full enforcement power to combat environment crimes, include wildlife, forest and fishery crimes. The force investigates violation cases related to wildlife, forest and/or fishery protection such as poaching, fishing, transportation, farming and export/import.

### **Department of Market Surveillance, Ministry of Industry and Trade**

The Department of Market Management leads the direction of the Market Surveillance Force to enhance the supervision, control of sale, and control of illegal transport of illegal wildlife in the market or during transportation. The department actively collaborates with provincial agencies to supervise, deter trafficking and illegal transport of wildlife and other goods domestically.

### **Border Guard, Ministry of National Defense**

Working alongside the Coast Guard and Customs, the Border Guard is a specialized armed force unit that protects the border area (both land and sea) and implements anti-smuggling activities in the areas that Customs does not cover (Customs only operates in designated border checkpoints and ports). At sea, the Border Guard works with the Coast Guard and actively supports Fishery Surveillance to enforce national and international laws on fisheries and oceans.

### **Coast Guard, Ministry of National Defense**

Working alongside the Border Guard and Customs, the Coast Guard is a specialist armed force unit that patrols the sea in Vietnam's water of jurisdiction. At sea, the Coast Guard works with the Border Guard and also actively supports the Fishery Surveillance team to enforce national and international laws on fisheries and oceans.

### **Department of Fisheries Resources Surveillance (DFS), Fishery Administration, MARD**

DFS is a specialized fishery protection force that helps to monitor the implementation and enforcement of national laws and regulation on fisheries and biodiversity protection at sea. The department could stop and check all vessels for fishery inspection purposes in Vietnam's waters of jurisdiction.

### **Vietnam CITES Management Authority, VNFOREST, MARD**

Vietnam CITES MA is a national focal point for CITES implementation. Vietnam CITES MA is also the coordinating unit of the Vietnam WEN (next paragraph) and other international wildlife trafficking matters.

### **Vietnam Wildlife Enforcement Network (Vietnam-WEN)**

In addition to the CITES implementation role, many of the above-mentioned enforcement bodies are also members of the Vietnam Wildlife Enforcement Network (Vietnam-WEN) that is a national coordination body established to comply with a regional initiative on wildlife enforcement called Wildlife Enforcement Network (ASEAN-WEN). The ASEAN-WEN was established in December 2005 as a follow-up action to the implementation of the ASEAN Regional Action Plan on Trade in Wild Fauna and Flora (2005 - 2010). The ASEAN-WEN aims to address illegal exploitation and trafficking in CITES-listed species within the ASEAN



region. It is an integrated network among law enforcement agencies and involves forest rangers (Forest Protection Department), CITES MA, Vietnam Customs, Police, People's Supreme Procuracy, Supreme People's Court and specialized governmental wildlife-law enforcement bodies and other relevant national law enforcement agencies. In response to this regional commitment, Vietnam-WEN was established in 2010 and is comprised of nine key national agencies involved in combating wildlife trafficking (established under Decision no. 234/QĐ-BNN-KL; No. 1632/QĐ-BNN-TCCB; No. 5465/QĐ-BNN-TCCB). The nine agencies include:

#### **Management bodies**

- CITES Management Authority
- Market Surveillance Department
- Animal Quarantine

#### **Enforcement bodies**

- Customs
- Forest Protection Department
- Environment Police
- Interpol Vietnam

#### **Justice Sector**

- Supreme People Procuracy
- Supreme People's Court

Vietnam CITES MA is the coordination body of the Vietnam-WEN. According to the decision, the Vietnam-WEN serves as a coordination unit of the inter-agency network for combating wildlife trafficking in the country. The Vietnam-WEN also coordinates and facilitates experience and information sharing and training within the members to improve combating wildlife trafficking (CWT) efforts. Vietnam-WEN focuses on all wildlife and timber, including terrestrial and marine species, but it lacks representative from fisheries authorities such as Vietnam Fisheries Resources Surveillance (a key force for Fisheries Resources protection) and the Coast Guard which is the key enforcement body on the sea. It is critical that these bodies be included in the WEN for it to be effective in combatting illegal trade in marine species.

The coordination among the Vietnam-WEN is not as strong and effective as desired as it is a challenge to coordinate among the wide range of government bodies, armed forces and the justice sector. Such coordination requires a really powerful mechanism with strong commitment and resources; however, the Vietnam-WEN doesn't have the needed resources and that strong a commitment from members. In addition, the Vietnam-WEN sounds like a perfect coordination mechanism, however, very low political will and resources have been spent to maintain its coordination role and activities on the ground. For instance, the CITES MA only has a budget of about US\$15,000 per year to do their coordination role. Because of lacking political support and resources, the WEN exists only on paper with no activities if there are no external resources to keep it running. In addition, selecting the coordination unit seemed not quite relevant as the CITES MA is just a focal point of CITES which has quite limited capacity and resources, and more importantly the CITES MA lacks the management and enforcement power that could give them favourable condition to coordinate other more powerful bodies such as Border Guard, Police and Customs.

## 7.4 History of trade research and CITES activity in Vietnam

1994-1995 – Dr. Amanda Vincent (Project Seahorse) carries out first ever research on seahorse fisheries and trade in Vietnam. Vietnam estimated to export 5 tonnes of dried seahorses for use as TCM; no live exports reported. Most seahorses obtained as bycatch in trawl fisheries off the southern province of Kien Gian and off the six central provinces around Nha Trang (Vincent 1996).

1995-1999 – Catch monitoring and surveys were used to assess the seahorse trade in Vietnam. Despite low daily catch rates, potentially 6.5 t of dried seahorses (~2.2 million seahorses) were taken annually as bycatch by trawlers operating out of five coastal provinces of Vietnam. Individual seahorse catches were collated by a few local buyers, who supplied wholesalers in three major markets: Ho Chi Minh City, Hai Phong City, and Da Nang. Domestic consumption was small and most seahorses were exported, generally through unofficial and unregulated channels across the northern border into Guangxi province of China. Overall, the seahorse trade was of low economic value to Vietnam, but may constitute an important source of income to upper-level buyers and exporters. Most fishers and buyers surveyed reported that seahorse catch had declined over time (Giles et al. 2006, Lourie et al. 1999, Meeuwig et al. 2006).

2002 – All seahorse species (*Hippocampus* spp.) listed on CITES Appendix II.

2004 – CITES listing implemented in May.

2009 – Vietnam included in the CITES Review of Significant Trade (RST) as a range State for *Hippocampus kuda*.

2012 – Vietnam deemed of Possible Concern through the CITES RST process; issued seven recommendations to move permitted exports toward sustainability (AC26, March).

2013 – CITES Standing Committee recommends Parties suspend trade in *H. kuda* from Vietnam at SC63 (March) for failure to meet the RST recommendations by deadlines.

2013 – Collaborative workshop for making non-detriment findings (NDFs) for seahorses in Vietnam (May, Nha Trang). Simplified ID guide for Southeast Asian Seahorses produced and made available in Vietnamese (<http://www.projectseahorse.org/s/SeahorseIDposterVietnam2013Oct.pdf>).

2014 – Project Seahorse, in collaboration with RIMF, carries out fisheries surveys in Phu Quoc, a notable seahorse fisheries hot spot (April-August). To uncover recent trends in fish landings and value in the absence of historical data, 77 fishers and five buyers were interviewed regarding their current and past fishing practices, with a focus on seahorse catches. Seahorses (*Hippocampus* spp.) were caught using multiple gear types (including trawls, crab nets, and compressor diving). Most fishers caught seahorses incidentally, though ~20% targeted them and made the majority of their income from their sale. The total catch from the island was approximately 127,000–269,000 seahorses per year from a fleet of 124 trawl boats and 46 compressor diver vessels. Catches consisted of three species – *H. kuda*, *H. spinosissimus*, and *H. trimaculatus* – with relative proportions varying by gear type and fishing ground. Fishers reported that seahorse catch rates decreased by 86–95% from 2004 to 2014, while landed value simultaneously increased by 534% indicating seahorse fishing on Phu Quoc was unsustainable (Stocks et al. 2017, 2019).

2014 – Project Seahorse rapid assessment of seahorses using underwater surveys and informal interviews along the Vietnamese coast (February-April). Seahorses were only found diving at two locations, Whale Island (Hon Ong) and Phu Quoc Island, with seahorses more abundant at Phu Quoc. The most common species from surveys and in catches was *H. spinosissimus*. *Hippocampus spinosissimus*, *H. trimaculatus*, *H. kuda*, and *H. mohnikei* were all found in soft-bottom habitats, such as silt, sand and seagrass. *Hippocampus kelloggi* and *H. histrix* were found in deeper waters, and usually caught by trawlers operating far offshore.

Seahorses were commonly caught in bottom trawls, and many fishers estimated that seahorse populations have declined over the past ten years. To build capacity for seahorse monitoring in Vietnam, Project Seahorse conducted seven iSeahorse Trends workshops and trained 103 participants. Workshop participants comprised staff from Marine Protected Areas (MPAs), National Parks, research institutes and dive organizations, and local fishers.

2016-2017 – Project Seahorse fisheries and trade surveys across eight coastal provinces in Vietnam (November- January). Fishers reported catching seahorses from seven different types of fishing gear with two-thirds of the respondents reporting use of single trawls. Some divers and single trawls reported targeting seahorses directly, but most catch was incidental. Total national catch estimated at ~16.7 million individual seahorses per annum with 85% from the southernmost province, Kien Giang. Pair trawls estimated to land approximately 12.5 million seahorses per annum (75% of Vietnam's total catch), four times more than single trawls (around 20%). Landed seahorses enter a complex trade, with large domestic consumption of seahorses in Vietnam for seahorse wine and tonics and considerable export. Five different seahorse species were identified in trade with *H. trimaculatus* comprising nearly two-thirds of specimens surveyed from seahorse buyers. Seahorses born in captivity to wild parents – and traded live – made up 90% of reported wild exports in the CITES database for 2008-2014. Aquaculture facilities, all focused on *H. kuda*, reportedly struggled to close the life cycle on breeding – thus retaining dependence on wild brood stock, obtained from fishers. According to CITES data, two-thirds of live trade from 2005-2014 apparently went to the USA and 11% to France. Ninety-five per cent of fishers from all provinces reported a decline in seahorse CPUE over a ten-year period with a mean 59% decline. Most fishers also reported inferred decline in body height (down 44%) and an increase in price of seahorses over the same time period (up 42%). A minority of buyers and two culturists also reported declines in supply (Foster et al. 2017).

2016-17 – A Project Seahorse study investigated the illegal trade of seahorses, among the first taxa of marine fishes to come under global trade restrictions (Foster et al. 2019). To investigate global compliance, 220 interviews were conducted with traders in Hong Kong SAR, the largest entrepôt for dried seahorses. Traders reported obtaining dried seahorses from many countries with bans or suspensions on seahorse exports. **Traders reported Vietnam as among the top ten countries supplying dried seahorses imported into Hong Kong SAR at that time.** Almost all dried seahorses in Hong Kong SAR (95%) were reportedly imported from source countries that had ended legal exports, indicating a widespread lack of enforcement.

2017 – Implementing CITES for seahorses in Vietnam – A consultative meeting (April, Hai Phong); hosted by RIMF and funded by Peoples Trust for Endangered Species (UK) and Mohamed bin Zayed Species Conservation Fund (UAE) through grants to Project Seahorse. Purpose was to share the findings of Project Seahorse's collaborative fisheries and trade surveys for seahorses, plan the way forward for seahorse conservation in Vietnam, and for the eventual removal of the CITES imposed export suspension on *Hippocampus kuda*. Project Seahorse considered there is enough information for Vietnam to make NDFs for the export of F-code *H. kuda* from Vietnam seahorse farms. The NDF could include an annual quota for wild brood stock, monitoring of seahorse landings at regular intervals across several ports, and monitoring of wild brood stock use by seahorse farms.

2018 – CITES removes the trade suspension at SC70 (October) after Vietnam declared its intent to suspend exports of wild specimens of *H. kuda* until further notice. Vietnam confirmed in SC70 Doc. 29.2 A2 its intent to export F1 generation, or code F, specimens. However, subsequent discussions with CITES Vietnam, in support of this report, confirm that Vietnam suspended international trade in all seahorse species (by implementing zero export quotas) at this time (see Section 7.5, below).

2019 – Vietnam initiated regulations for seahorses catches in national waters, effective March 15, including minimum size limits and closed fishing seasons (details under Section 7.6.4, below).

## 7.5 Nature of export bans/suspensions

The CITES' decision to suspend trade in *Hippocampus kuda*, effective in 2013, was officially implemented in the country; no CITES permits have been granted for any specimen of the species since. However, domestic trade continued and exporting still continued with other seahorse species (the seahorse was only listed as protected species in March 2019, Decree 26/2019/NĐ-CP, see Section 7.6.4, below). In 2018, CITES removed the trade suspension after Vietnam declared its intent to implement a zero quota for exports of wild specimens of *H. kuda*, thereby suspending legal trade, until further notice. In speaking with respondents for this report, however, it has been clarified that Vietnam has implemented the zero quota for all seahorse species from both wild and captive bred sources. Vietnam has not reported these zero quotas to the CITES Secretariat for publishing on the CITES website ([https://cites.org/eng/resources/quotas/export\\_quotas](https://cites.org/eng/resources/quotas/export_quotas)).

According to CITES data, importing Parties reported *H. comes*, *H. histrix*, and *Hippocampus* spp. as coming from Vietnam in the period after the CITES suspension was imposed on *H. kuda*, from 2014-2017 – some seized (source code I) but lots as commercial trade of source code F (especially for *H. comes*). This data relies on information from other Parties. Although only the export of *H. kuda* was suspended, such that no CITES export permits were granted for the species, record keeping challenges meant that Vietnam did not properly share its exports of other seahorse species with the Secretariat during this time. The latest CITES data only have four records of trade with Vietnam in 2018, the year in which Vietnam implemented a zero quota for all species; all four records are reported as seized by the importing Party.

There has been no information or no monitoring effort made by the government of Vietnam to document whether the trade suspension has had an impact on the illegal market – they simply stopped issuing CITES export permits – first for *H. kuda*, and then for all other species. Based on the interviews with marine experts and traders, the trade of dried seahorse is continuing as it was because the trade in dried seahorses, targeted for China and other east Asian markets, has been taking place for hundreds of years without any permitting system applied. The trade suspension appears to have had no influence on the traditional medicine trade, connections and markets. Instead, the zero quotas appear to have only impacted the legal trade in live seahorse and a small volume of dry seahorses that were legally exported to European and North America markets, as these markets are well controlled with import and export permits needed. It should be noted that any records of dried trade in the CITES database were reported by importing Parties; Vietnam has only ever reported one dried trade transaction to CITES in its annual reports.

In addition, seahorses are among the least know fisheries species in Vietnam, and as they were not protected in the country until 2019 (Decree 26/2019/NĐ-CP), no effort was made to document the fishing of this group of species. In addition, seahorse is a by-catch species with small amounts caught per fishing trip, and as it has never been a significant marine fishery in comparison with other fish, no efforts have been made to document the catch and trade on this species unless required by CITES for exporting purposes.

The CITES suspension on *H. kuda* imposed to Vietnam was a controversial discussion among CITES Authorities and the FA. The latter wanted to find a way to lift the suspension as soon as possible as seahorse trade had become an important resource and they received pressure from farmers and exporting companies. Vietnam CITES MA seemed not quite ready and reluctant to do an NDF and other preparations for lifting the suspension as some CITES experts were concerned that the farms were ranching, not captive breeding, such that brood stock still regularly needed to be taken from the wild. In addition, both the FA and CITES MA couldn't find relevant resources to do an NDF for seahorse as Vietnam hasn't allocated any money to do it yet, and they are still discussing how this would be properly implemented while information on seahorse seems quite fragmented and not yet systematically collected. In addition, there is no action from the SAs in terms of providing enough support to the CITES MA and the FA to prepare an NDF and justification to lift the suspension.

The CITES suspension was imposed as Vietnam failed to provide the CITES Secretariat sufficient information on the captive breeding operations and implementing an NDF for *H. kuda* and other seahorse species. Vietnam implemented the suspension by ceasing to issue permits for legal trade, however respondents confirmed there was no effort made to enforce the zero quota on the ground including informing the fishing community and fishing vessels about the suspension in order to control bycatch and introduction from the sea.



**Figure 7.2.** Timeline of trade suspensions for seahorses in Vietnam.

Regarding national regulations for implementing CITES, Vietnam is listed as Category 1, meaning that the national legislation is sufficient to implement CITES. Recently, Vietnam amended its national law again to strengthen their national legislation to implement CITES. This included mentioning CITES implementation in the Penal Code (2015 amended 2017), Forestry Law (2017), Fishery Law (2017), and implementation of CITES was also clearly instructed in Government Decrees and ministerial circulars.

Receiving complaints from captive breeding facility and traders, Vietnam’s FA managed at least four meeting with Vietnam’s CITES MA to find solutions for lifting the trade suspension for *H. kuda*, however there has been no effort to strengthen monitoring of seahorse catch and implement a study to evaluate population status of seahorses to justify for the trade suspension to be removed. The Research Institute for Marine Fisheries (RIMF) also complained that there is very little funding available to support the institutions to do research that could provide the information needed to make NDFs. Indeed, it does not appear, at present, that Vietnam’s CITES MA intends to pursue lifting the suspension because up to the moment the CITES MA has not planned to implement an NDF for seahorse and the FA doesn’t have any resources to do it either, such that the discussion continues without any clear roadmap. The reasoning is perhaps that the contribution from seahorse catches is too small at a national level such that trade or no trade is not making any difference in the annual record of the fishery sector such that they consider seahorses are not as important as other fishery resources. Or perhaps, most of the local benefits come from unreported and illegal trade such that the suspension doesn’t matter as it only affects legal trade which reflects only a small proportion of the actual historic catch and trade.

Perhaps the newly issued government Decree no. 26/2019/NĐ-CP that listed seahorses as protected marine species (equivalent to CITES appendix II that mean harvesting and trade domestically and internationally are regulated with reporting and permitting system) will help to show CITES that Vietnam has sufficient national regulation to support seahorse and threatened marine fishes’ protection. However, the Vietnam government still needs to implement a comprehensive study on seahorse populations and trades, and strengthen its catch monitoring with sufficient data management, to provide information needed to support lifting the trade suspension.

## 7.6 Understanding of seahorse fisheries, trade and bans/suspensions

### 7.6.1 What do respondents understand/know about seahorse fisheries and trade?

All interviewees were aware about seahorse catch and its trade chain and network and key markets. Generally, all interviewees concluded that the key market for dry seahorse is China including Mainland China, Hong Kong SAR, and Taiwan Province of China, however, Mainland China and Hong Kong SAR are the most important ones; and live seahorse is for domestic market (for medicinal purpose) and international markets are European countries and North America.

Regarding the decision to suspend seahorse exports made by Vietnam in 2018, very few local fishery departments were aware of the decision. It would only matter when they would need a CITES permit, however the traders who trade in dry seahorse didn't care about the export suspension as they don't seek permits for their business. With respect to dried seahorse traders, it is possible that enforcement gaps in the border made them believe that CITES permits are not necessary. Fishermen are not aware of Vietnam's seahorse export suspension as no one informed them about it but most importantly it does not have any impact on their day-to-day business.

In fact, not all fishery experts were aware of Vietnam's zero quota for seahorses. Only those involved with CITES, who either worked for or with the CITES SAs, were aware of the suspension; most other experts were not aware as they have never been consulted and informed about the issue. Actually, seahorses are considered as a by-catch species and don't contribute any significant income for the community or value for the fishery sector, so the government has paid very little attention and dedicated very few resources for this group of fishes.

Although Project Seahorse has generated a great deal of information on seahorse fisheries and trade in Vietnam (see Section 7.4), often in partnership with government (e.g., RIMF), the Vietnamese government requires its own studies and information before it is willing to take action on improving CITES implementation for seahorses. There is no database on seahorse catch and trade in Vietnam, in addition there is no effort to document the catch and trade by the CITES SAs or other scientific institutions in Vietnam. There is some information at RIMF and the Institute of Oceanology but they are fragmented and outdated and there is no effort to keep it updated. The only seahorse trade information generated by the government in Vietnam is that the CITES MA has collected from granting permits.

However, there are a few fisheries databases that could be used to collect seahorse catch data including VNFishbase/Cơ sở dữ liệu nghề cá quốc gia and Tuna Fishing Database/Dữ liệu về quản lý nghề cá cừ đại dương của Việt Nam. These two systems are implemented nationwide; fishing vessels need to note their catch (species, landed volume) in a logbook that is later collected by fisheries officers at ports. This regulation applies to fishing vessels that have capacity above 20CV, though it is encouraged of all vessels greater than 6 meters. The VNFishbase is comprised of two important components: 1. fishing vessel data (vessel registration and fishing license); and 2. fishing and vessel activity log, including landings data. The database is a pilot system that is currently being upgraded for systematic application throughout the country. With this existing system, data on seahorses and other threatened marine species catch and landings could be collected by having them integrated into VNFishbase, however it would take a long time and a lot of resources to convince the FA to have seahorse information (and other specific species) in the VNFishbase, then piloting it before applying widely.

As seahorses are a neglected group of fishes then there are very few efforts on monitoring their population and trade. There were some very small-scale studies on seahorses implemented by Vietnam's research institutions (Ky 1998, 2010, Ky et al. 2010, 2012, Ut & Tam 2020, Van & Hoang 1998). There have also been studies carried out by the international research team Project Seahorse (e.g. Foster 2017, Foster et al. 2017, Stocks et al. 2019 – but see also Section 7.4). All studies focused on providing a better understanding of Vietnam's seahorses with recommendations on improving management, monitoring and reporting.

**Table 7.1.** Summary of the various respondents' understanding of seahorse fisheries, trade and the export suspension.

<b>Respondents</b>	<b>Their understanding</b>	<b>Note</b>
CITES MA, SA specialists	100% of CITES MA staff have no fishery background, their information about fishery and seahorses therefore depends on information provided by FA colleagues or information provided by CITES SAs and fishery expert that they consulted. CITES Vietnam has never collaborated with any expert and organization to do any seahorse survey, therefore they don't have much information about the trade as well as status of wild populations. CITES MA have information about the captive breeding facilities as they regularly monitored them and established quota for the facilities (now they are all closed). However, the CITES MA is aware of the illegal trade.	Lack of interest and resources
Staff of Vietnam Fishery Administration	FA staff are aware of the status of seahorse populations, fishing and trades. However, as seahorses are not listed as a priority fishery species (for both conservation value and economic importance) very little attention has been paid on this group of species. The FA staff are also well-aware of the bycatch issue and trafficking, but – at the time of the interview - they had no plans to address the bycatch fishing issue and strengthen enforcement of the illegal trade and introduction from the sea. As seahorse is considered as low attention no resources have been spared for implementing an NDF to lift the trade suspension.	Lack of interest and resources
Fishery experts	There are very few experts that work on seahorses in Vietnam as this group gets low attention from government, even with international concern. As such there is very little funding available for this species and so only a few experts are doing research on this group of species in Vietnam. The experts who study seahorses are well aware of the seahorse issues in Vietnam include fishing, captive breeding (even the story behind the breeding) and trade of seahorses. However, they don't really have any strong commitment as well as strong pursuit to find funding for seahorse studies, and they haven't made any recommendations to the FA to request for attention for this group of fishes.	Lacking attention from both government and the scientific community
Customs officers	Customs have no concern about seahorse as they only deal with import and export procedures. As long as species are listed in CITES's Appendices or listed as protected species in Vietnam, then they will apply relevant export and import procedures accordingly. Customs complain about receiving very little information about protected species that could help them do better import and export control such as species ID or point of contact with relevant species experts. Customs officers are also aware of the trafficking of seahorses and shared that the actual illegal trade is much higher than is documented or noted by seizure cases.	Poor training and technical support
Seahorse captive breeding facilities owners	The owners are all formal seahorse traders, they know the seahorse fisheries well and got their brood stock from fisherman or ordered them from fishing vessels which they knew well. The owners shared that all their production was a mixed of captive breeding (with seahorses mating in captivity) and ranching (such that the seahorses were pregnant when they arrived at the facilities). They also complained that trawling and fishing using cyanide were the key threats that have led to the depletion of seahorses and that the government acted too late to stop the disappearing of the seahorses. They also believed that ranching didn't make any serious impact to the seahorse population as they only need 10-20 pair and sell only their infants (with certain species and size) for aquaculture purposes. But the dry-seahorse trade consists of wild caught individuals of any size and is more destructive especially as it was not documented, whereas the breeding operations were well documented. They complain that they have no international connection and had to sell through a broker or other aquatic company.	Poor study and documentation of catches
Seahorse traders	They have good information about the catching, including places of catching as well as the catching volumes over time, however they could share orally without any documentation. They also shared that the seahorse population in Vietnam is rare now and most of the catch was from different sources and from all over Southeast Asian countries, but they don't know for sure where most catch came from. Traders also shared that they do not need permits to trade with China as their connections in China don't need them so that they have never applied for them. Traders shared that they don't yet have any problem with enforcement bodies regarding the trade to China as they know how to deal with the forces (corruption), and in addition seahorses are not a top protection species and so not a big deal with enforcement agencies. Actually, many traders didn't know seahorses are CITES species and protected species in Vietnam as they have received no information or warning (even though the FA should have done it).	Weak enforcement
Seahorse retailer in local market	The retailer in local market and traditional medical district has no information at all regarding the fact that seahorses have been listed as protected species in Vietnam. They shared that the business keeps going but the seahorses are rarer now. Local people come and purchase seahorses to pickle in rice wine; at traditional medicinal markets, they use them as an ingredient in traditional Chinese medicine.	no dissemination to local community and markets that seahorses were listed as protected species

### 7.6.2 What is respondent awareness and use of existing tools and information for seahorses?

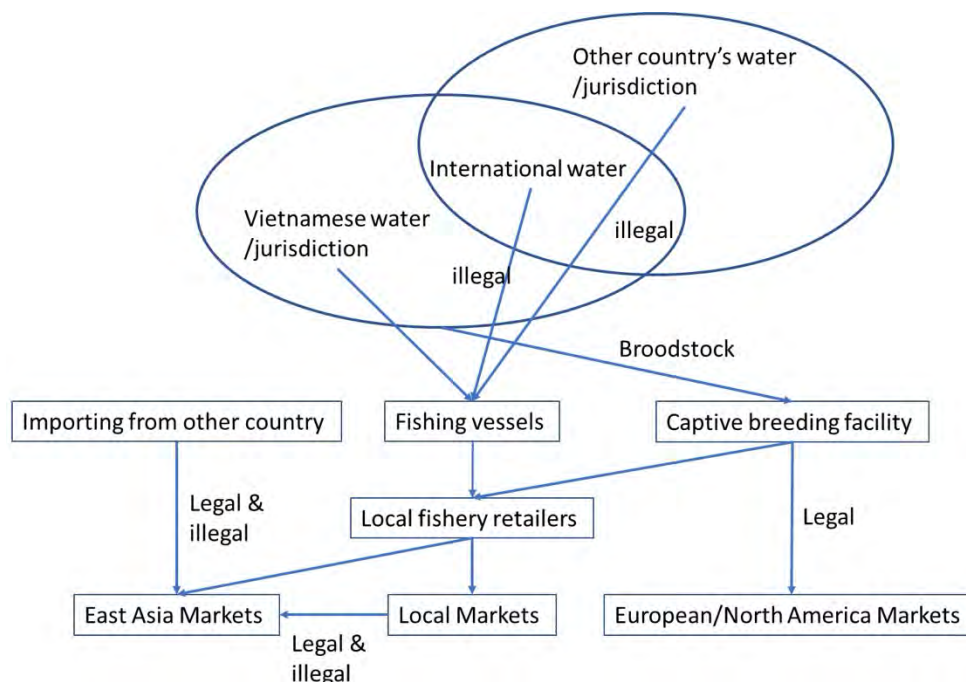
The author consulted a total of nine experts who know about seahorses in Vietnam from different organizations including scientific institutions, universities, and Management Authorities however, not much information, especially updated information was provided because very few studies on this group have been implemented and most of them were conducted about 10 years ago. Some are waiting for grants from the State before implementing seahorse studies (already applied).

There are no tools being used in Vietnam to study and monitor seahorse species. Even though Project Seahorse's iSeahorse tool for monitoring fisheries landings was recommended for use in Vietnam (<https://projectseahorse.org/iseahorse/trends/landings/>), the tool is in English so has not been practical for use in Vietnam, especially at the ground level (Nguyen Manh Ha pers. comm., 2020). And actually, very few people at the FA and CITES MA and a few others from scientific institutions were aware of the tool. In sum, there are no other tools recommended or used to monitor seahorse and their trade in Vietnam.

The seahorse fishing and trade chain has not changed for many years, as there is no effort to regulate the fishing and trade. As soon as the seahorses are landed at port, they are sold fresh to well-known local retailers, or dried and then sold to local retailers. The seahorses will then be stockpiled and retailed at a local market or other shops for domestic use, or sold to wholesalers or bigger traders for export. This means that collecting data on seahorse catches and trades could be done by regularly visiting local fishing ports or local traders to check their purchase volume (monthly and quarterly), or applying a logbook system in which fishers or traders could note their catches or purchase volumes. Collecting information using logbook at key traders could be a possible option as seahorses are not a strictly prohibited species and the current regulations are applied to fisheries and not domestic trade (fishing season and size limit). In addition, monitoring at port using protocols such as the iSeahorse landings monitoring tool mentioned above also helps to collect data on fishing area, species and seahorse body size, but it might also be difficult as individual seahorse landings are often small (by-catch products), such that local fisherman could easily hide them to avoid detection by authorities or enforcement bodies. In addition, seahorses are not high-volume fisheries in any water (in Southeast Asia) such that individual catches are small (though cumulative catches are large). Enforcement for illegal export of dry seahorses could be an issue as Vietnam shares a very long land border with China. At present, the enforcement for seahorse trade seems quite loose along the Vietnam-China border and neither country seems interested in improving enforcement yet.



### 7.6.3 Seahorse export/import paths



**Figure 7.3.** Map of seahorse trade pathways in Vietnam

**Harvest and trade monitoring:** The pathways indicated that local fishery retailers play an important role in facilitating the trade as they purchased seahorse from different sources then sold them to other traders (inter-province and international traders) and local traditional medicine markets. The fishing port authority is also very important as they monitor vessels coming and going. Both these stakeholders could be engaged in monitoring the actual seahorse landing and actual seahorse trade volume in each locality. However, there should be a tool to support them to do the monitoring. Perhaps a simple fishery or seahorse monitoring app should be developed and introduced (e.g., the iSeahorse tool could be translated into Vietnamese to support this) so that the traders and port authority could get a quick instruction and then could start the monitoring. Data from the app could then link directly to an FA database to support management and reporting or enforcement efforts. On the sea, Fishery Surveillance and the Coast Guard should be the key enforcement bodies; and environment police should be the key enforcement body on land.

**Harvesting practices:** Dry seahorses are collected year-round from small boats and larger fishing vessels all over Vietnam as a bycatch fishery from trawling effort. Fishermen often collect and keep seahorses from each fishing trip as it quite easy to keep and store dry seahorses for a longtime. Then dry seahorses are often sold to local retailers who stockpile them to sell to bigger dealers or distribute to local markets or for export. Live seahorses are occasionally caught by divers to sell in local markets for medicinal purpose, however only in small volumes. Sometime the live seahorses are from captive breeding facilities. Small boats and inshore fisheries collect seahorses from Vietnamese waters; however, they provide only a small volume as seahorse populations in Vietnam seem quite depleted. Most of the catch come from large trawling effort by big vessels that fish offshore and from international waters.

**Key harvesting areas:** In Vietnam south central and southern coast and its islands are the traditional catching areas for seahorses, starting from Quang Nam down to Kien Giang and Phu Quoc. There is some information on Vietnamese fishermen collecting and buying dry seahorse from foreign fishing boats in Southeast Asia however there is no official confirmation and there was no study to document it.

In addition, it is reported (repeatedly) that many dried seahorses landed in Vietnam originated from other Southeast Asia countries; they were collected (purchased) at sea between fisherman and fisherman and from

fishing vessels to vessel to be landed in Vietnam's ports. It was suggested that this importing from other sources contributes a great deal of seahorses to the trade within Vietnam and for export to China (illegally), as Vietnam's national seahorse stocks are quite depleted (Nguyen Manh Ha pers. comm., 2020). As seahorses were not, until recently, a protected species and were not a species under any monitoring program (like tuna and other protected marine species such as sea turtles), no monitoring and checking on source of origin was undertaken. As such, all landed seahorses were automatically considered as Vietnamese origin. There is no clear information on where (which countries waters in Southeast Asia) the seahorse mostly come from as nobody cares and no research efforts have been made to documented this, but information from traders shared that likely they are from Cambodia, Thailand, Indonesia, and the Philippines (Nguyen Manh Ha pers. comm., 2020).

**Trade Network:** Specialized seahorse traders at the provincial level collect and stockpile seahorses to distribute to other markets and to export (mostly without CITES permits). However, there are not many big seahorse traders as it is not a common fishery.

Dry-seahorse traders are mostly aware that international trade in seahorses (export) will need a CITES permit but they are not aware about the Vietnamese export suspension as the government's decision to implement a zero-export quota for seahorse international trade has never been released to the public.

Regarding illegal and unreported export/import paths, a recent seizure of seahorse from illegal imports indicated seahorses from African waters were illegally imported into Vietnam in a large quantity, but only one case was reported. However, it's believed that many illegal trade shipments get through which are then illegally re-exported to China (Nguyen Manh Ha pers. comm., 2020).

**Market:** Dry seahorses are sold at local markets in southern coastal areas and key tourism sites. They used to be available for sale live – five years ago live seahorses for sale in tanks were common in Nha Trang, Ninh Thuan, Vung Tau, and Phu Quoc, but they are not available now as people prefer dried seahorses which are easier to transport. Retailers in Nha Trang, Ninh Thuan, and Binh Thuan Provinces reported that a number of Chinese tourists purchased dry seahorse but it was not very common, some would purchase 10 to 20 pairs for personal used. In big cities such as Hanoi, Da Nang, Hoi An, Nha Trang and Ho Chi Minh City, dry seahorses could be found at some specialized traditional medicine market and stores. For traditional medicine, Vietnamese is the only customer but as seahorses are not an important medicinal ingredient only a small proportion were actually sold at domestic traditional medicinal stores.

#### **7.6.4 Seahorse conservation status and regulations**

Seahorses were only declared protected species in Vietnam in 2019 when Government Decree no. 26/2019/NĐ-CP/Nghi định Chính phủ số 26/2019/NĐ-CP<sup>96</sup> went into force. Five species of seahorse found in Vietnam are listed in the Government Decree no. 26/2019/NĐ-CP and four of them are listed in Vietnam Red Data Book/Sách Đỏ Việt Nam (2007) as VU or EN categories. The Red Data Book is a scientific warning, providing information for relevant management agencies to take action, but it has no obligations for enforcement. But for the species that were listed in Government Decree no. 26/2019/NĐ-CP, there are regulated restrictions for time and size of exploitation and condition for exploitation. The basis for the regulations (closed seasons, size limits) is not clear.

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<sup>96</sup> <https://www.customs.gov.vn/Lists/VanBanPhapLuat/ViewDetails.aspx?ID=11615>

**Table 7.2.** Fisheries management measures applied to seahorse species in Vietnam according to Government Decree no. 26/2019/NĐ-CP.

Scientific name/ Name in Vietnamese	Vietnam Red Data Book	Management group	Prohibited exploitation time (day/month)	Size limit for exploitation (cm)
Tên khoa học/Tên Việt Nam	Sách Đỏ Việt Nam	NHÓM	Thời gian cấm khai thác trong năm (ngày/tháng)	Kích thước tối thiểu cho phép khai thác (Tổng chiều dài (TL) tính theo cm)
<i>Hippocampus japonicus</i> / Cá ngựa nhật*	EN	Group I** <sup>97</sup>	Apply for all times	Apply for all size
<i>Hippocampus kelloggi</i> / Cá ngựa ken lô	N/A	Group II** <sup>98</sup>	1/5 - 1/8	≥ 20
<i>Hippocampus kuda</i> / Cá ngựa đen	EN	Group II	1/9 - 1/12	≥ 12
<i>Hippocampus histrix</i> / Cá ngựa gai	VU	Group II	1/5 - 1/8	≥ 15
<i>Hippocampus trimaculatus</i> / Cá ngựa chấm	EN	Group II	1/5 - 1/8	≥ 14

\*Valid species name is *H. mohnikei*

\*\*Species classified into Group I shall be caught to serve one of the following purposes: conservation, scientific research, creation of original breeds and international cooperation/ Loài thuộc Nhóm I được khai thác vì một trong các mục đích như: Bảo tồn, nghiên cứu khoa học, nghiên cứu tạo nguồn giống ban đầu, hợp tác quốc tế.

\*\*\* Species classified into Group II shall be caught to serve one of the following purposes: conservation, scientific research, creation of original breeds and international cooperation or satisfy the conditions specified in Section II Appendix II hereof / Loài thuộc Nhóm II được khai thác vì một trong các mục đích như: Bảo tồn, nghiên cứu khoa học, nghiên cứu tạo nguồn giống ban đầu, hợp tác quốc tế hoặc đáp ứng điều kiện quy định tại Phần II Phụ lục II ban hành kèm theo Nghị định này.

The law, however, has not been fully implemented on the ground. Local fishery authorities and relevant enforcement bodies will need proper training and technical instruction (training, guidebooks, and other supporting materials) from the FA in order to implement the law. It is also not clear who will lead the implementation. For instance, there is no plan in place to inform fisherman and fishing vessel, traders, retailers about the new regulations on fishing seasons and sizes. In addition, in the decree, there is a long list

<sup>97</sup> An endangered, precious or rare aquatic species shall be classified into Group I if the following criteria are met: a) The species carries rare and precious genes so that it is preserved and selected to serve aquaculture or contains substances or active ingredients with specific biological effects used as raw materials for preparation of medicinal products or is highly profitable when commercialized or plays a decisive role in maintaining the balance of other species in the biome or has representativeness or uniqueness of an geographic area; b) There has been a very small number of species in nature or the species is in great danger of extinction if there is an observed or estimated population size reduction of at least 50% over the last 05 years by the time of assessment or a population size reduction of at least 50%, projected to be met within the next 05 years / Loài thủy sản nguy cấp, quý, hiếm thuộc Nhóm I khi đáp ứng các tiêu chí sau: a) Mang nguồn gen quý, hiếm để bảo tồn, chọn giống phục vụ nuôi trồng thủy sản hoặc chứa chất hoặc hoạt chất có tác dụng sinh học đặc hiệu được sử dụng làm nguyên liệu điều chế các sản phẩm thuốc phục vụ ngành y tế hoặc có khả năng sinh lợi cao khi được thương mại hóa hoặc giữ vai trò quyết định trong việc duy trì sự cân bằng của các loài khác trong quần xã hoặc có tính đại diện hay tính độc đáo của khu vực địa lý tự nhiên; b) Số lượng còn rất ít trong tự nhiên hoặc có nguy cơ tuyệt chủng rất lớn được xác định bằng mức độ suy giảm quần thể ít nhất 50% theo quan sát hoặc ước tính trong 05 năm gần nhất tính đến thời điểm đánh giá hoặc được dự báo suy giảm ít nhất 50% trong 05 năm tiếp theo.

<sup>98</sup> Species in group II. Could be exploited for the following purpose: Conservation, scientific, study to provide brood stock, international cooperation. 3. An endangered, precious or rare aquatic species shall be classified into Group II if the following criteria are met: a) The species meets the criterion specified in Point a Clause 2 of this Article. b) There has been a very small number of species in nature or the species is in great danger of extinction if there is an observed or estimated population size reduction of at least 20% over the last 05 years by the time of assessment or a population size reduction of at least 20%, projected to be met within the next 05 years. 3. Loài thủy sản nguy cấp, quý, hiếm thuộc Nhóm II khi đáp ứng các tiêu chí sau: a) Đáp ứng tiêu chí được quy định tại điểm a khoản 2 Điều này; b) Số lượng còn ít trong tự nhiên hoặc có nguy cơ tuyệt chủng lớn được xác định bằng mức độ suy giảm quần thể ít nhất 20% theo quan sát hoặc ước tính trong 05 năm gần nhất tính đến thời điểm đánh giá; hoặc được dự báo suy giảm ít nhất 20% trong 05 năm tiếp theo.

of protected species which are hardly known by enforcement officers, such that they will need a lot of trainings and support materials before they can sufficiently enforce the law. More importantly, there is no government effort to study and document the trade and harvest of seahorses to prepare a protection and conservation plan yet. If none of these efforts take place, especially informing relevant stakeholders (fisherman, traders, enforcement officers) of the new regulations, then it is likely that the catch and trade of seahorses will continue as it was.

The Vietnam FA is not yet receiving any pressure from government to lift the seahorse trade suspension therefore they haven't got a plan to strengthen seahorse management, provide sufficient information such as NDF and other supporting report to CITES Secretariat or working with CITES MA to remove the suspension. And there is no plan to collect information on seahorse catch and trade. However, there was some discussion between CITES MA and FA on implementing an NDF for seahorse – but there is no concrete plan and there is no funding available for NDF implementation.

#### **7.6.5 Other relevant laws and regulations**

According to government regulations, Vietnam regulated fishing zones include shore-fishing (<6 nautical miles), transition zone fishing (from 6-12 nautical miles) and off-shore fishing (>12 nautical miles) (Gov. 2019). Fishing vessels > 15 meter are only allowed to do offshore fishing. Fishing methods such as trawling, electric shock, explosives, and using light (except for squid fishing) are prohibited in the inshore waters (MARD, 19/2018/TT-BNNPTNT). However, as the capacity for fisheries law enforcement in Vietnam is weak, trawling continues and is a common fishery violation. Although these are general fishing regulations, and not specific to any one species, prohibiting trawling in Vietnam will contribute significantly to the protection of seahorse and other species if there are strong monitoring systems and enforcement as well.

Vietnam is improving its fishery monitoring and currently requests fishing vessels to record their landings in a logbook. However, the logbook was designed to collect mostly catch volumes but not by species or even groups of species; fishing area is also collected for tuna fishing. There have been no efforts to collect information for seahorses yet, and Vietnam is not planning to collect information for seahorses at any level. Again, as seahorse is not an important fishery resource no priorities have been set for this group. However, the existing data collection from fishing vessels via VNFishbase (see Section 7.6.1, above) could be a good platform that could be used to collect information for seahorses and other threatened marine species if needed.

There are 16 proposed marine protected areas (MPAs) in Vietnam and 10 have been established (Annex 7). The MPAs are important areas for conserving marine biodiversity as well as spawning ground for fished species, and also a safehouse for threatened species such as marine turtles, sharks, seahorses and many others. However, the MPAs are not well managed yet as only two MPAs have their own management board, therefore protection efforts have not yet been well implemented and fishing still sometimes happens, even in the core zone of MPAs (Bui et al. 2014).

#### **7.6.6 Seahorse seizures**

As seahorses are not a common fishery species and they were not protected by Vietnamese regulations until very recently, very little attention has been paid to the species, especially among the enforcement bodies, therefore their trade almost went unnoted. There are no records of any violation regarding domestic harvest or trade of seahorses. Regarding international trade, there was only one seizure recorded in May 2017 when a shipment of more than one ton of dry seahorse was spotted and seized in Hai Phong Seaport which originated from Africa and transited in Hong Kong SAR before entering Vietnam. The seahorses were hidden in a container of raw donkey skin (wet salted skin). Aware that the shipment was intercepted by the Hai Phong Customs Department, the importing company refused to claim the container and declared that they were not aware of the hidden seahorses. The effort to investigate the case went nowhere as Hai Phong Customs had no information from the port of departure nor the country of origin, so the case was dismissed.

Researchers from RIMF were called to support species identification. The case was investigated and prosecuted; however, no involved stakeholders were identified. Customs did report the case to CITES MA and CITES SA however their support only focused on species identification, there was no effort to measure size or document sex. The seahorse species identified in the smuggling was *H. algericus* (see images in Section 7.9, below) and other dry fish from African waters.

It is very likely that the illegal import of seahorses has been happening for a while but not spotted until the 2017 case identified by Customs. No subsequent case has been reported, possibly because the traders changed their mean of transport or are smuggling in different ways. Further study on this should be done to identify the connection with other African and South American supply routes.

There was some information on seizures of seahorses by local enforcement bodies, but they were never properly recorded and so it is difficult to get a clear picture on how local enforcement bodies are involved in enforcing the Government Decree 20/2019/ND-CP and the Vietnamese suspension on seahorse export.

## **7.7 Challenges and opportunities**

Overall, there is low political will for fisheries management and conservation in Vietnam. Fisheries are considered as natural resources such that many Vietnamese and political systems think about how to exploit them in the fastest way rather than exploit them sustainably.

Bycatch is a real challenge for seahorses. As Vietnam is a developing country, the vast majority of fishermen are using small fishing boats and fishing inshore. They are numerous and trawling is their common practice, which makes the trawl ban quite difficult to enforce with the small fishing vessels. It also makes it really difficult to monitor/estimate the actual catch. In addition, as fishing ports are only used for large fishing vessels and not used by local fishing boats, it might be difficult to document the catch. It would take lot of time to collect the information from small boats and fishermen.

In the case of Vietnam, seahorses are not fishery species of national importance and so there is no political will or pressure strong enough to implement the law and government decree on protecting them. It is very likely that the trade suspension is not working in Vietnam, the suspension has simply driven the trade from above ground (with permits and reporting) to underground (illegal trade). In this way the suspension actually creates more confusion and makes seahorse populations more vulnerable because of unreported and unregulated trade and fishing that continues unrestricted because of poor enforcement.

In the case of Vietnam, the trade suspension doesn't work well as seahorses are mostly illegally exported and there is poor enforcement at the border area. Indeed, the trade suspension might only be effective if China and other East Asia Markets also move to strengthen their enforcement to stop the illegal trade.

However, there are opportunities that could help improve enforcement and monitoring efforts and, in turn, improve the understanding of the seahorse harvest and trade. Having a good understanding of the challenges and effective measures in place will help to make the trade become more sustainable. Improving monitoring and understanding could be done through the existing mechanisms including:

Using existing fishery monitoring systems to collect information on seahorse catch and trade. As Vietnam has the *VNFishbase* in place then information could be collected through this existing system to support management of seahorses and others threatened species as well. Project Seahorse could work with the FA to update their *VNFishbase* to include information on seahorses and other threatened species if needed.

If Vietnam is planning to implement an NDF for seahorse, then this is a good opportunity to have a comprehensive review on seahorse management and priority actions to strengthen management toward sustainable trade and use.

If Vietnam's scientific institutions become interested and concerned about seahorses, and start applying for government grants to study them, then it's an opportunity to gather information to prepare an NDF that is needed to lift the trade suspension imposed for Vietnam. As noted earlier, information generated by international collaborations is not sufficient for government action – the Vietnamese government needs to generate its own information in order to feel responsibility for taking subsequent action.

The CITES Secretariat and Project Seahorse could work with the FA to develop a seahorse monitoring program by having local fishery staff to periodically visit fishing ports (on a weekly or monthly basis) to collect data on seahorses landed at ports to provide a long-term monitoring on catch and population trends. An important first step would be to translate the iSeahorse catch landings monitoring protocol into Vietnamese.

Vietnam CITES MA should have fishery staff to oversee and supervise import/export of fishery or having a specialize fishery advisory group that could provide them supported needed regarding fishery import/export

The other really important opportunity to advance seahorse conservation in Vietnam is the new ban on trawling in all Vietnamese inshore waters. This is not yet being properly enforced – but if it was, the reduction in trawl pressure would make a significant difference to seahorse populations and habitats and many other threatened and depleted species.

## 7.8 Conclusions and recommendations

### Conclusions

The export suspension for *H. kuda* imposed by CITES and the subsequent suspension of trade in all species imposed by Vietnam itself, only affected the legal trade in live seahorses. Vietnam stopped issuing export permits for live seahorse exports but no action happened on the ground to stop catches, reduce bycatch and control illegal trade. In reality the trade suspension drove more of the trade underground rather than suspending it.

The trade suspension actually had no effect on seahorse catch and trade because traditionally the dry seahorse trade has been carried out without permits. As a result, the trade suspension was not of concern to Vietnam's fishing and trade communities, and the catch and trade seems to be carrying on as normal.

As seahorses are not of commercial importance at the national level, the Vietnamese government feels no consequence due to the trade suspension, which is why the country has made no real effort to provide sufficient information to implement an NDF and lift the suspension.

Illegal importing of seahorses could be a new issue for Vietnam, a single seizure case in 2017 with more than 1 metric ton showed a shocking level of illegal seahorse trade from Africa to Vietnam. This case somehow indicated that the trade might already be well established, and it might take a year to stockpile and it must be a network to collect and facilitate the trade.

### Recommendations

A government lead study on seahorse catch and trade should be implemented as a priority action. The study should be led by Fishery Administration to (i) provide scientific information to prepare an NDF to support lifting the trade suspension, and (ii) to provide information need to amend existing fishery policies and seahorse management.

As seahorses are now protected by Vietnamese regulations then a monitoring program should be implemented to understand catches and population trends to provide information for intervention. The monitoring could be done using the exiting *VNFishbase* with proper modification to include information on seahorse catches and landings at ports.

The illegal trade from other country to Vietnam seems to be an emerging issue such that a study on international seahorse trade from Africa to Asia should be a priority. Likewise, there is a need to determine the source of seahorses being landed by Vietnamese fishing boats – whether caught in Vietnam’s waters, caught by Vietnamese boats in international waters, or purchased from vessels operating in other countries waters.

The capacity of the provincial fishery sectors seems quite weak, especially with respect to sustainable fisheries and conservation, such that no relevant information on threatened species has been collected. Therefore, a capacity building program should be implemented targeted for provincial fishery staff on monitoring catch and trade of threatened species include seahorses, sharks, rays, marine turtles, and tunas... training should include instruction on using existing data collecting tools and new tools.

The iSeahorse landings monitoring tool that has been developed by Project Seahorse ([www.iseahorse.org/Trends/Landings](http://www.iseahorse.org/Trends/Landings)) is a useful tool that could help monitor and report actual seahorse landing, so this tool should be translated into Vietnamese and introduced to local fishery department to apply, especially at key seahorse area such as Vietnam’s southern provinces.

Vietnam Fisheries Resources Surveillance and the Coast Guard, which are the key enforcement bodies on the sea, should be included in the Vietnam-WEN as soon as possible.

Vietnam should further strengthen its efforts to enforce the trawl ban in Vietnamese waters.

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## Annex 7

### Vietnam established and proposed Marine Protected Areas

No.	MPA Name/province	Area (ha)	Water area (ha)	Status
1	Đảo Trần/Quảng Ninh	4.200	3900	
2	Cô Tô/Quảng Ninh	7.850	4000	Established
3	Bạch Long Vĩ/Hải Phòng	20.700	10.900	Established
4	Cát Bà/Hải Phòng	20.700	10.900	Established
5	Hòn Mê/Thanh Hoá	6.700	6200	
6	Cồn Cỏ/Quảng Trị	2.490	2.140	Established
7	Hải Vân-Sơn Trà/Thừa Thiên Huế-Đà Nẵng	17.039	7.626	
8	Cù Lao Chàm/Quảng Nam	8.265	6.716	Established
9	Lý Sơn/Quảng Ngãi	7.925	7.113	
10	Nam Yết/Khánh Hoà	35.000	20.000	
11	Vịnh Nha Trang/Khánh Hòa	15.000	12.000	Established
12	Núi Chúa/Ninh Thuận	29.865	7.352	Established
13	Phú Quý/Bình Thuận	18.980	16.680	
14	Hòn Cau/Bình Thuận	12.500	12.390	Established
15	Côn Đảo/Bà Rịa – Vũng Tàu	29.400	23.000	Established
16	Phú Quốc/Kiên Giang	33.657	18.700	Established

## 8. China

### 8.1 Mainland China

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#### 8.1.1 Background

Seahorses (*Hippocampus* spp.) are protected animals in China (i.e., People's Republic of China, hereafter PRC). *Hippocampus kelloggi* has long been listed as a Class II animal<sup>99</sup> on the National List of Protected Animals of PRC since 1989 (Ministry of Forestry 1988). Legislation enacted in 1999 specifies that domestic management of CITES Appendix II aquatic species is implemented in accordance to Class II of nationally protected animals (Ministry of Agriculture 1999). Then in 2002, when all seahorses were added to Appendix II of CITES, China acknowledged all seahorse species as Class II animals in order to facilitate their domestic management (catch and domestic trade; Ministry of Environmental Protection 2002). In summary, China's laws prohibit fishing of seahorses for all but special uses (such as research, artificial breeding, pharmaceutical production, etc), and further prohibit domestic commercial trade **with the exception of trade for medicinal use**, which requires special "Operation and Utilization Certificates" permits (Ministry of Agriculture 1999, described in more detail under Section 8.1.4, below; original text in English and Chinese in Annex 8.1.). Meanwhile, as a CITES Appendix-II species, seahorse imports and exports require permits from the PRC Endangered Species Import and Export Management Office (ESIEMO), but "Operation and Utilization Certificates" are required in order to apply for such permits (Ministry of Agriculture 1999). As such, China's laws permit for continued domestic and international trade of seahorses for use in traditional Chinese medicine (TCM) – which is the purpose of the vast majority of seahorse trade involving China – but only with special permissions (Ministry of Agriculture 1999; see Annex 8.1.). In this way China goes well above CITES requirements; CITES only requires an export permit for Appendix II listed species.

Although the regulations are clear that CITES Appendix I and II listed aquatic species should be treated as Class I and II species, respectively, for the purposes of domestic management (Ref 2, Chapter 6, Article 38), China has been historically ambiguous in its communications around how this should be implemented on the ground.<sup>100</sup> This meant that local authorities and citizens were unclear (at least tended to be so) about whether all seahorses found in China or only *H. kelloggi* should be managed as Class II animals (personal

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<sup>99</sup> China ranks protected wildlife into two levels for the purposes of domestic management: Class I and Class II. Protection regulations differ between the two levels, with Class I animals being afforded greater protection than Class II. According to the latest regulations (Refs. 2 & 14), catch and domestic trade of the wild populations of both Class-I and Class-II species is only allowed for special purposes (e.g., scientific research, population management, artificial breeding, medicinal use) and requires a special permit. For Class-I aquatic species, the permit should be directly approved by the Ministry of Agriculture and Rural Affairs. In contrast, when it comes to Class-II aquatic species, provincial fishery authorities can issue the such special permits. Furthermore, when assessing values of seized illegal trade, a weight of 10 and 5 was assigned to the species listed as Class I and Class II, respectively, to discriminate their protection levels. When it comes to species listed on CITES, China treats Appendix I and Appendix II species as Class I and Class II, respectively, in domestic trade (Ministry of Agriculture, 1999).

<sup>100</sup> The regulations are currently clear that aquatic species listed on CITES Appendix I should be considered Class I and those on Appendix II as Class II (Ministry of Agriculture, 1999), but although this law took effect in 1999, there have been various notices regarding the regulation of CITES listed aquatic species issued over the past decades that may have created confusion for stakeholders. It appears that MARA initially published a notice to local authorities in 2005 after CITES CoP12 and CoP13, when the first fully marine fishes were added to CITES Appendix II, requiring local authorities to manage these species according to a '2001 notice' that included a regulation of 'treating Appendix II as Class-II' ([http://www.110.com/fagui/law\\_145359.html](http://www.110.com/fagui/law_145359.html)). This '2005 notice' was then reversed by MARA in 2010 in a political order that reversed quite a few previous regulations (see no. 48 for the '2005 notice' in <http://www.hgnzw.com/zc/2010-12-02/1090.html>). However, MARA subsequently published the CITES list of species (including the genus *Hippocampus*) in another notice in 2009 after CoP14 ([http://www.moa.gov.cn/nybg/2009/dsiq/201806/t20180606\\_6151230.htm](http://www.moa.gov.cn/nybg/2009/dsiq/201806/t20180606_6151230.htm)). This 2009 notice asks people to manage CITES listed species "in accordance with the "Convention" and relevant Chinese laws and regulations", which would presumably include that acknowledging all Appendix II as Class II (i.e., Ministry of Agriculture, 1999).

observations in 2016 and 2017). As a consequence, they tended to consider only *H. kelloggi* as a Class-II animal, allowing for other seahorse species to be widely traded as TCM without the necessary special permits (Zhang & Vincent 2017). This ambiguity problem has only been resolved by a recent policy which approved the updated National List (published in Oct. 2018), in which all seahorse species are clearly confirmed as Class II animals in China (MARA 2018).

According to CITES Trade Database for 2004 – 2011, Mainland China was among the top consumers of dried seahorses, along with Hong Kong Special Administrative Region of China (hereafter Hong Kong SAR) and Taiwan Province of China, with an annual reported import of 280,000 – 1.3 million individual dried seahorses (Foster et al. 2016). Although the top sources of seahorses imported into the region have been Asian countries (e.g., Thailand, Malaysia, Vietnam), a growing volume of seahorses (*H. algiricus*) have been imported from West Africa (Guinea, Senegal) to China (Foster et al. 2016), as Chinese commercial interests have increased in the region. However, CITES data only reflect legal trade that is reported to CITES by Parties in their annual reports (UNEP-WCMC 2013), which makes the true figure for China's seahorse consumption uncertain but likely much higher than the above estimation.

The CITES data also reported Mainland China as an important source of seahorses for international trade, with annual reported exports 6,000 – 386,000 individual dried seahorses from 2004 – 2011 (Foster et al. 2016). Because of this, China was included in two rounds of the CITES Review of Significant Trade for four seahorse species (see Section 8.1.4, below). In response to the review, China declared an end to wild exports of all seahorse species starting in 2011 (UNEP-WCMC 2012). It does not appear this suspension was implemented, however, with both CITES data ([www.trade.cites.org](http://www.trade.cites.org)) and on the ground trade surveys (Foster et al. 2019) reporting China as a continued source of dried seahorses in international trade.

Therefore, as a major destination Party and notable source Party, China has an important role to play in ensuring successful implementation of CITES for seahorses. Understanding China's laws and regulations related to CITES policy, and what are the challenges in implementing these laws and regulations for seahorses will help us explore options to facilitate CITES implementation for seahorses and other marine species alike.

### 8.1.2 Methods/Strategy

Dr. Xiong ZHANG, the author of this report, is a Chinese citizen and native speaker of the language. He graduated from The University of British Columbia in 2019 with a Ph.D. Degree (Zoology). He is a seahorse expert in China, and a member of the IUCN SSC Seahorse, Pipefish & Seadragon Specialist Group. Dr. ZHANG has conducted research on bottom-trawl fisheries and the trade of seahorses in China for more than five years.

This study took place in November 2020 to February 2021. In order to gather information for this report, the author set out to interview individuals within government, line agencies, non-governmental organizations, community groups and academic institutions within Mainland China. A focused effort was made to speak with representatives of the CITES Management and Scientific Authorities (MA and SA) and Enforcement Focal Points (EFPs). The author was able to speak with eight of 17 potential informants, but – in spite of best efforts – was not able to speak with the nine others; some refused participation due to a lack of knowledge on the subject of seahorses, some cited reasons of political sensitivity and others never responded to the request for an interview. Respondents interviewed are summarized in Table 8.1.1.

**Table 8.1.1.** Agencies/organizations that were represented by respondents interviewed for this study, and a brief summary of information provided.

<b>Agency/organization</b>	<b>Information</b>
The Endangered Species Scientific Commission of the People's Republic of China, Chinese Academy of Sciences (CAS)	CITES Scientific Authority & national government organization
Environmental and Resource Protection Sector, Bureau of Fisheries, Ministry of Agriculture and Rural Affairs	fisheries national government organization
Forest Police Detachment, Police Station of Dongying, Shandong province	law enforcement City-level government agency
Inspection Section, Anti-Smuggling Bureau, Custom Service of Rizhao, Shandong province	City-level law enforcement government agency
Fisheries Law Enforcement Team, Guangdong province	law enforcement Provincial government agency
Integrated Marine Law-Enforcement Team, China Coast Guard of Qingdao, Shandong province	law enforcement Provincial government agency
South China Sea Institute of Oceanography, CAS	seahorse fisheries & trade Regional academic organization

### 8.1.3 The Actors

The key actors with respect to CITES implementation in Mainland China include one MA, one SA and two EFPs, each with different roles in CITES implementation for marine fishes at the country level (see Figure 8.1.1, below). Please refer to the Annex 8.1. for name of actors and names of rules/regulations, and key text therein, in Mandarin.

The MA is:

- **ESIEMO-NFGA:** The Endangered Species Import and Export Management Office (ESIEMO), Wildlife Conservation Department of National Forestry and Grassland Administration (NFGA) of PRC. Its responsibilities include: 1) supervising the imports & exports of wildlife and their products, import/export permit approval, coordinating customs clearance for imported & exported wildlife and their products; 2) species listing for bans & restrictions based on CITES's policies and other international agreements; 3) registration of importers and exporters of CITES species and their products; and 4) implementing CITES policies and coordinating law enforcement among different government organizations.

The SA is:

- **ESSC:** The Endangered Species Scientific Commission of the People's Republic of China. It is established at the Institute of Zoology, Chinese Academy of Sciences. Its responsibilities include: 1) providing technical support to ESIEMO to issue trade permit according to NDF requirements; 2) exemption review for artificial breeding and other imports/exports that are exempted by CITES (e.g. research, education, etc.); 3) facility confirmation for artificial breeding of CITES species; 4) supervising permit issuing for species listed on Appendix II and confirming their quotas; 5) providing advice for dealing with confiscated specimens; 6) attending the CITES conferences as a member of China's representative team; 7) introducing policy proposals in CITES conferences; and 8) translation of CITES documents.

The two listed EFPs are:

- **Compliance and Law Enforcement Coordination of Wildlife Conservation Department of National Forestry and Grassland Administration (NFGA).**
- **ASB-SCG, ASDII:** The Anti-Smuggling Bureau of State Customs General Administration, Anti-Smuggling Division II, and the corresponding authorities in each Customs area (n = 42) in China. Their responsibilities include: 1) comprehensive management of anti-smuggling in the customs area;

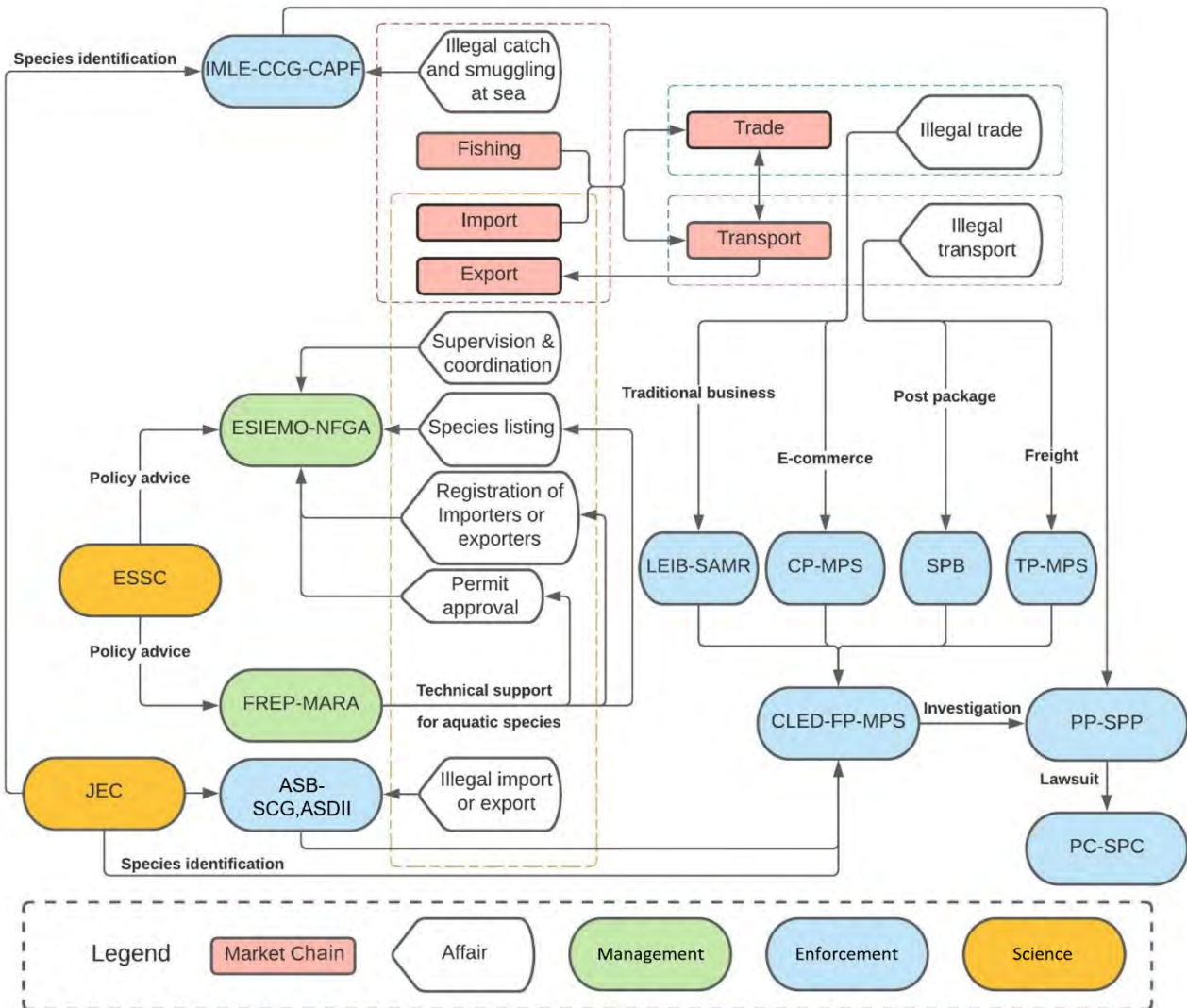
2) enacting and implementing specific policies to combat smuggling; and 3) statistics and comprehensive analysis of smuggling criminal cases and smuggling, violations and other administrative violations in the jurisdiction.

Other key government actors include:

- **FREP-MARA:** The Division of Fishery Resource and Environment Protection (FREP), Fishery Bureau, Ministry of Agriculture and Rural Affairs (MARA) of PRC. Its responsibilities include: 1) providing technical support to ESIEMO for managing aquatic species listed by CITES; and 2) providing guidelines and advice to its corresponding local authorities in each province/city regarding fisheries management. FREP-MARA has the authority to enact domestic policies in terms of protecting aquatic species and can issue special permits for catching or trading of CITES species, but the import/export permits require ultimate approval by the ESIEMO-NFGA.
- **JECs:** The Judicial Expertise Centers (JECs) for wildlife identification (paid service). Their responsibility is to provide judicial evidence of species identification for CITES species. Currently, there are 12 JECs across China that have judicial qualifications (certificated by the Ministry of Justice or the Ministry of Public Security) to provide expertise service for aquatic species identification (and thus seahorses are included by default). The MARA also approved 11 research institutions to provide species identification for aquatic species (as the third party) to support law enforcement (Note that, throughout this report, the term JEC is used to represent all these authorities).
- **IMLE-CCG-CAPF:** The Integrated Marine Law-Enforcement Team (IMLE), under the administration of China Coast Guard (CCG), the Chinese Armed Police Force (CAPF), and its corresponding authorities in each province/city. Their roles are diverse, including combating illegal fishing and smuggling within China's claimed EEZ and many other maritime affairs (e.g. supervising coastal water use, sea mining, sea engineering, maritime rights protection). Given their major body is coast guard, it is likely that protecting China's maritime interests is their major role.
- **LEIB-SAMR:** Law-enforcement & Inspection Bureaus of the State Administration for Market Regulation, and its corresponding authorities in each province/city. Their responsibilities include: 1) managing wild animal products in traditional business (in brick-and-mortar stores); 2) enacting and implementing specific policies to combat illegal trade in traditional business; 3) investigating and punishing illegal wildlife trade in traditional business; and 4) transferring criminal cases to the police (see CLET-FP-MPS below).
- **CP-MPS:** Cyber Police of the Ministry of Public Security (MPS) and its corresponding police in each province/city. Their responsibilities include: 1) investigating and punishing illegal wildlife trade on e-commerce platforms; and 2) transferring criminal cases to the police (see CLET-FP-MPS below).
- **SPB:** State Post Bureau and its local authorities. Their roles include: 1) intercepting and capturing illegal wild animals and their products in post packages; 2) transferring criminal cases to local police (see CLET-FP-MPS below).
- **TP-MPS:** Traffic Police in local police stations under the administration of the MPS. Their responsibilities include: 1) intercepting and capturing illegal wild animals and their products in transportation by freight; 2) transferring criminal cases to local police (see CLET-FP-MPS below).
- **CLET-FP-MPS:** Criminal-law Enforcement Team of Forest Police in local police stations under the administration of the MPS. Their roles are 1) cracking down on crimes in the trade of threatened wild animals, including illegal trade and transportation after entry; 2) accepting criminal cases handed over by other law-enforcement authorities such as LEIB-SAMR, CP-MPS, SPB, and TP-MPS; 3) investigating criminal cases and handing over the cases to people's procuratorates.
- **PP-SPP:** The People's Procuratorates at each administration level and they are subject to the Supreme People's Procuratorate (SPP). Their roles include 1) supervising law enforcement of other government bodies; and 2) proposing public-interest litigation including criminal cases related to wildlife and their products.
- **PC-SPC:** The People's Courts in each administration area and they are subject to the Supreme People's Court (SPC). Their major roles in implementing wildlife laws are 1) enacting and

implementing enforcement policies and standards to support the law enforcement; 2) hearing criminal cases related to wildlife and their products; and 3) judging and punishing criminals engaged in these cases.

There do not appear to be any other organizations (e.g. NGOs) playing key roles in implementing CITES policies in China. That said, Project Seahorse has conducted several capacity-building workshops for training Chinese citizens to initiate seahorse conservation outreach from 2015 to 2018. Several local marine NGOs participated in our workshops (or established afterward) that are doing campaigns to protect marine species including seahorses in China’s waters, but they are more or less focused on coral reefs. Their influence on China’s policies and CITES implementation is very limited.



**Figure 8.1.1.** A flow chart demonstrating the how China’s government agencies work together to manage seahorse trade. Abbreviations for the agencies were provided above. The different dash line boxes (except the legend box) highlight different parts of the market chain and its related affairs.

Support for CITES implementation for marine fishes and aquatic species is provided to the CITES MA (ESIEMO-NFGA) by FREP-MARA, mentioned above. However, FREP-MARA is extremely short-handed and lacks management capacity; FREP-MARA has few staff and the agency is also responsible for fisheries production (i.e., achieving sustainable development of fisheries). In this way, FREP-MARA is a dual responsibility sector that poses a challenge in balancing aquatic conservation and fisheries production. FREP-MARA has the authority to enact domestic policies in terms of protecting aquatic species and can issue special permits for catching or trading CITES species, but the imports & export special permits need to be approved by the ESIEMO-NFGA.

There was a separate enforcement agency for marine fisheries, previously known as Fisheries Law-Enforcement Team under the administration of MARA and its corresponding local fisheries authorities, but it was integrated with other maritime law-enforcement units (e.g., coastal water use, island management, coast guard, marine environment protection) into the IMLE-CCG-CAPF in 2018, with the purpose to facilitate general law enforcement at sea. Historically, given that law enforcement at sea was separated across a variety of government agencies (e.g., fisheries authorities, oceanic administration, environmental agencies, coast guard, natural resource agencies), it was usually unclear which agencies should be responsible for which affairs, allowing each to deflect responsibility to others and causing conflicts of interest – a problem well known as ‘nine dragons governing the sea’ in China. Therefore, Chinese leaders mandated that these different law enforcement authorities be integrated into one comprehensive body. However, coast guard is the dominant agency in terms of facilities and manpower.

Since the establishment of the Coast Guard force in 2013, it has been learning to conduct fisheries law enforcement. However, the previous responsibilities of the Coast Guard were maritime rescue, public security, and safeguarding China’s maritime rights. Such a history makes them poorly prepared for fisheries law enforcement (according to a respondent from IMLE-CCG-CAPF). Therefore, considering the risk of making mistakes and being held accountable, fisheries-law enforcement has been a ‘hot potato’ for the Coast Guard even after the establishment of IMLE-CCG-CAPF.

Currently, the integration of Coast Guard and other agencies (fisheries law-enforcement) only happens at the national level (i.e., the three marine administration areas: The Bohai and Yellow Sea, East China Sea and South China Sea). The situation varies at the provincial/city level. Some provinces/cities are still negotiating. But as claimed by the respondent from IMLE-CCG-CAPF, ‘we have been learning to conduct fisheries law enforcement since 2013, and it is definitely one of the major responsibilities of us. I believe we can do it well gradually’.

The ties among the above agencies with respect to CITES implementation in China are difficult to evaluate given the limited samples and the difficulty to interview more people (especially the national-level authorities). However, some evidence suggests recently some of the agencies have collaborated closely in combatting illegal seahorse trade, especially as China has enhanced its law enforcement in combating illegal wildlife trade in response to the serious impact of COVID-19. In January 2020, SAMR, MARA and NFGA co-issued a brief announcement, The Announcement about the Ban on Wildlife Trade, to ban all kinds of wildlife trade from January 14, 2020 to the end of the pandemic. Citizens are encouraged to boycott the consumption of wildlife and report illegal trade through the reporting hotline (12315) or online platform (SAMR 2020a). In February 2020, SAMR, MPS, MARA, GAC and NFGA co-issued a notice to initiate a special cooperation campaign to ban all kinds of wildlife trade through a coordinative mechanism called the Departmental Meeting for Combatting Wildlife Trade (SAMR 2020b). It requires local authorities of the above five national-level departments (SAMR, MPS, MARA, GAC and NFGA) to cooperate and report their enforcement of the ban on wildlife trade (specific actions, results and statistics) before 10 am every Monday since February 10, 2020. Although in the second document ‘aquatic products’ are exempted, respondents for this report clarified this only refers to ‘food fish’ or commercial aquatic products (e.g., iced/processed fish traded in package) for food. Therefore, the exemption does not include protected aquatic animals such as seahorses (as explained by a respondent from MARA), and the current pandemic-induced ban on wildlife trade applies to seahorses (though see next paragraph regarding exemption for their use as medicine).

Shortly after the notice (SAMR 2020b), The Standing Committee of the National People's Congress of PRC approved The Decision on Completely Prohibiting the Illegal Wildlife Trade, Putting an End to the Abuse of Wild Animals and Effectively Safeguarding the Life, Health and Safety of the People (since February 2020; NPC 2020). It further established the ban on wildlife trade as a long-term policy and added a ban on eating wildlife (all kinds) except ‘aquatic products’ (but again, not including protected aquatic animals such as seahorses). However, it does say that ‘the non-edible use of wildlife for *scientific research, medicine,*

*exhibition and other special purposes should follow existing national laws and under strict examination and quarantine inspection*' (NPC 2020) – implying that seahorse can be still traded (through legal processes) as it is commonly used in TCM, but respondents interviewed for this report claimed the required special permits have become difficult to obtain.

These three national policies above (SAMR 2020a, 2020b, NPC 2020) show that the central government is making an unprecedented effort to combat illegal wildlife trade, including (indirectly and by association) seahorse trade. Shortly after the above policies were put in place, as learned from the respondents, dried seahorses disappeared almost overnight from TCM markets in Guangzhou, Qingdao, and likely elsewhere in China. Most such sales had been illegal as traders did not hold the required special permits, but some dealers still traded them in 'black markets' instead based on respondents' feedback and personal surveys in Guangzhou. Meanwhile, large volumes of dried seahorses seized by local forest police and customs were reported on internet. One forest police officer in Shandong reported that, since January 2020, forest police in Yantai and Rizhao (two coastal cities of Shandong province) seized a total of 400 kg dried seahorses from a total of 10 criminal cases. See more about cases of customs seizing illegally traded seahorses below in Section 8.1.5.

However, wild seahorses are still traded on some e-commerce platforms (e.g., Jingdong) though they have disappeared from other e-commerce platforms (e.g. Taobao, Alibaba; but prior to the pandemic). This implies that the cyber police (CP-MPS) may not have taken an equivalent action on seahorse trade as other enforcement authorities have.

As learned from a local forest policeman, wildlife criminal cases have only recently been recognized as great dangers to the society by China's procuratorates and courts because of the COVID-19 pandemic. Prior to this pandemic, procuratorates rarely approved the arrest of criminals engaged in wildlife trade, and courts generally did not punish them heavily.

#### **8.1.4 Nature of export bans/suspensions**

According to the "*Regulations of the People's Republic of China on Concession for Utilization of Aquatic Wild Animals* (revised in 2017)" (Ministry of Agriculture 1999) the rules for domestic management of national key protected aquatic animals (hereafter, these animals/species) – including seahorses – are as follows:

- 1) It is forbidden to catch or kill these animals covered by this law except for "special circumstances" (such as research, teaching, artificial breeding, exhibition, donation, monitoring, pharmaceutical production, etc) (Chapter 2, Articles 8 and 9). As such, fishing seahorses for commercial purposes is not allowed except under special circumstances.
- 2) China encourages relevant research institutions to conduct artificial breeding of these animals for conservation purposes (Chapter 3, Article 15). Other than that, anyone who wants to breed these species must apply for an "Artificial Breeding License" (Chapter 3, Article 15). As such, breeding seahorses for the purpose of commercial trade is allowed but subject to a permit regulation.
- 3) It is generally forbidden to sell, buy, and use these animals and their products (Chapter 4, Article 22). The use of these animals or their products for medical and health care can, however, be approved; businesses need an "Operation and Utilization Permit" (Chapter 4, Articles 24 and 26). As such, domestic trade of seahorses for TCM is allowed but only with special permissions.

The same regulations specify that import or export of these species requires permits (Chapter 5, Article 29), and that "Operation and Utilization Certificates" are required in order to apply for such permits (Chapter 5, Article 30). The stipulations around issuing these special permits are described below, in Section 8.1.5.4. So, in essence, TCM traders could apply to import or export seahorses as long as they have the required certificate (as per Chapter 4).



So, for example, merchants in a Guangzhou TCM shop would need a special permit to be selling seahorses within China - regardless of where they came from (i.e., sourced in China or imported from another country). Likewise, traders would need a special permit to import seahorses into China. And fishing boats (of all sizes and gear types) would need a special permit to catch and sell seahorses - no matter whether the catch is targeted or incidental (bycatch). In this way China goes well above CITES requirements, which only requires an export permit for Appendix II listed species. For seahorses, these special permits for domestic management can be issued by FREP-MARA - but for import/export the permits also need to be cleared with ESIEMO-NFGA.

In addition to these regulations, China appears to have declared an export suspension in 2011 in response to its inclusion in the CITES Review of Significant Trade. In 2009 China was included in the CITES Review of Significant Trade for three species of seahorse – *H. kelloggi*, *H. kuda*, and *H. spinosissimus* (round 1), and then again in 2011 for two species – *H. histrix* and *H. trimaculatus* (round 2) (Foster 2016). In round one, Chinese CITES Authorities did not respond to the Secretariat's initial request for information, but they did engage when UNEP-WCMC compiled their expert report in support of the review. At that point, the CITES Authorities reported that "The export of wild *Hippocampus* spp. was banned on 01/01/2011 until further notice (J. He, pers. comm. to UNEP-WCMC 2011), with the exception of small numbers for art collections (X. Meng, in litt. to UNEP-WCMC 2011)" (UNEP-WCMC 2012). Because of this declaration, China was removed from both rounds of RST on the basis of "no anticipated trade" (UNEP-WCMC 2012).

It appears, however, that this export suspension was never enacted. A contact interviewed for this report (senior advisor for CITES issues working for the FREP-MARA) confirmed China has continued to issue special permits for export (and import) of wild seahorses since 2011. Indeed, the CITES trade data also suggest China continued to export seahorses and reporting them to CITES ([www.trade.cites.org](http://www.trade.cites.org)). Most trade records involving China as an exporter are reported by China as re-exports (with the reported origin as Thailand), but the data do contain some direct exports reported by China as recently as 2018. These records are for trade in the same species for which China was removed from RST. Furthermore, Mainland China was recently reported as one of the major sources of dried seahorses in Hong Kong SAR TCM markets; Mainland China was reported as the third most important source by volume, following Thailand and the Philippines (Foster et al. 2019).

## **8.1.5 Understanding of seahorse fisheries, trade and bans/suspensions**

### **8.1.5.1 What do respondents understand/know about seahorse fisheries and trade?**

Generally, respondents did not widely understand seahorse fisheries. Only one respondent understood seahorse fisheries; they reported that seahorses are mainly caught as bycatch species in China's marine capture fisheries, especially bottom trawl fisheries. According to this respondent, the largest amount of such bycatch is from the South China Sea and the East China sea, followed by the Yellow Sea. Local fishers have reported apparent declines on seahorse bycatch over recent decade. Although there is currently no published data to measure the size of seahorse fisheries and the decline extent, anecdotal and unpublished data (Kwan & Vincent 2006) suggest that over tens of millions of seahorses are caught every year and enter China's TCM market.

All respondents knew that wild seahorse trade is regulated in China given they are nationally protected animals (Class II) and can only be traded with special permits. They understand that illegal trade without special permits is a big problem, but they think this is because that local authorities are often reluctant to enforce the law as they are outnumbered by the traders engaged in this business. However, the ongoing trade without permits may have also resulted from the historic ambiguity of China's policies regarding CITES aquatic species as mentioned above, in the background section.

### **8.1.5.2. What is respondent awareness and use of existing tools and information for seahorses?**

Only one respondent was aware of the existing trade and fisheries studies for seahorses and the identification guides, but they were not aware of the NDF framework. All other respondents were unaware of these tools and information for seahorses. The respondents were aware of three in-country seahorse experts, and only one had consulted one expert once for species identification.

### **8.1.5.3. Seahorse export/import paths**

The illegal export/import paths include air transport, land freight and shipping (they are often placed in personal suitcases or parcels sent by post). Based on a local respondent from the ASIB, the major smuggling entrances are in Guangdong province (Guangzhou, Zhuhai), Shandong province (Qingdao, Yantai), Guangxi province (Nanning, Guigang), Yunnan province (Kunming), and Fujian province (Xia'men). The smuggling methods are different depending on the location. Shipping is the major approach in Shandong, land freight in Guangxi and Yunnan, flights in Guangdong. The major illegal sources are reportedly from Vietnam, the Philippines and Peru.

The ASIB of Customs engages along all three entrance paths. The only respondent from ASIB said they usually treat seahorses as equivalent to other species when looking for smuggling – no specific priority was given to any species. Seahorses are also imported/exported through illegal fishing and smuggling at sea, though this is not the major trade path. The IMLE of China Coast Guard engages in addressing both illegal catch and smuggling at sea. Again, as mentioned above, this agency is still just embarking on combatting wildlife smuggling and such challenges are unlikely to be their priority. It is difficult to assess what the key actors know about seahorse trade given the limited sample sizes, though three of the six respondents (including one from SA and one from EA) said they were aware of the serious issues in smuggling of seahorses, the difficulty to combat such crimes, and the threat from destructive fisheries. The major challenges include: 1) large numbers of traders and fishers involved in the 'black market' vs. short-handed enforcement force; and 2) large numbers of locations along the coast where smuggling could happen. After seahorses have entered the country, the illegal trade is managed by different authorities depending on the transportation approach (post package vs. freight) and trade mode (traditional vs. e-commerce; Figure 8.1.1). Seahorses transported by post package can be seized by post offices (SPB). Seahorses transported through land freight can be confiscated by the traffic police (TP-MPS). Trade in TCM markets is under the administration of the market supervision authorities (LEIB-SAMR). Trade through e-commerce platform is supervised by the cyber police (CP-MPS). The forest police (CLET-FP-MPS) plays a key role through investigating all the criminal cases transferred from the above enforcement agencies. The People's Procuratorates are responsible for proposing the lawsuit and providing permits to force police to arrest criminals. Finally, the People's Courts (PC-SPC) judge the cases.

### **8.1.5.4. Seahorse conservation status and regulations**

There are seven national laws/regulations relevant to seahorse trade in China (see Annex 8.1. for names, relevant experts in Madarin). In the order of their dates of the first versions,<sup>101</sup> they are:

1. The Law of The People's Republic of China (PRC) on The Protection of Wildlife (since 1989; hereafter, Wildlife Protection Act; NPC 2018a);
2. The Criminal Law of The PRC (since 1997; NPC 2018b);
3. Regulations of the People's Republic of China on Concession for Utilization of Aquatic Wild Animals (since 1999; hereafter, Special Permit Approach for Aquatic Wildlife; Ministry of Agriculture 1999);
4. The Measures for Value Evaluation of Aquatic Wild Animals and Their Products (since 2019; hereafter, Value-Evaluation Measures; MARA 2019);
5. The Announcement about the Ban on Wildlife Trade (since January 2020; SAMR 2020a);

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<sup>101</sup> Note that the first three laws/regulations have been revised multiple times over history. Here we narrate the latest version of each one of them.

6. The Notice on Joint Enforcement Actions Against Illegal Wildlife Trade (since February 2020; SAMR 2020b);
7. The Decision on Completely Prohibiting the Illegal Wildlife Trade, Putting an End to the Abuse of Wild Animals and Effectively Safeguarding the Life, Health and Safety of the People (since February 2020; NPC 2020).

Clause 44 of (1) the Wild Animal Protection Act (i) prohibits the trade (domestic & international) of threatened and protected wildlife without special permits. The penalty for violation is a fine two to ten times the value of the animals or their products (NPC 2018a). However, it is only since August 2019 that the MARA enacted (4) the Value-Evaluation Measures (MARA 2019). According to the Measures, different seahorse species have different prices/values. *Hippocampus kelloggi* (the most threatened and first seahorse species listed as Class II animal) was given a ‘basic price’ of 1000 RMB per ind., while all other seahorse species was 150 RMB per individual (MARA 2019). This value difference means enforcement authorities have to identify the seahorse species that were seized, setting an obstacle for law enforcement (see more in 1.7). The ‘ultimate value’ was calculated based on the above basic price multiplied by a few weights (e.g., conservation-status weight, life-stage weight) elaborated in the Measures (MARA 2019). For instance, Class I and Class II species are given different conservation-status weights (10 vs. 5, respectively).

Clause 341 of (2) the Criminal Law of PRC (ii) prohibits illegal catch, kill, transport, and trade (domestic & international) of threatened and protected wildlife without special permits in China. The penalty can be as low as less than five years’ sentence with fines, but can be as high as over ten years’ imprisonment with fines according to the gravity of the circumstances (NPC 2018b).

The (3) Special Permit Approach for Aquatic Wildlife (iii) mandates that any person or organization that wants to catch/trade CITES species should apply for a special permit from the corresponding authorities (Ministry of Agriculture 1999). For CITES aquatic species, the authority is the provincial fisheries government, but the provincial authority should report this to the central governments (i.e., FREP-MARA & ESIEMO-NFGA) who ultimately approve the permits. The Special Permit Approach for Aquatic Wildlife includes four and five qualifications for exporting and importing CITES aquatic species, respectively (Ministry of Agriculture 1999). For export, the qualifications are: 1) the exported species or ingredient of the species must come from a “legitimate source”;<sup>102</sup> 2) the exported species must be obtained (e.g., purchased) legally; 3) the export will not affect the national image in protecting wildlife and foreign economic exchanges; 4) the wild resources of the exported species should be abundant and suitable for export; and 5) the export should meet national conservation requirements of aquatic resources. For import, the qualifications are: 1) the import’s purpose should be compatible with Chinese laws and policies; 2) the importer should have the necessary maintenance facilities and technical conditions for survival of the imported live animals; 3) the imported live animals should not break the ecological balance or cause destructive impact on China’s ecosystem; and 4) the import will not affect the national image in protecting wildlife and foreign economic exchanges.

The more recent regulations (v – vii) have been mentioned above in Section 8.1.3 where we narrated the recent cooperative actions to ban wildlife trade by multiple authorities after the Covid-19 outbreak.

#### **8.1.5.5. Other relevant laws and regulations**

Seahorses are found in the bycatches of China’s bottom trawl fisheries and are often picked up by fisher labors and sold to local trade dealers. To better manage these non-selective fisheries and reduce bycatch, historically, China has issued a total of 103 policies related to bottom trawl fisheries from 1950 to 2018, with most focusing on input controls including no-trawl zones, regional bans, fishing permits, combatting illegal

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<sup>102</sup> The term “legitimate source” is not defined, but it is inferred to mean that the trade chain of the specimens should be traced to ensure they are caught/purchased legally throughout the trade chain. For instance, if the species were imported to China and then exported to other countries, traders should provide documents to ensure the original import of such species is legal (i.e., permitted by the original country and China).

fishing and the summer moratorium (Zhang & Vincent 2020). However, many good-intentioned policies were not implemented or effective, for a variety of reasons (e.g., local protectionism, enforcement capacity, non-compliance) (Zhang & Vincent 2020).

As mentioned above, China has attempted to enhance law enforcement through building the integrated law-enforcement force at sea (i.e., IMLE-CCG-CAPF mentioned above). However, given the major component of this force is the coast guard, the fisheries counterpart may be marginalized. It is not very clear whether the law enforcement of fisheries will be truly enhanced or weakened, though one respondent from IMLE is optimistic. Another respondent worries that the local IMLE team has not been yet effective in implementing fisheries laws/regulations, leading some local fisheries authorities to consider rebuilding their own enforcement forces. Perhaps, the only period when law enforcement is really enhanced is during the summer moratorium (on fisheries using all gears except hook and line; last ~ 4 - 5 months, May to Sep.), when law-enforcement patrolling at sea is conducted to combat illegal fishing (since ~ 2006). They agency does not have specific technical groups in identifying or dealing with threatened and protected species like seahorses. All in all, it remains to be seen whether the IMLE can truly enhance fisheries law-enforcement at sea.

#### **8.1.5.6. Seahorse seizures**

Seahorse have been seized by Chinese local Customs and other law enforcement authorities (e.g., forest police and LEIB-SAMR). The frequency is difficult to estimate given limited respondents and such records at national levels are not available. However, searching the official website of General Administration of Customs (GAC) of PRC revealed a total of 12 cases of dried seahorses smuggling that were seized in 2019 and 2020 (by 29 December 2020). The data report 12 seizures of a total ~682,000 individual seahorses across ten entry points in 2019 and another 12 cases of a total of ~262,000 individuals across at least nine entry points in 2020. One respondent from the GAC further claimed that there were more than ten cases in 2019. The true number of seizure cases is likely much higher as many are not reported on GAC's website. For instance, another respondent said that forest police in two cities (Yantai and Rizhao) of Shandong alone have seized a total of 11 cases of illegal trade of dried seahorses in 2020 (by 15 December 2020). There has also been a public report in October 2020 where police found 13,991 dried seahorses weighing about 17 kg while routinely inspecting a bus from the city of Dongxing to Guangzhou, capital city of Guangdong Province (The Star 2020).

According to the two respondents from enforcement agencies, enforcement authorities do record seahorse information (including quantity by number or weight, species, and size). However, such information above is not reported to CITES in China's IWT report. As learned from the two respondents from local enforcement agencies, the reason is that this is not mandatory according to their work regulations, so they often do not report this information to the CITES MA who writes the IWT reports.

#### **8.1.6 Challenges and opportunities**

China has long issued well-intentioned and specific regulations and laws to prohibit illegal wildlife trade, but these policies have not been well implemented until recently. Although seahorses have been considered as Class II animals in China and are not allowed to be traded without special permits from the Management Authority (MA), this policy has not been well implemented by local authorities until the recent outbreak of COVID-19 when the MA started to take cooperative actions to combat illegal wildlife trade including that involving protected aquatic species. These cooperative enforcement actions to combat illegal wildlife trade (including smuggling and illegal domestic trade) appear to have included an increase in enforcement of trade regulations for wild seahorses (all kinds, traditional trade & e-commerce). However, trade through 'black markets' still exists based on respondents' feedback and personal observations and it should be addressed as well by Chinese authorities.

Seahorses continue to be caught (mostly as bycatch) without necessary special permits in China's domestic fisheries, many of which find their way into domestic and possibly international trade. For combatting illegal

fisheries, the challenges are 1) the pervasive use of bottom trawls (making bycatch unavoidable); and 2) the lack of implementation of many well-intentioned fishery policies. The integrated law enforcement force at sea, i.e., IMLE-CCG-CAPF, though still in its infancy, may eventually facilitate fisheries law enforcement to prevent illegal fishing or smuggling at sea on the condition that it obtains sufficient professional staffing to deal with illegal fishing and smuggling matters related to protected aquatic species like seahorses.

Importantly, we find the suspension of wild seahorse export in China since 2011, as reported by Chinese CITES Authorities during the CITES Review of Significant Trade, has never been enacted; the MA is still issuing export (and import) permits for wild seahorses. This explains the previous findings that some dried seahorse in Hong Kong SAR markets were from Mainland China (Foster et al. 2019). If this claimed suspension resulted from miscommunication, then it is vital for China to carry out non-detriment findings (NDFs) prior to granting an export license for seahorses, but there is no evidence that China is following this rule. Exports of Appendix II species are further required to be legally sourced, but it is highly likely that fishing vessels catching seahorses lack the required special permits. Given the pervasive use of bottom trawls that catch millions of seahorses in China's waters (anecdotal records and unpublished data) and the poor enforcement of trawl regulations, the sustainability of seahorse populations in China are of great concern. Although China has built a comprehensive law enforcement authority (i.e., IMLE-CCG-CAPF) to facilitate the governance of maritime affairs including combating illegal fishing and smuggling at sea, worry is that this new authority is still in its infancy and its capacity to conduct such wildlife-related missions are uncertain.

For combatting illegal seahorse trade, particularly in respect to illegal imports, the challenges are: 1) short-handed enforcement force and the lack of marine expertise within it for wildlife trade, especially when compared to the many potential opportunities for smuggling activities given China's long coastline and borders; 2) sources of smuggling case clues are limited; and, 3) service fee paid to judicial expertise centers (JECs) for the species is expensive. In addition, a lesser concern but hidden trouble is smuggling at sea. Although this seems to be a minor source of seahorses imported into China's market at present, it may become a major trade route for the 'black market' as air-based and land-based smuggling gates get increasingly shut down by the local authorities. Another untouched issue is related to incorporating seahorses in pre-packaged medicines. Although this is not the major avenue for seahorse trade, it can be a challenge for combating illegal trade and requires further study.

Although the current effort to combat illegal trade is unprecedented, this is largely due to the pandemic and whether such effort will remain after the pandemic remains to be seen, especially for marine species. That said, the current awareness of wildlife conservation and a series of cooperative actions to combat illegal wildlife trade in China provides a unique opportunity to enhance seahorse trade management. Historically, awareness of the conservation status of seahorses is low among Chinese citizens (personal observations), and policies regarding them were sometimes ambiguous, with little protection and trade management occurring in local areas (see Section 8.1.1). As narrated above, strengthening law enforcement on combating illegal wildlife trade (including protected aquatic animals like seahorses) has been made a high priority during the pandemic. Some authorities (SAMR, MPS, MARA, GAC, and NFGA) have taken cooperative actions to prohibit illegal wildlife trade through the Departmental Meeting for Combatting Wildlife Trade. Despite these 'high-pressure' but more or less emergency measures, continuous actions (e.g., routinized patrolling in local TCM markets which is not in place) from the relevant enforcement authorities (e.g. local market supervision authorities and forest police) are needed, especially with a focus on the 'black market' in the domestic trade chain. Moreover, the cyber police should also engage in combating illegal wildlife trade online if China really aims to prohibit illegal wildlife trade. But some e-commerce platforms (e.g., Taobao) have banned such trade in China. Additionally, to avoid misunderstanding of current policies in terms of exempting 'aquatic products', the government may need to issue an interpretation notice for current policies to highlight that protected aquatic animals are not exempted from the ban except for use in TCM which requires special permits to be legal.

For CITES policy implementation in general, the ESIEMO-NFGA is China's CITES Management Authority. However, ESIEMO-NFGA is under the administration of the State Administration of Forestry and Grassland, Ministry of Natural Resources. The findings of this report strongly suggest this political structure means aquatic/marine species are being given less concern in management and leads ESIEMO-NFGA to pass the buck to the FREP-MARA (which lacks the true authority or capacity to implement CITES policies and mainly provides technical support to ESIEMO-NFGA). Specifically, when ESIEMO-NFGA were contacted to request an interview regarding seahorse trade, the officials said they are not familiar with aquatic species and deferred to MARA. The lack of an officially established, separated marine/fisheries CITES Scientific Authority (SA) is also a limitation. Addressing this limitation may facilitate technical support for decision making related to marine species by China's CITES MA.

### 8.1.7 Conclusions and recommendations

Although many well-intentioned laws and regulations on seahorse trade and protection have long been in place in China, the pervasive illegal trade in domestic markets was not addressed by enforcement authorities until very recently. A major reason is that Chinese courts generally have not regarded wildlife trade crimes as 'very harmful to the society' and previously did not punish the criminals heavily. It is only in recent years, especially in 2020 after the unexpected outbreak of the COVID-19, that the Chinese government has become totally aware of the importance of ecological safety and taken unprecedented actions to combat illegal trade of wild animals and their products (including dried seahorses). Such a historic change encourages us to hope for a beneficial impact of awareness on decision making and actions to combat illegal wildlife trade. It remains to be seen whether this effort will continue once the pandemic is over. Although the central government has issued a high-level law to ban illegal wildlife trade and the use of wildlife will be constrained very strictly, local enforcement forces are often outnumbered by illegal traders and thus the 'black market' will almost certainly persist and may indeed grow. Such a problem, again, could be largely addressed through raising awareness of consumers.

Importantly, although smuggled seahorses are seized by local law enforcement authorities, reporting these local statistics is not mandated by the central CITES MA who should then provide such information to CITES in the Party's IWT report.

Meanwhile, China does not appear to have eliminated seahorse exports from 2011, in contrast to what the country reported to CITES during the RST, and the state of China's wild seahorse populations should be of great concern. Although seahorses are regarded as protected animals in China, their bycatch is pervasive due to the widespread use of bottom trawls. Anecdotal data (unpublished study of a local respondent) suggests that tens of millions of wild seahorses are caught every year from China's coastal seas. Making China's seahorse export a sustainable trade will require China to carry out NDFs which in turn means China needs to conduct research and enhance its fisheries and market management to meet the NDF requirements.

The following are suggested next steps in order to move China toward effective implementation of CITES for seahorses:

- **Allocate more resources to marine species technical support for the Management Authority or establish a totally independent MA for marine species.**

The Management Authority (MA) for CITES affairs in China, i.e., ESIEMO-NFGA, is formed based on terrestrial (forest & grassland) management bodies and pays less attention to aquatic animals. FREP-MARA, which provides technical support to the MA for CITES affairs for aquatic animals, has a relatively lower profile (only three staff members) compared to the terrestrial one and receives less management resources in China. China's central government (i.e., the State Council) should provide more management resources (personnel and budget) and more authority to FREP-MARA. A better option perhaps is establishing a fully independent MA for marine species like some other Parties do; China should consider fully separating the authority between the (forestry) ESIEMO-NFGA and (fisheries) FREP-MARA in managing CITES species.

- **Establish an official and independent Scientific Authority for marine species.**  
To facilitate China to secure a sustainable trade on seahorses, China should establish an official and independent SA for marine species, as we mentioned above. An SA for marine species could then have the capacity to conduct the NDF research required by CITES for exporting countries.
- **Increase policy transparency related to CITES implementation for aquatic species like seahorses.**  
The finding that China has not banned wild seahorse export, in contrast to what was reported to CITES, shows the need for China to update CITES regularly on its progress in following through on good intentions in implementing CITES for seahorses. Meanwhile, current policies to combat illegal wildlife trade also needs to be clarified when it comes to aquatic animals. This is vital to avoid miscommunication to the general public and the outside world. This finding also confirms the importance of CITES following up with Parties that are removed from RST by declaring an end to permitted exports, to ensure such trade suspensions are implemented to good effect.
- **Report seahorse seizures to CITES.**  
It is important to collect data on seahorse seizures so that the magnitude of the illegal trade can be better understood. In addition, data on species and biological characteristics of the seized specimens can provide important insights into trade routes and impacts of exploitation and trade. China's Management Authority (ESIEMO-NFGA) should mandate local enforcement bodies to report any data on seized seahorses, and in turn should submit it to CITES through the annual IWT report. This will then require a good collaboration between China's Management Authority and enforcement agencies as they are different government bodies.
- **Raise awareness of seahorses among local citizens (including traders) and educate them to protect seahorses in China.**  
Given the high demand of dried seahorses in Chinese TCM markets, smuggling and illegal domestic trade will likely continue through the unknown black market. In a bid to address this issue, China's MA, SA and EFPs should work together and allocate more resources to raise the awareness of seahorses among Chinese citizens (including dealers and consumers) and educate them (and international visitors) to stop smuggling, using and trading wild seahorses illegally. For instance, when Chinese citizens need to buy seahorses as medicine from local TCM markets, they should ask traders show their 'Operation and Utilization Certificate' and only purchase seahorses from those who hold such certificates. This awareness-raising and education action could be done through an existing campaign – the Aquatic Wild Animal Month (usually in September/October/November) – conducted every year by MARA and its local fisheries authorities, in collaboration with NGOs, aquariums, and academic institutions. However, these important events have had a low profile (often not visible on mainstream social media). Moreover, seahorses have been included but not highlighted in these events where the priority has been given to large species, e.g., dolphins. To address this shortfall, we suggest Chinese authorities, NGOs, and seahorse experts work more actively to promote these events to be covered by mainstream social media (e.g., CCTV) and highlight the urgency of protecting seahorses. The government should also encourage local NGOs to do public outreach and provide them resources and facilities to do so. Local NGOs should also encourage governments to make TCM markets more transparent. For instance, they can advocate local governments to adopt a 'QR code' system which allow anyone to scan it at each TCM store to check its information especially relevant to the special certificates.
- **License more JECs and lower their service fee.**  
JEC's play a key role when it comes to prosecuting perpetrators of the illegal wildlife trade. Since there are limited experts and JEC for seahorses in China, the Chinese MA should license more scientists and JECs for species identification of seahorses and other marine species alike. Local law enforcement officials interviewed for this study suggested the current number of JECs (n = 23) that have the certificates to provide technical support in smuggling cases of marine fish is insufficient, and only a few of them have the capacity to identify seahorses. Meanwhile, the service fee (for identifying the seized animals) charged by these JECs is reportedly too high to be affordable to enforcement authorities who have to pay in advance of any verdict, such that the payment is a risk given the accused may not be arrested or punished (fined) in the end.

- **End bottom trawling in China.**

Sustainable use of seahorses can never be achieved if (non-selective) bottom trawls will continue to be widely used in China (and worldwide). Scientists, fisheries industries, marine NGOs should collaborate to help China end its bottom trawl fisheries and build a sustainable and selective fishery.

### 8.1.8 Key references/resources

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## Annex 8.1

### Actors

#### **CITES Management Authority:**

The Endangered Species Import and Export Management Office (ESIEMO)

Wildlife Conservation Department of National Forestry and Grassland Administration (NFGA)

guójiā lín yè hé cǎo yuán jú

国家林业和草原局

zhōnghuá rénmíngòng héguó bīnwēi w zhōngjìn chūkǒu guǎn lǐ bàngōngshì yěshēng dòngwù zhíwù bǎohù sī

中华人民共和国濒危物种进出口管理办公室野生动物植物保护司

#### **CITES Scientific Authority:**

The Endangered Species Scientific Commission (ESSC), PRC

zhōnghuá rénmíngòng héguó bīnwēi w zhōng kē xué wēi yuán huì

中华人民共和国濒危物种科学委员会

#### **Enforcement Focal Points:**

Compliance § Law Enforcement Coordination, Wildlife Conservation Department of National Forestry and Grassland Administration (NFGA)

guójiā lín yè hé cǎo yuán jú

国家林业和草原局

zhí fǎ xié tiáo zǔ

执法协调组

The Anti-Smuggling Bureau of State Customs General Administration, Anti-Smuggling Division II (ASB-SCG, ASDII)

guójiā hǎiguān zǒngshǔ jī sī jú dì èr jī sī zǔ

国家海关总署--缉私局--第二缉私组

#### **Other:**

The Division of Fishery Resource and Environment Protection (FREP)

Fishery Bureau, Ministry of Agriculture and Rural Affairs (MARA)

zhōnghuá rénmíngòng héguó nóng yè n cūnbù

中华人民共和国农业农村部

yú yè yú zhèng guǎn lǐ jú

渔业渔政管理局

yú yè zī yuán yǔ huán jīng bǎohù chù

渔业资源与环境保护处

Judicial Expertise Centers (JECs)

sī fǎ jiàndìng zhōngxīn

司法鉴定中心

Integrated Marine Law-Enforcement Team (IMLE)

China Coast Guard (CCG)

Chinese Armed Police Force (CAPF)

zhōngrénmín jiě fàngjūn zhōngguó hǎi ànjīngwèidui hǎishànglián hézhí fǎ zǒngduì

中国人民解放军-中国海岸警卫队-海上联合执法总队

Law-enforcement & Inspection Bureaus of the State Administration for Market Regulation (LEIB-SAMR)

guójiā shìchǎng jiānǎn dūguǎn lǐ zǒng zhí fǎ jī chá jú

国家市场监督管理总局-执法稽查局

Cyber Police of the Ministry of Public Security (MPS)

gōngān bù wǎngluò jǐngchá

公安部网络警察

State Post Bureau (SPB)

guójiā yóuzhèng jú  
国家邮政局

**Traffic Police (TP-MPS)**

jiāotōngbùjǐngchá  
交通部警察

**Criminal-law Enforcement Team of Forest Police (CLET-FP-MPS)**

sēnlín gōng'ān xíngshìzhí fǎ dàduì  
森林公安刑事执法大队

**The People's Procuratorates (PP)**

rénmínjiǎncháyuàn  
人民检察院

**Supreme People's Procuratorate (SPP)**

zuìgāorénmínjiǎncháyuàn  
最高人民检察院

**The People's Courts (PC)**

rénmín fǎ yuàn  
人民法院

**Supreme People's Court (SPC)**

zuìgāorénmín fǎ yuàn  
最高人民法院

**The Standing Committee of the National People's Congress**

quánguó rén dà cháng wěi huì  
全国人大常委会

**Rules and regulations**

• **The Announcement about the Ban on Wildlife Trade (SAMR, 2020a)**

guān yú jìn zhǐ yě shēng dòng wù jiāo yì de gōng gào  
关于禁止野生动物交易的公告

• **Departmental Meeting for Combatting Wildlife Trade (SAMR, 2020)**

dǎ jī yě shēng dòng zhí wù fēi fǎ mào yì bù mén lián xí huì yì  
打击野生动植物非法贸易部门联席会议

• **The Decision on Completely Prohibiting the Illegal Wildlife Trade, Putting an End to the Abuse of Wild Animals and Effectively Safeguarding the Life, Health and Safety of the People (NPC, 2020)**

guān yú quán miàn jìn zhǐ fēi fǎ yě shēng dòng wù jiāo yì , gē chú làn shí yě shēng dòng wù lǚ xí , qiè shí bǎo zhàng rén mín qún zhòng shēng mìng jiàn kāng ān quán de jué dìng  
关于全面禁止非法野生动物交易、革除滥食野生动物陋习、切实保障人民群众生命健康安全的决定

• **The Law of The People's Republic of China (PRC) on The Protection of Wildlife (NPC, 2018a)**

zhōng huá rén mín gòng hé guó yě shēng dòng wù bǎo hù fǎ  
中华人民共和国野生动物保护法

• **The Criminal Law of The PRC (NPC, 2018b)**

zhōng huá rén mín gòng hé guó xíng fǎ  
中华人民共和国刑法

• **Regulations of the People's Republic of China on Concession for Utilization of Aquatic Wild Animals (Ministry of Agriculture, 1999)**

zhōng huá rén mín gòng hé guó shuǐ shēng yě shēng dòng wù lì yòng tè xǔ bàn fǎ  
中华人民共和国水生野生动物利用特许办法

• **The Measures for Value Evaluation of Aquatic Wild Animals and Their Products (MARA, 2019)**

shuǐshēng yě shēngdòngwù jí qí zhìpǐn jià zhíping gū bàn fǎ  
水生野生动物及其制品价值评估办法

• The Notice on Joint Enforcement Actions Against Illegal Wildlife Trade (SAMR, 2020b)

guān yú lián hé kāi zhǎn dǎ jī yě shēngdòngwù wéi guī jiāo yì zhuān xiàng zhī fǎ xíng dòng de tōng zhī  
关于联合开展打击野生动物违规交易专项执法行动的通知

**Original regulation text:**

Regulations of the People's Republic of China on Concession for Utilization of Aquatic Wild Animals (revised in 2017) (Ministry of Agriculture, 1999):

- 4) It is forbidden to catch or kill these animals covered by this law expect for “special circumstances” (such as research, teaching, artificial breeding, exhibition, donation, monitoring, pharmaceutical production, etc.) (Chapter 2, Articles 8 and 9). As such, fishing seahorses for commercial purposes is not allowed except under special circumstances.

dì bā tiáo jìn zhǐ bǔ zhuō shā hài shuǐ shēng yě shēng dòng wù yīn kē yán jiào xué réng ōng fán yù zhǎn lǎn  
第八条 禁止捕捉、杀害水生野生动物。因科研、教学、人工繁育、展览、

juān zèng dēng tè shū qíng kuàng xū yào bǔ zhuō shuǐ shēng yě shēng dòng wù de , bì xū bàn lǐ 《 liè bǔ zhèng 》 。  
捐赠等特殊情况下需要捕捉水生野生动物的，必须办理《猎捕证》。

dì jiǔ tiáo fān shēn qǐng bǔ zhuō shuǐ shēng yě shēng dòng wù de , yīng dāng rú shí tián xiě shēn qǐng biǎo bìng suí biǎo fù bào yǒu guān zhèng  
第九条 凡申请捕捉水生野生动物的，应当如实填写《申请表》，并随表附报有关证

mí  
明材料：

yī yīn kē yán diào chá jiān cè yī yào shēng chǎn xū yào bǔ zhuō de , bì xū fù shàng shěng jí yǐ shàng yǒu guān bù mén xià dá de kē  
(一)因科研、调查、监测、医药生产需要捕捉的，必须附上省级以上有关部门下达的科

yán diào chá jiān cè yī yào shēng chǎn jì huà huò rèn wù shū fù yìn jiàn 1 fēn , yuán jiàn bèi chá ;  
研、调查、监测、医药生产计划或任务书复印件1份，原件备查；

- 5) China encourages relevant research institutions to conduct artificial breeding of these animals for conservation purposes (Chapter 3, Article 15). Other than that, anyone who wants to breed these species must apply for an "Artificial Breeding License" (Chapter 3, Article 15). As such, breeding seahorses for the purpose of commercial trade is allowed but subject to a permit regulation.

dì shí wǔ tiáo guó jiā zhī chí yǒu guān kē xué yán jiū jī gòu yīn wù zhǒng bǎo hù mù de rén gōng fán yù guó jiā zhòng diǎn bǎo hù shuǐ shēng yě shēng dòng wù  
第十五条 国家支持有关科学研究机构因物种保护目的人工繁育国家重点保护水生野生动物。

qián kuān guī dìng yǐ wài de rén gōng fán yù guó jiā zhòng diǎn bǎo hù shuǐ shēng yě shēng dòng wù shí xíng xǔ kě zhì dù rén gōng fán yù guó jiā zhòng diǎn bǎo hù shuǐ shēng yě shēng dòng wù de yīng dāng jīng shěng jí rén mín zhèng fǔ yú yè zhǔ guǎn bù mén pī zhǔn qǔ dé rén gōng fán yù xǔ kě zhèng dàn guó wù yuàn duì pī zhǔn jī guān lín yǒu guī dìng de chú wài 。  
前款规定以外的人工繁育国家重点保护水生野生动物实行许可制度。人工繁育国家重点保护水生野生动物的，应当经省级人民政府渔业主管部门批准，取得《人工繁育许可证》，但国务院对批准机关另有规定的除外。

- 6) It is generally forbidden to sell, buy, and use these animals and their products (Chapter 4, Article 22). The use of these animals or their products for medical and health care can, however, be approved; businesses need an “Operation and Utilization Permit” (Chapter 4, Articles 24 and 26). As such, domestic trade of seahorses for TCM is allowed but only with special permissions.

dì èr shí èr tiáo jìn zhǐ chū shòu gòu mǎi lì yòng guó jiā zhòng diǎn bǎo hù shuǐ shēng yě shēng dòng wù jí qí zhì pǐn yīn kē xué yán jiū rén gōng fán yù gōng zhòng zhǎn shì zhǎn yǎn wén wù bǎo hù huò qí tā tè shū qíng kuàng xū yào chū shòu gòu mǎi lì yòng shuǐ shēng yě shēng dòng wù jí qí zhì pǐn de yīng dāng jīng shěng jí rén mín zhèng fǔ yú yè zhǔ guǎn bù mén huò qí shòu quán de yú yè zhǔ guǎn bù mén shēn hé pī zhǔn bìng àn zhào guī dìng qǔ dé hé shǐ yòng zhuān yòng biāo shí bǎo zhèng kě zhuī sù  
第二十二条 禁止出售、购买、利用国家重点保护水生野生动物及其制品。因科学研究、人工繁育、公众展示展演、文物保护或者其他特殊情况，需要出售、购买、利用水生野生动物及其制品的，应当经省级人民政府渔业主管部门或其授权的渔业主管部门审核批准，并按照规定取得和使用专用标识，保证可追溯。

di èr shí sì tiáo yī yào bǎo jiàn lì yòng shuǐ shēng yě shēng dòng wù huò qí zhì pǐn bì xū jù bèi shàng jí yǐ shàng yī yào wèi shēng xíng zhèng guǎn  
第二十四条 医药保健利用水生野生动物或其制品, 必须具备省级以上医药卫生行政管  
lǐ bù mén chū jù de suǒ shēng yào wù jí bǎo jiàn pǐn lì yòng rén gōng fán yù de shuǐ shēng yě shēng dòng wù zǐ dài huò qí chǎn pǐn de bì  
理部门出具的所生产药物及保健品; 利用人工繁育的水生野生动物子代或其产品的, 必  
xū jù bèi shàng jí yǐ shàng yú yè xíng zhèng zhǔ guǎn bù mén zhǐ dìng de kē yá dān wèi chū jù de shǔ rén gōng fán yù de shuǐ shēng yě shēng dòng wù zǐ  
须具备省级以上渔业行政主管部门指定的科研单位出具的属人工繁殖的水生野生动物子  
dài huò qí chǎn pǐn de zhèng míng  
代或其产品的证明。

di èr shí liù tiáo jīng pī zhǔn chū shòu gòu mǎi lì yòng shuǐ shēng yě shēng dòng wù huò qí zhì pǐn de dān wèi hé gè rén yīng dāng chí jīng yíng  
第二十六条 经批准出售、购买、利用水生野生动物或其制品的单位和个人, 应当持《经营  
lì yòng zhèng dào chū shòu shōu gòu suǒ zài dì dè xiàn jí yǐ shàng yú yè xíng zhèng zhǔ guǎn bù mén bēi àn hòu fāng kě jìn xíng chū shòu gòu  
利用证》到出售、收购所在地的县级以上渔业行政主管部门备案后方可进行出售、购  
mǎi lì yòng huó dòng  
买、利用活动。

The Special Permit Approach for Aquatic Wildlife includes four and five qualifications for exporting and importing CITES aquatic species, respectively (Ministry of Agriculture, 1999).

For export, the qualifications are:

- 1) the exported species or ingredient of the species must come from a “legitimate source”;
- 2) the exported species must be obtained (e.g., purchased) legally;
- 3) the export will not affect the national image in protecting wildlife and foreign economic exchanges;
- 4) the wild resources of the exported species should be abundant and suitable for export; and
- 5) the export should meet national conservation requirements of aquatic resources.

di sān shí èr tiáo chū kǒu shuǐ shēng yě shēng dòng wù huò qí zhì pǐn de yīng dāng jù bèi xià liè tiáo jiàn  
第三十二条 出口水生野生动物或其制品的, 应当具备下列条件:

- (一) chū kǒu de shuǐ shēng yě shēng dòng wù wù zhǒng hé hán shuǐ shēng yě shēng dòng wù chéng fèn chǎn pǐn zhōng wù zhǒng yuán liào de lái;  
出口的 水生野生动物物种和含水生野生动物成分产品中物种原料的来;
- (二) chū kǒu de shuǐ shēng yě shēng dòng wù shì hé fǎ qǔ dé  
出口的 水生野生动物是合法取得;
- (三) bú huì yǐng xiǎng guó jiā yě shēng dòng wù bǎo hù xíng xiàng hé duì wài jīng jì jiāo wǎng  
不会影 响 国家野 生 动物保 护形 象 和对外 经济交 往 ;
- (四) chū kǒu de shuǐ shēng yě shēng dòng wù zī yuán liàng chōng zú shì yí chū kǒu  
出口的 水生野 生 动物资 源量 充足, 适宜出 口 ;
- (五) fú hé wǒ guó shuǐ chǎn zhǒng zhì zī yuán bǎo hù guī dìng  
符合我 国水 产 种 质资 源保 护规 定。

For import, the qualifications are:

- 1) the import’s purpose should be in concert with Chinese laws and policies;
- 2) the importer should have the necessary maintenance facilities and technical conditions for survival of the imported live animals;
- 3) the imported live animals should not break the ecological balance or cause destructive impact on China’s ecosystem; and
- 4) the import will not affect the national image in protecting wildlife and foreign economic exchanges.

di sān shí sān tiáo jìn kǒu shuǐ shēng yě shēng dòng wù huò qí zhì pǐn de yīng dāng jù bèi xià liè tiáo jiàn  
第三十三条 进口水生野生动物或其制品的, 应当具备下列条件:

- (一) jìn kǒu de mù dì fú hé wǒ guó fǎ lǜ fǎ guī hé zhèng cè  
进口的 目的符 合我 国法 律法规 和 政策 ;
- (二) jù bèi suǒ jìn kǒu shuǐ shēng yě shēng dòng wù huó tǐ shēng cún bì xū de yǎng hù shè shī hé jì shù tiáo jiàn  
具备所 进口 水生 野生 动物活 体生 存必需 的养 护设施 和技术 条件 ;
- (三) yǐn jìn de shuǐ shēng yě shēng dòng wù huó tǐ bú huì duì wǒ guó shēng tài píng héng zào chéng bù lì yǐng xiǎng huò chǎn shēng pò huài zuò yòng  
引进的 水生野 生 动物活 体不会 对我 国生 态平 衡造 成不 利影 响或 产生 破坏 作 用 ;
- (四) bú yǐng xiǎng guó jiā yě shēng dòng wù bǎo hù xíng xiàng hé duì wài jīng jì jiāo wǎng  
不影 响 国家野 生 动物保 护形 象 和对外 经济交 往 。

## 8.2. Hong Kong Special Administrative Region of China

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*DISCLAIMER: This version of the report is based on an advanced draft provided to Project Seahorse by Ms. Wan in November 2021. Significant health challenges prevented Ms. Wan from finishing the report. Project Seahorse has cleaned up the draft as submitted.*

### 8.2.1 Background

Hong Kong Special Administrative Region of China (hereafter referred to as Hong Kong SAR) is a major entrepôt for the trade in dried seahorses as ingredients of traditional Chinese medicine (TCM). Historical information on the role of Hong Kong SAR in the international trade of seahorses comes from trade surveys carried out by Project Seahorse in 1993 (Vincent 1996) and again from 1998–2000 (Kwan and Vincent, unpublished). Local seahorses were apparently not targeted but caught as bycatch and sold into the TCM market. Most seahorses for sale, however, were imported. Hong Kong SAR imported dried seahorses from a wide range of places, including Southeast Asia, the Americas, Africa, Australia, and Europe; the vast majority of seahorses apparently came from Thailand and the Philippines. Crude calculations from three retail levels in Hong Kong SAR in 1993 produced sales estimates of perhaps 10 tonnes (t) of dried seahorses annually by importers, 7 t by wholesalers and more than 25 t by TCM outlets (Vincent 1996). An unspecified but reportedly large volume of the seahorses imported into Hong Kong SAR were re-exported to Mainland China.

Hong Kong SAR Customs began recording seahorse imports and exports in 1998. According to Customs records, the territory imported 25 t annually of dried seahorses from a variety of source countries between 2000 and 2004 (Kwan and Vincent, unpublished). Surveys suggest the official data provided a reasonable estimate of annual import volume, although most re-exports were not recorded. According to surveys, the majority of imported seahorses were re-exported to Mainland China; an estimated 6–7 t of dried seahorses were consumed locally in Hong Kong SAR each year. The bulk of imported seahorses were dried, although some trade in live seahorses did take place. In addition to its trade in dried seahorses, Hong Kong SAR imported thousands of live seahorses both for local use as aquarium fish and for re-export.

Available data after 2004 highlight the continued importance of Hong Kong SAR in the seahorse trade after the listing of seahorses on CITES Appendix II. CITES official data became available with the listing of seahorses on CITES Appendix II in May 2004. Hong Kong SAR, Taiwan Province of China, and Mainland China were together reported to consume the vast majority of seahorse exports reported to CITES (93% of average annual volume), with Hong Kong SAR reportedly importing from 2.5 to 5.2 million dried seahorses per year across 2004–2011 (Foster et al. 2016).

Official CITES trade statistics suggest a drop off in seahorse imports into Hong Kong SAR after 2011, when exporting countries first started responding to the CITES compliance process known as the Review of Significant Trade (RST; Foster et al. 2021). By 2016, all countries historically exporting large numbers of seahorses had ended legal exports. In particular, Thailand, previously considered the source of about 75% of all wild dried seahorses, suspended exports in January 2016. To investigate global compliance, 220 interviews were conducted with traders in Hong Kong SAR to understand current sources of seahorses (2016–17) and relative volumes from each source (Foster et al. 2019). Traders reported obtaining dried seahorses from many countries with bans/suspensions on seahorse exports. Indeed, it was estimated that almost all dried seahorses in Hong Kong SAR (95%) were reportedly imported from source countries despite export bans/suspensions being in place, indicating a widespread lack of enforcement.

As such, Hong Kong SAR has a critical role to play in implementing the CITES Appendix II listing for seahorses – whether it comes to due diligence with respect to legal imports or curbing the illegal flow of seahorses that continues to this day.

### 8.2.2 Methods/Strategy

This report was compiled by Anita Kar Yan Wan. Ms. Wan is a Chinese native from Hong Kong SAR, with a background in wildlife conservation and anthropology. Over the past decade, she has conducted demand-side research of wildlife markets for the ornamental and traditional Chinese medicine trades in Southeast Asia and into/from China. She explores opportunities to encourage positive behaviour change for sustainable use. In 2017, Ms. Wan worked with Project Seahorse to conduct a market study in Hong Kong SAR, exploring the impact of international export bans/suspensions on domestic supplies of dried seahorses.

To obtain a multidisciplinary review of domestic enforcement mechanisms managing the trade of seahorses and related marine fish/products in Hong Kong SAR, the author engaged with local experts and representatives across relevant government bodies, non-government organizations (NGOs), community groups and academic institutions. Interviews were carried out by the author from 14 October - 10 November 2020.

Interviewees were contacted by the author via email, following direct referral by Project Seahorse or other interviewees (verbal or otherwise). Additional experts were identified via online searches. All invitation letters provided a brief introduction on study aims, a customized list of potential interview topics of interest (with relevance to the contact's expertise), and two documents attached for reference: 1) a one-page Project briefing by Project Seahorse; and 2) an official letter of support for the overall project from the CITES Secretariat.

Key topics of interest included:

1. **Existing trade regulations** for managing and enforcing seahorse/marine fish imports and re-exports in Hong Kong SAR.
2. **Successes and challenges** in CITES Appendix II implementation for seahorses/marine fishes in Hong Kong SAR (whether at the industry level, organizational level, or policy level; with relevance extending to situations seen across broad market sectors for wildlife products).
3. **External influences and potential shifting trends** in recent trade patterns (e.g., by international trade measures and/or other restrictions).
4. **Suggestions** for improving local enforcement efforts to trace, detect, manage and counter illicit trade (whether at the CITES or local level).
5. **Noteworthy factors that interviewees believe should be considered** to maximize enforcement impact, including **lessons learned** from other related experiences.

Considering potential sensitivity by participants when sharing policy perspectives, the author ensured that all participants were briefed on participant rights regarding information disclosure, and expected study outputs prior to the interview. All findings and notes were recorded manually in this study, with no use of audio or video equipment.

Upon conclusion of the interview, all participants were asked for potential recommendations or referrals to relevant contacts, who they believe may be of interest or potentially available to partake in our study.

In total, nine key informants were formally interviewed in October-November 2020, with ad-hoc follow-ups via online communications until May 2021.

Interviews averaged 1.5 hours in length, with the longest lasting up to four hours. All arrangements followed participant preferences for communication settings – in person or online. All in-person interviews followed

the Hong Kong SAR government's guidelines for public health and safety, and complied to domestic COVID-19 regulations for social distancing.

**Table 8.2.1.** The affiliation and expertise of respondents' interview for this report.

<b>Organization</b>	<b>Main role / Expertise</b>	<b>Participation</b>	<b>Information provided</b>
HK AFCD*	CITES management	In-person	CITES coordination, CAP586 implementation Enforcement priorities
HK AFCD	CITES enforcement (works closely with HK C&ED)	In-person	Detection, Seizure cases, Prosecution process
HK AFCD	CITES licensing	In-person	Licensing details, declared records
BLOOM Association- Hong Kong	HK shark trade	In-person	Market observations (e.g., shark fin, ivory)
OPCFHK*	Fisheries, Funding	In-person	Seahorse conservation in Hong Kong SAR
HKU* School of Biological Sciences	HK reef fish trade (wrasses, groupers)	In-person	Marine fisheries, Traceability (e.g., Napoleon wrasse)
WWF* Hong Kong	HK shark and ray trade	In-person	Traceability gaps (e.g shark fin)
ADMCF*	HK wildlife trade & policy	Zoom	Legal gaps, Efforts on Organized and Serious Crime Ordinance
HKU School of Law	Criminology	Zoom	Legal gaps

\* Abbreviations: ADM Capital Foundation (ADMCF), Hong Kong SAR Agriculture, Fisheries and Conservation Department (HK AFCD), Hong Kong SAR Customs and Excise Department (HK C&ED), Ocean Park Conservation Foundation Hong Kong (OPCHK), The University of Hong Kong (HKU), World Wildlife Fund (WWF)

Prior to formal conduction of the study, the author engaged in informal conversations with two TCM practitioners and two university academics specialised in TCM, in September 2020. This was for the purpose of attaining preliminary understanding on potentially relevant industry practices and standards, particularly on practitioner use or domestic retail of seahorses, and gathering tips for potential contacts within local industry or trade association offices. All information provided were predominantly used as support for the design of interview questions or prompts, and to maximize opportunities to reach relevant contacts from different backgrounds.

### 8.2.3 The Actors

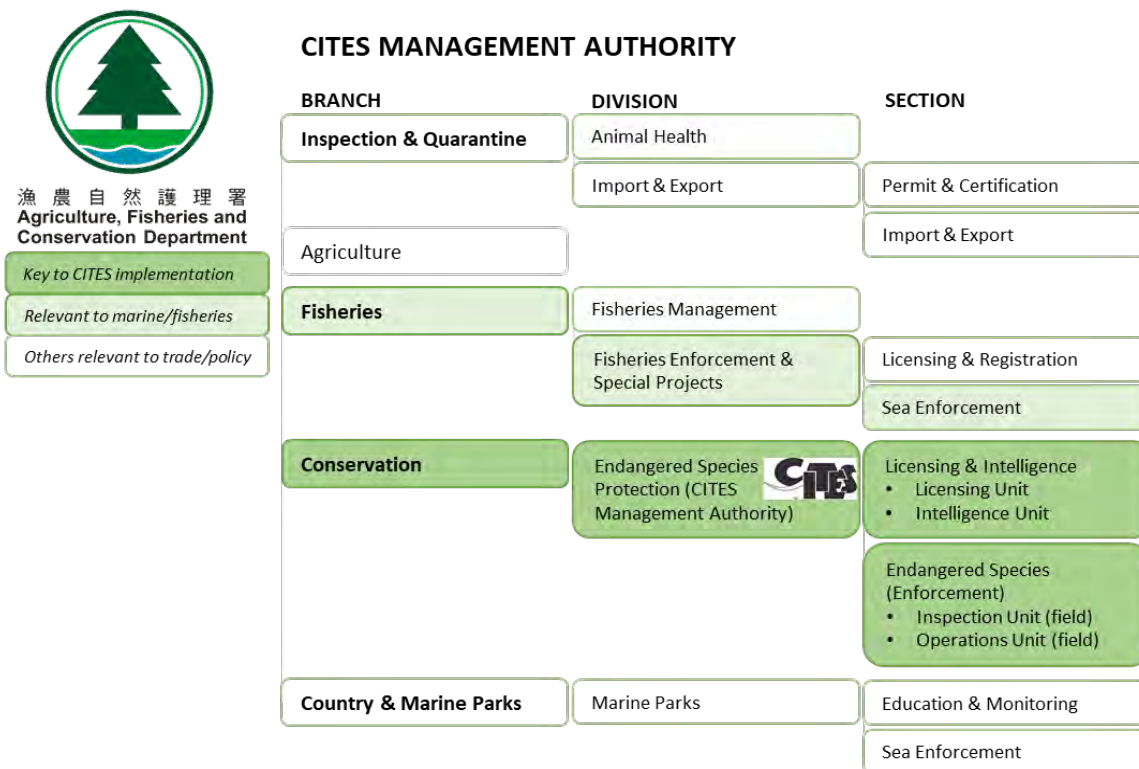
#### CITES Authorities and inter-agency support

The CITES Authority structure in Hong Kong SAR is mainly centred at the Agriculture, Fisheries and Conservation Department (AFCD), specifically the Endangered Species Protection Division that represents the designated CITES Management Authority (MA) for this jurisdiction. This is the primary division responsible for CITES implementation in terms of licensing of permits and enforcement, including inspection assistance in identification of CITES-listed species, policy amendments and reviewing CITES documentation and technical proposals. Officers are also responsible for attendance at CITES events and meetings, as well as reporting all relevant records and documents to the CITES Secretariat.

Hong Kong SAR does not have a separate CITES Scientific Authority (SA). As AFCD has other designated departmental divisions responsible for the conservation of natural resources, and sustainable management of wild and captive-bred animal and plant species populations (including as agricultural and fishery commodities), AFCD also takes on the roles of the CITES SA across divisions, such as in species identification or the conduction of non-detrimental findings (NDFs). At the same time, the CITES MA regularly consults an

external network of local experts in the civil society sector, to offer further technical assistance in species identification and detection efforts, capacity building of enforcement officers, and shared scientific expertise from monitoring domestic trade and population statuses of wild animal and plant species.

**Hong Kong SAR Agriculture, Fisheries and Conservation Department**



**Figure 8.2.1.** Organogram of key AFCD divisions pertaining to CITES implementation for marine fishes and wildlife trade in Hong Kong SAR (adapted from [https://www.afcd.gov.hk/english/aboutus/abt\\_role/abt\\_role.html](https://www.afcd.gov.hk/english/aboutus/abt_role/abt_role.html)).

Agency roles & key responsibilities	Domestic management and monitoring of natural resources and wildlife trade Key responsibilities include: <ul style="list-style-type: none"> <li>• Policy implementation and licensing (including CITES)</li> <li>• Natural resource sustainability, management and conservation</li> <li>• Animal management, health and welfare</li> <li>• Endangered and threatened species management and conservation</li> <li>• Public education and awareness-raising</li> <li>• Media releases and visibility</li> </ul>
Primary divisions for CITES implementation	<p><b>Conservation Branch: Endangered Species Protection Division</b>                  As the CITES MA for Hong Kong SAR, this Division implements domestic laws and international treaties. Designated sections are responsible for implementing CITES and domestic trade measures on live animals and plants, and wildlife products and their derivatives.</p> <p>CITES implementation efforts are split into two key departmental sections, dividing responsibilities for issuance of licenses and enforcement:</p> <p><b>(1) Licensing &amp; Intelligence Section</b></p> <ul style="list-style-type: none"> <li>• Policy implementation and amendments (domestic or international)</li> <li>• Issuance of CITES permits for export, import, re-export, possession or control (commercial) and introduction from the sea</li> <li>• Intelligence gathering (e.g., Public hotline for reporting of illegal trade)</li> <li>• Recording of trade data</li> </ul> <p><b>(2) Endangered Species (Enforcement) Section</b></p> <ul style="list-style-type: none"> <li>• Inspection assistance to the Hong Kong SAR Customs and Excise Department (C&amp;ED) for species identification and permit checks at control points (main station at airport, travels on request to control points)</li> <li>• Assist in obtaining data and transferring case to Police to undergo the prosecution process</li> </ul>



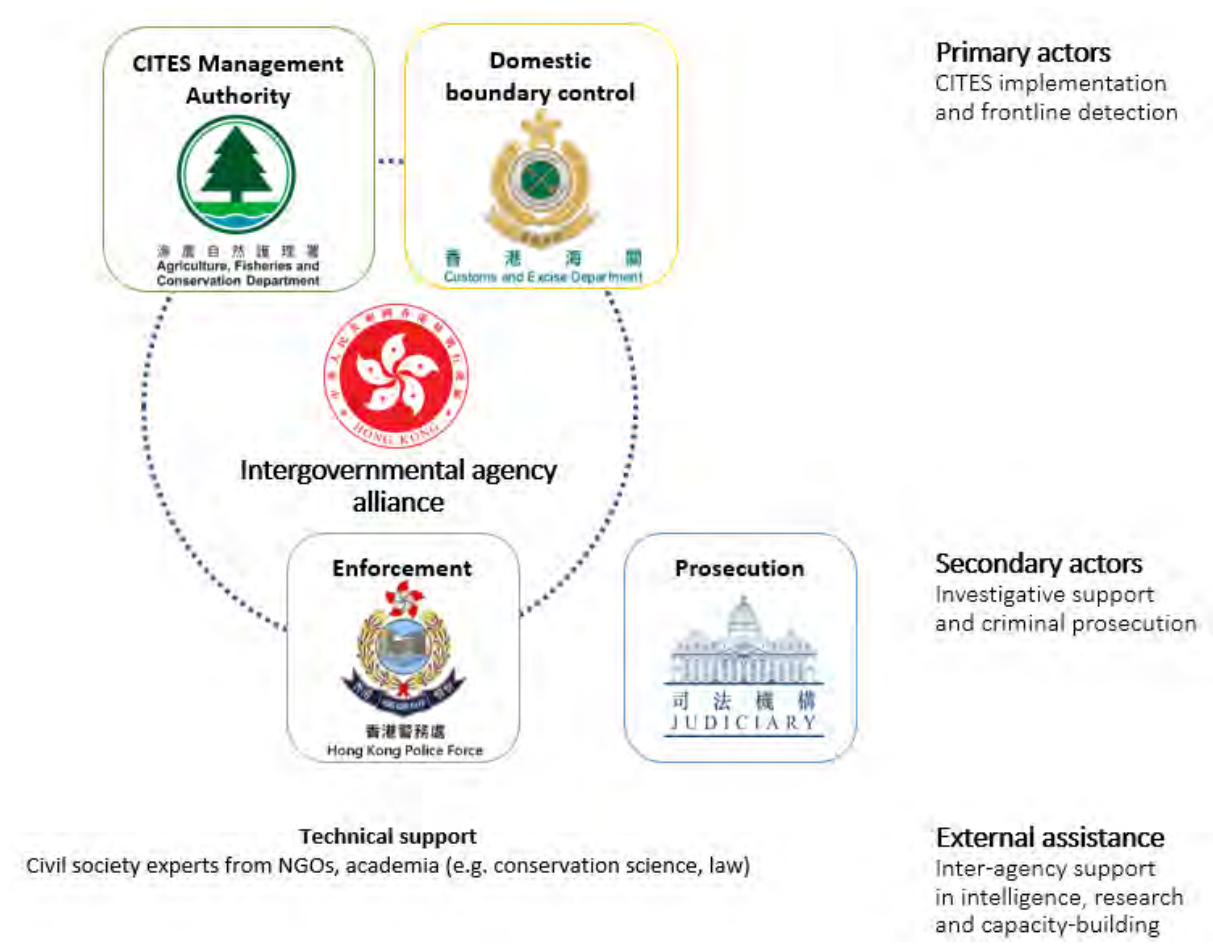
	<ul style="list-style-type: none"> <li>• Coordination with C&amp;ED in sharing intelligence from tip-offs (HKWTWG, public hotline)</li> <li>• Training and capacity building between enforcement authorities</li> <li>• Report to CITES Secretariat</li> <li>• Media releases and public awareness</li> </ul>
<p>Other relevant or related divisions to marine trade</p>	<p><b>Inspection &amp; Quarantine Branch:</b>  The <b>Import and Export Division</b> is responsible for conducting inspections of shipments at import or export, whether by air (Airport Unit) or through the border (Man Kam To, Boundary Control Unit). Authorized officers are stationed at key Control Points (see C&amp;ED, Figure 3), or may travel on-request to support Customs officers in the inspection of licenses, shipping documents and live or dead specimens of animals and plants. Those suspected to be endangered or CITES-listed species will be further assisted by officers from the Endangered Species (Enforcement) Section of the Conservation Branch.</p>
	<p>The <b>Animal Health Division</b> is responsible for overseeing and conducting quarantine measures for live animal transport (including pet animals and including fish) to ensure health and safety, as well as animal welfare standards are met.</p>
	<p><b>Fisheries Branch:</b>  Relevant to CITES implementation for marine fishes, this branch is mainly responsible for the domestic management, regulation and enforcement of commercial fisheries and aquacultural practices in local waters. The branch also provides infrastructural and technical support services, from fisheries development to wholesale marketing of marine fish (administered and operated under the Fish Marketing Organization, FMO), to promote sustainable development of the industry and conservation of local fish stocks.</p>
	<p>Key responsibilities relevant to CITES include:</p>
	<p><b>(1) Fisheries Management Division, Fisheries Technical Division &amp; Fisheries Support Division</b></p>
	<ul style="list-style-type: none"> <li>• Monitoring and recording of commercial fish stocks (including the carrying out of NDFs for CITES-listed marine fish species of domestic origin)</li> <li>• Fisheries development, extension and management activities to the industry; including technical studies and surveys, assistance and vocational training to fishermen (with the Fisheries Technical Division)</li> <li>• Education of sustainable or non-detrimental fishing practices</li> <li>• Fisheries Marketing Organisation (FMO)<sup>103</sup> administration and support of sustainable wholesale marketing services of live marine fish, including the promotion of local fisheries products under the Accredited Fish Farm Scheme and joint networks in Mainland China.</li> <li>• Policy amendments to regulate commercial fishery practices, such as setting industry standards for the use of non-detrimental fishing practices, and reviewing wholesale marketing standards for live marine fish.</li> </ul>
	<p><b>(2) Fisheries Enforcement and Special Projects Division</b></p>
	<ul style="list-style-type: none"> <li>• Licensing, such as issuance of fishing permits (including for research purposes), and registration of local fishing vessels to certify standards are met (e.g. vessel engines/gears, and compliance to fishing methods, equipment, fished areas and periods)</li> <li>• Policy implementation via enforcement at sea, to monitor fishing activities of local commercial vessels, to ensure compliance to legislation and performance of non-detrimental fishing activities</li> <li>• Policy implementation via enforcement at Hong Kong SAR's seven wholesale markets (operated under FMO), to ensure compliance to marketing standards, and regulation against illegal marine fish activities</li> </ul>
	<p><b>Country and Marine Parks:</b></p>
	<p>This branch is relevant to conservation efforts of seahorse habitats, with jurisdiction coverage of coastlines along Hong Kong SAR's country parks and marine reserves, as well as wetlands.</p>
	<ul style="list-style-type: none"> <li>• Forestry and natural resource management</li> <li>• Population surveying and monitoring</li> </ul>

<sup>103</sup> A statutory body of Hong Kong SAR, administered by AFCD, established under the Marine Fish (Marketing) Ordinance, Cap 291 to provide wholesale marketing services through the operation of wholesale fish markets.

### Inter-agency support in CITES implementation

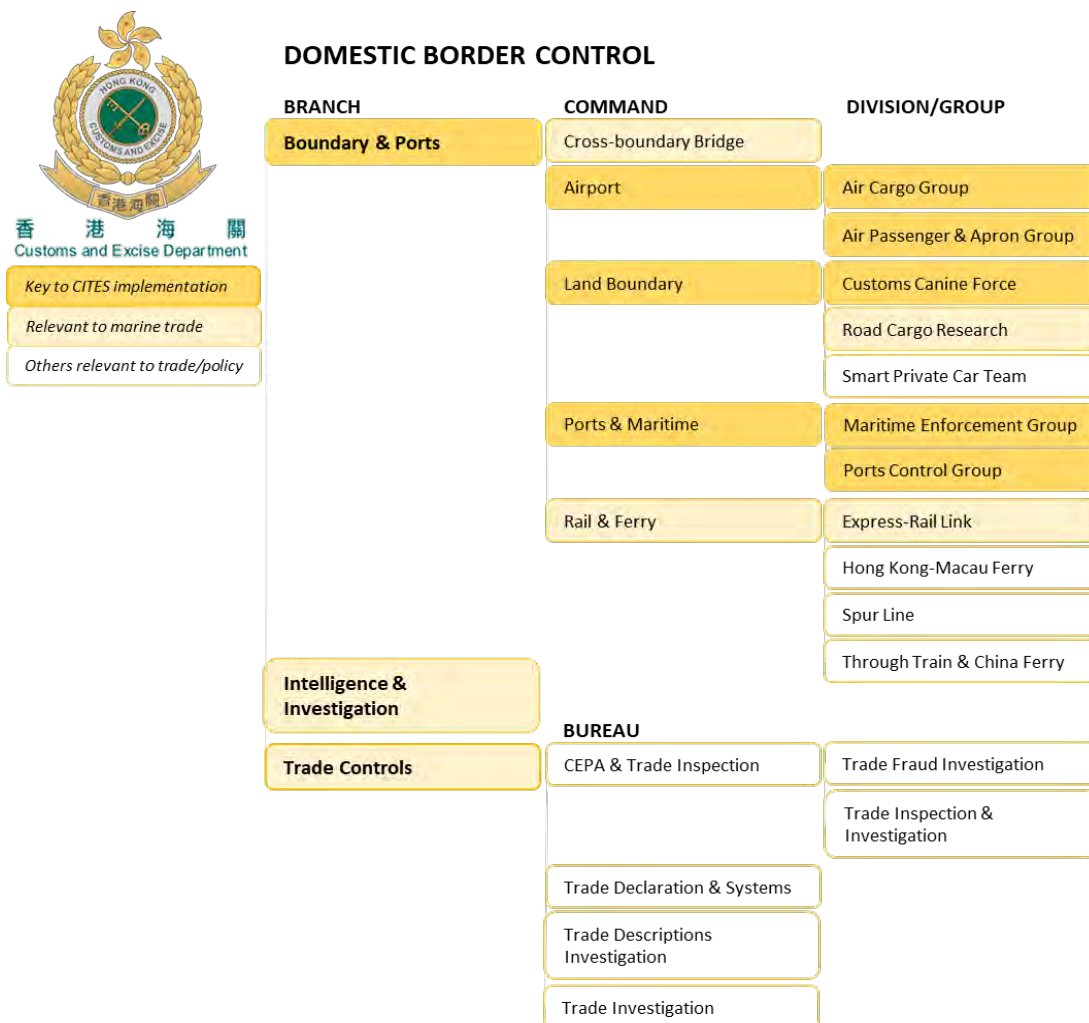
To strengthen enforcement capacity, efficiency and output, Authorities also collaborate between government departments to share intelligence, pool resources, and tighten regulatory efforts against criminal activity. In the context of trade in animal and plant species, CITES implementation by AFCD is primarily supported by an inter-agency alliance with the Customs & Excise Department (C&ED) for frontline detection and monitoring at domestic boundaries (Figure 9.2). This alliance also extends to the Hong Kong SAR Police Force (HKPF) for departmental collaborations, mostly with C&ED, in investigation and enforcement of cases linked to regional crime operations on criminal networks. Altogether, this alliance forms the basis of a united front between authorities to combat wildlife crime.

Following on-site arrest, suspects of smuggling or affiliated criminal activities would subsequently enter the Court system for prosecution of criminal charges, handled by the Department of Justice (DOJ).



**Figure 8.2.2.** Inter-agency involvement supporting CITES implementation for marine fishes in Hong Kong SAR.

**Customs and Excise Department (C&ED)**



**Figure 8.2.3.** Organogram of key C&ED divisions pertaining to CITES implementation for marine fishes in Hong Kong SAR.

Agency roles & key responsibilities

**International and domestic boundary control**

The C&ED is the frontline agency responsible for monitoring and regulating the movement of all goods and articles, whether for commercial trade or personal use, upon entry or exit across international and domestic boundaries of Hong Kong SAR. With focal emphasis on detection, inspection and investigation, the C&ED plays a primary role in anti-smuggling efforts by preventing the import and export of all articles (including illegal wildlife products) prohibited under domestic legislation, and ensuring that Hong Kong SAR fulfils CITES obligations and other participating international trade agreements.

Key responsibilities relevant to the trade of wildlife goods include:

- Screening consignments upon arrival at control points
- Inspection of items and permit information
- Confiscation of prohibited items
- Intelligence
- Media releases and public awareness

Primary divisions supporting CITES implementation

**Boundary and Ports Branch:**

Authorized C&ED officers apply passenger immigration control, frontline inspection of transported goods and personal effects at multiple command centres across Hong Kong SAR. These control points are located at both international boundaries and key international transit hubs or transport links for land-based, air-based and maritime control. AFCD officials are also stationed at major control points, such as the Hong Kong SAR International Airport, or may travel to location for inspection assistance on consignments with suspected CITES-listed animal and plant species (such as species identification).

**a) Land-based transport divisions**

- Cross-border **vehicular** transit to/from Macau Special Administrative Region of China (hereafter Macau SAR) and Mainland China (Cross-boundary bridge)
- Cross-border **railway** transit to/from Mainland China (Express-Rail Link, Spur Line)

**b) Airport division**

- International entry, transit or exit (passenger baggage, air freight/cargo)

**c) Marine transport divisions**

- Commercial **ports** and maritime transport (marine shipment/cargo)
- Cross-border **ferry** transit to/from Macau SAR and Mainland China (Hong-Macau Ferry, Through Train and China Ferry)

Other relevant or related divisions to trade

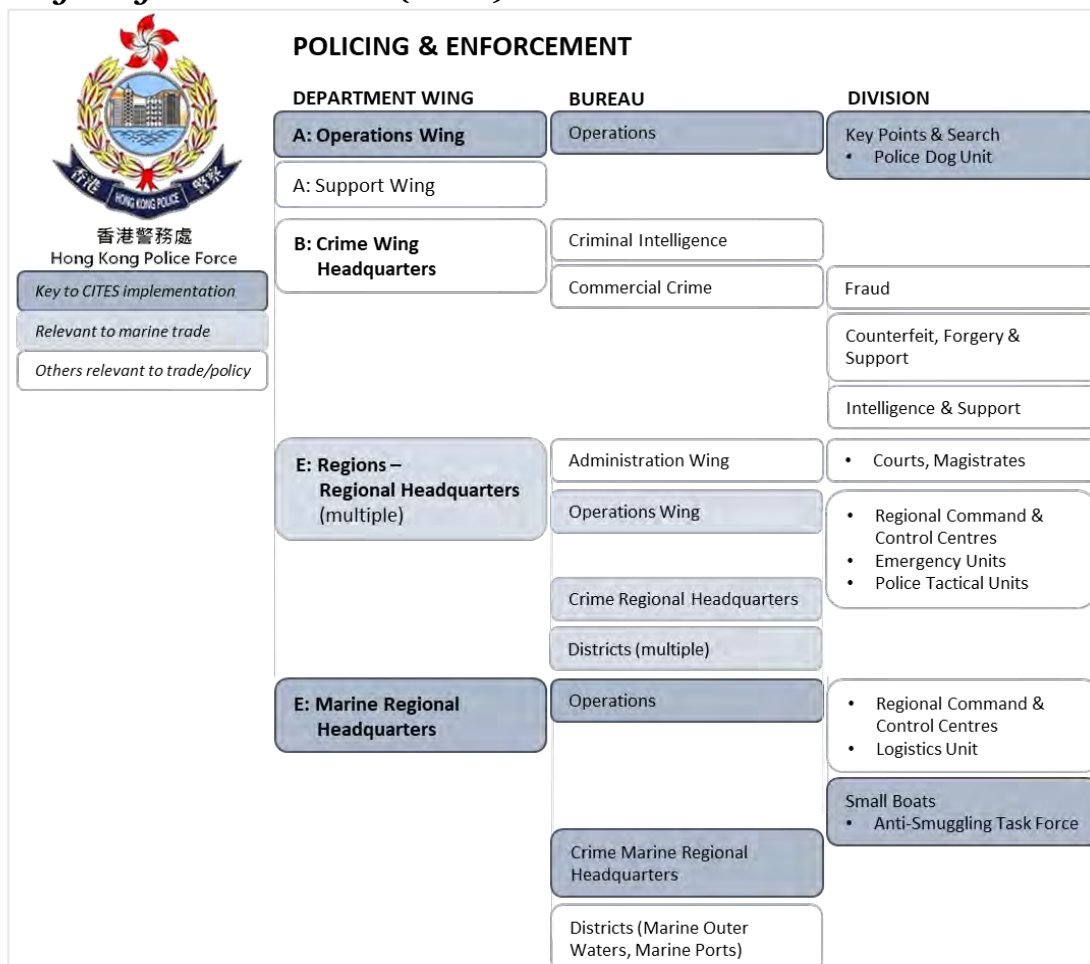
**Intelligence and Investigation Branch:**

This branch is dedicated to the collection of intelligence (including tip-offs) and criminal investigation of suspected smuggling or illegal cross-border activities. The close intergovernmental alliance with the HKPF allows opportunities for information-sharing from both investigative departments, and collaborative pooling of resources for joint operations, such as cases of suspected cross-border smuggling with affiliations to prime criminal networks.

**Trade Controls**

Applies to additional measures on international trade agreements, such as the inspection and compliance of commercially traded goods and standards, under the Closer Economic Partnership Agreement (CEPA) among China, Hong Kong SAR and Macau SAR.

**Hong Kong SAR Police Force (HKPF)**



**Figure 8.2.4.** Organogram of relevant HKPF divisions supporting CITES implementation for marine fishes and enforcing trade in Hong Kong SAR (adapted from [https://www.police.gov.hk/ppp\\_en/01\\_about\\_us/os\\_os.html](https://www.police.gov.hk/ppp_en/01_about_us/os_os.html)).

Roles and responsibilities

**Enforcement**

Key responsibilities relevant to the trade of wildlife goods include:

- Intelligence gathering and sharing on criminal activity
- Criminal investigations for illegal activity and trade

- Arrest and detainment of suspects awaiting prosecution or trial for criminal charges
- Court administration (District and Magistrate’s Courts)
- Imprisonment of charged criminals at correction facilities
- Capacity building and training for frontline detections and enforcement
- Crime prevention efforts and campaigns
- Media reports and public education

Primary divisions supporting CITES implementation

**Operations: Key Points and Search**

Refers to search and detection efforts at key locations, including C&ED Control Points and key points of interest (e.g., government buildings with high security measures). Particularly relevant are:

- **Police Dog Units**, especially of sniffer dogs that are trained to detect the possession or transport of prohibited goods or specific materials

**District-based regional operations**

For policing purposes, Hong Kong SAR is split into six distinct police districts or territorial regions to coordinate efforts for localized field operations. These include command centres and officer units for New Territories North (in green, with land boundaries to Mainland China), New Territories South (pink), Kowloon East (yellow), Kowloon West (blue), Hong Kong Island (red), and Marine for outlying islands (grey).

Particularly relevant are **Regional crime prevention units (RCPUs)**, who are responsible for identifying local crime trends or crime black spots, and organizing area-specific crime prevention campaigns and initiatives.



**Marine regional operations (Marine Police)**

The policing of maritime activities are separately enforced by the Marine Police, with operations split across six divisional boundaries in two marine districts. This includes the **Marine Outer Waters District (MOWDIST)** that covers the Marine North Division (in blue), Marine East Division (green) and Marine West Division (orange); and the **Marine Port District (MPDIST)** that covers the Marine South Division (pink, outer waters), Harbour Division (yellow) and Cheung Chau Division (red, including Lamma and Peng Chau islands) and Marine South Division (pink).

Particularly relevant is the **Anti-smuggling Task Force**, which focuses on small boat operations and interception of smuggling activities at Hong Kong SAR ports, channels and outer waters (including cross-border smuggling across the Greater Bay Area, to neighbouring Mainland China).

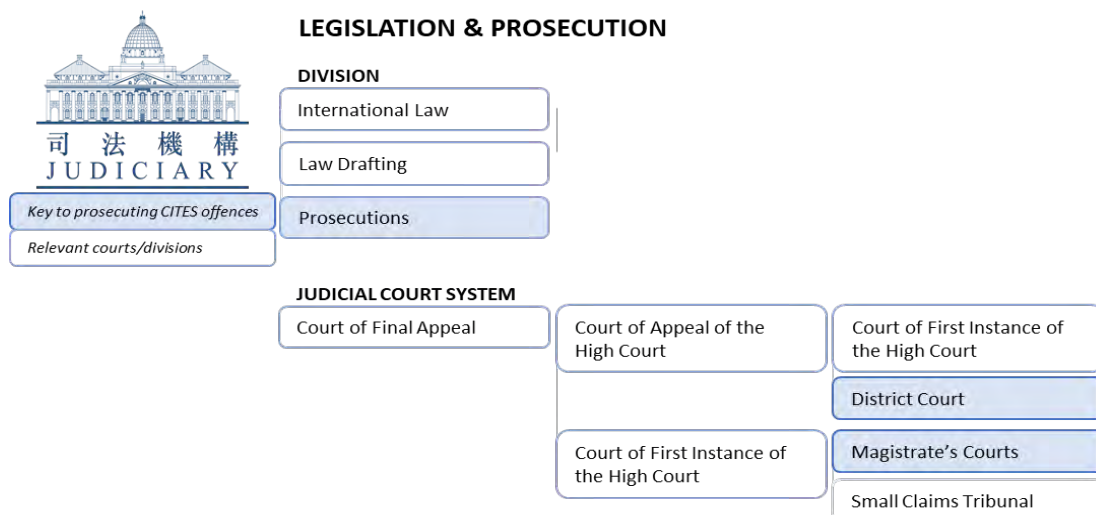


Other relevant or related divisions to trade

**Crime Wing: Criminal intelligence and Commercial crime**

These divisions are focused on intelligence-gathering and investigation on criminal activities. Trade-relevant investigations include focuses on commercial crimes, such as on trade fraud, forgery and counterfeit goods; categorized ‘serious and organized crimes’ such as trafficking of humans, drugs and fire arms, **and also illegal wildlife trade from August 2021**; as well as financial, cyber security and technology crimes (e.g., money laundering). Criminal intelligence may be shared to C&ED and AFCD officers for cases that require inter-agency expertise, resources, and collaborative operations.

**Department of Justice (DOJ)**



**Figure 8.2.5.** Organogram of relevant DOJ divisions that supports prosecution, and courts of justice that exercise criminal jurisdiction over CITES-related offences in wildlife trade in Hong Kong SAR (adapted from <https://www.doj.gov.hk/en/about/organisation.html> and [https://www.judiciary.hk/en/about\\_us/guide.html](https://www.judiciary.hk/en/about_us/guide.html)).

Roles and responsibilities	<p>Key responsibilities relevant to the trade of wildlife goods:</p> <ul style="list-style-type: none"> <li>• Prosecution process through Hong Kong SAR Court system</li> <li>• Conviction and sentencing</li> </ul> <p><b>Key actors:</b> Law and policymakers (Hong Kong Law Society), Court judges</p>
Relevant divisions	<p><b>Magistrate's Courts</b> All matters and offences, whether summary or indictable, appear at the Magistrate's courts initially. This court generally handles prosecution for a wide range of low-level non-compliances.</p> <p>These courts are present at C&amp;ED control points, such as the airport, to allow rapid progression and sentencing following immediate confiscation of items, detainment and criminal investigation by C&amp;ED officers. Prosecution at Magistrate's Courts may include the possession of prohibited items at small volumes or of low total value, which are often relevant for first-time offenders or independent traffickers and carriers. However, cases considered as minor offences (e.g., hawking, traffic contraventions) are heard by Special Magistrates, whom cannot impose a prison sentence. Cases for more serious indictable offences that require indictment before a judge or jury (and thus greater criminal investigative and legal resources) will progress through the Hong Kong SAR Court system, and transferred to higher level Courts (e.g., District Court or the Court of First Instance)</p> <p><b>District Court</b> The District Court deals with indictable offences transferred from Magistrates' Courts, which are, in this case, triable on indictment before a judge alone, without a jury. The District Court handles prosecution for higher level non-compliances, up to all serious criminal offences (excluding murder, manslaughter and rape), and may impose a maximum term of seven years imprisonment. Relevant cases at this level may include smuggling of large shipments of illegal wildlife goods, which may lead to higher prison sentences.</p>

**Consignment pathway for CITES-listed species**

Inter-agency involvement is apparent at various stages as trade enters or exits Hong Kong SAR (see Figure 6). This is a multi-step process that begins with **(1) licensing** and **(2) border control**, followed by **(3) enforcement**, and **(4) prosecution** upon identification of transport of prohibited goods.

**(1) Licensing**

Prior to arrival, consignments with CITES-listed species destined to land in or transit via Hong Kong SAR must first go through license approval and border inspection at the country of origin (CO) before transporting to the country of consignment or destination (CC, e.g., Hong Kong SAR). For legal export and import, the consignee (trader) must acquire valid CITES export permits from the local CITES MA at the CO, which will be carried on until arrival at the CC.

For imports into Hong Kong SAR, all consignments, whether consisting of dead or live specimens, must be declared to AFCD for legal entry and review of CITES permits and other transport documents. For live specimens (relevant to live marine fish), traders must also comply to domestic measures from AFCD. This includes applying for an additional import permit for review before entry, and a license to possess for commercial purposes and trade within Hong Kong SAR. All consignments expected for transit through Hong Kong SAR, towards a second CC or destination (including Mainland China and Macau SAR, which are separate CITES Parties), should be declared to AFCD for issuance of valid re-export permits before entry.

For live or dried specimens that are sourced domestically, consignees are required to apply for a valid CITES export permit from AFCD before exit from Hong Kong SAR.

## **(2) Border control**

Upon landing in Hong Kong SAR, all imported consignments are screened by C&ED officers at designated control points for goods inspection and review of shipping documents, declarations and permits. During customs inspection, if consignments are identified or suspected to carry potential CITES-listed species, C&ED officers will request assistance by AFCD officers on species identification, and transfer inspection duties to review compliance to CITES regulations. Consignments with live specimens will also undergo additional quarantine measures on-site to ensure compliance to health regulations.

Upon receiving customs clearance, the imported specimens will enter wildlife markets for domestic trade.

Consignments that are expected for re-export are kept at temporary holding facilities on-site, and will proceed to transport and subsequent international border control by CITES MAs at the second CC or destination.

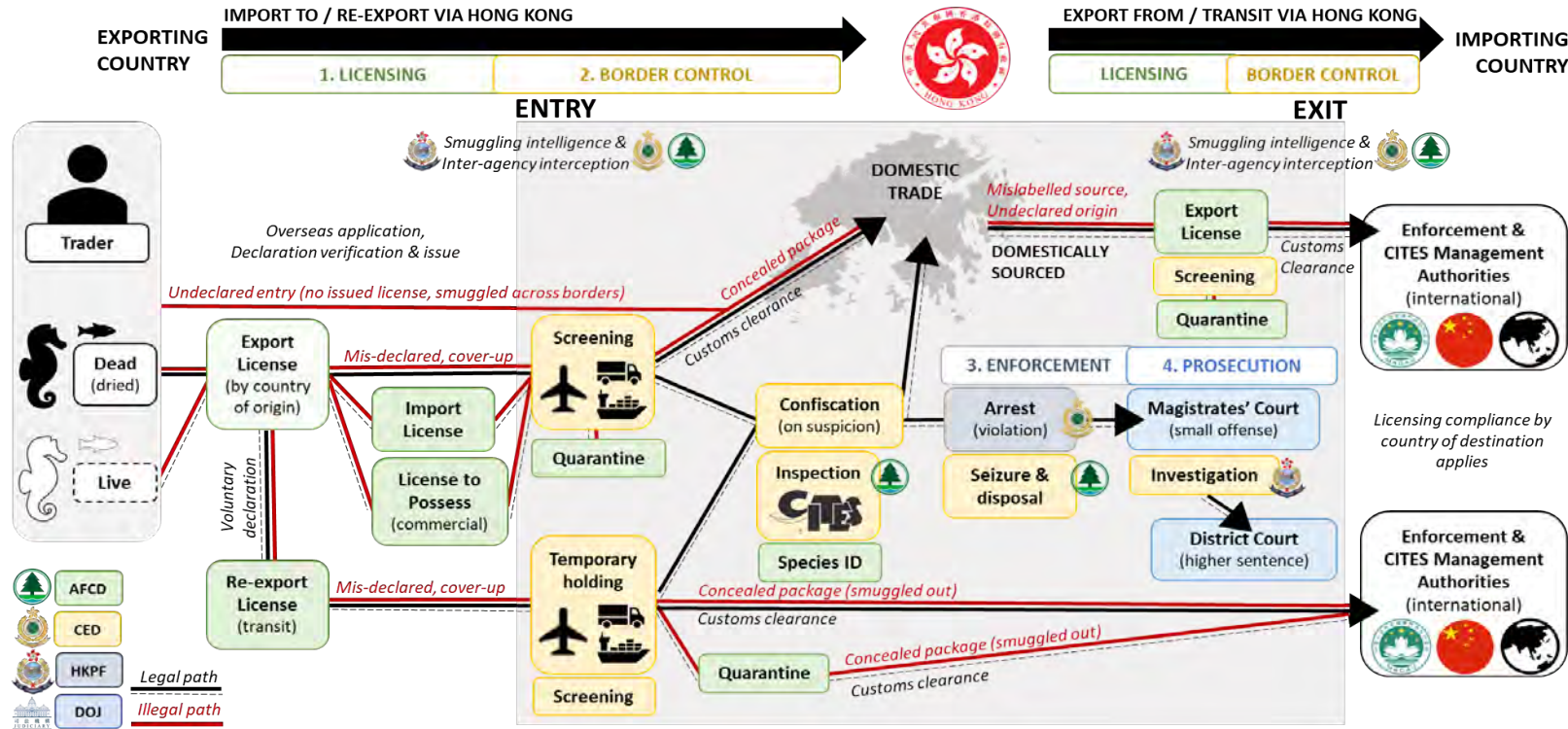
Consignments expected for legal export, such as live or dried specimens sourced domestically, will undergo goods inspection and review of documents by C&ED before exit from Hong Kong SAR (in this case, considered as CO). Subsequently, consignments will proceed to transport and international border control at the CC.

## **(3) Enforcement**

Suspected goods or shipments will be temporarily confiscated by C&ED officers, and reviewed for evidence by both C&ED and AFCD. If consignments are identified to have violated CITES or domestic measures (such as mis-declared content or smuggling of prohibited species), traffickers will be detained by C&ED enforcing officers at control points (can be assisted by the HKPF). The consignment in question will then be seized by C&ED.

## **(4) Prosecution**

Offenders will be tried and convicted through the Hong Kong SAR Court system by the DOJ. Cases for lower non-compliances will be charged, and most often disposed of at the Magistrates' Courts, which are present at major C&ED control points (such as the Hong Kong SAR International Airport). Court administration is supported by HKPF officers. Cases with more serious non-compliances will undergo further legal or criminal investigation (with policy assistance by lawmakers, or coordinated investigation with the HKPF for larger cases linked to regional crime). Such cases will be transferred to the District Court for trial and higher-level charges.



**Figure 8.2.6.** General pathway for consignments with CITES-listed species entering and exiting Hong Kong SAR. Inter-agency involvement is described by primary facilitators (in boxes) and collaborating agencies (in icons) along stages. Legal and illegal pathways are described by trade type and reference to dead or live specimens, in the context of marine fishes.



### **Coordination with Authorities in Mainland China and Macau SAR**

Neighbouring Mainland China and Macau SAR, Hong Kong SAR is a key financial and transport hub that carries prime geographic and infrastructural advantages as a gateway for commercial trade within the region. Hong Kong SAR also has flexible trade laws in place with Mainland China and Macau SAR in the form of bilateral Closer Economic Partnership Arrangements (CEPA). These are free trade agreements which allow for recurring influx and outflux of commercial trade with ease in processing of goods, as well as cross-border partnership of industries between Parties. However, the conveniences offered from tight connectivity to the Greater Bay Area and Southeast Asian region have also, simultaneously, increased Hong Kong SAR's profile as a prime target and hotspot for smuggling illegal wildlife products across borders.

At present, legal trade between Hong Kong SAR and Mainland China or Macau SAR is subject CITES regulations and licensing. Permits are required for consignments on import and export, whereas re-exports are subjected to voluntary declaration.

Hong Kong SAR CITES Authorities coordinate with Chinese governing bodies in both Mainland China and Macau SAR to strengthen enforcement efforts.

#### **Mainland China**

To support CITES implementation, AFCD officials are in regular contact with the The Endangered Species Import and Export Management Office of the People's Republic of China's National Forestry Grassland and Administration (CITES MA of China), mostly to enquire about permit information, relevant policy changes, and share intelligence and updates on border routes.

For the C&ED and HKPF, most coordination efforts with Chinese Customs agents and Provincial Forest Police (Guangdong) are primarily focussed on sharing intelligence and collaborating for coordinated sting operations on land or at sea, such as around the bay area near Northeast Hong Kong SAR and Shenzhen coastlines. More common are tip-offs for inspection of suspected shipments or consignments transporting across borders, or overnight smuggling activities.

Joint capacity building workshops with the National/Provincial Inter-Agencies CITES Enforcement Coordination Group (Mainland China) have also been held to share insights on latest efforts, intelligence, priorities and ways to strengthen border surveillance and coordination between agencies for improved CITES implementation.

### **Coordination with international CITES Parties**

AFCD maintains internal records of key contacts from international CITES MAs to allow ready channels for communication and enquiries. Enquiries are most often made for assistance and fact checking on permit applicability to enforcement measures at the CO, and confirming details with latest policy updates and bans/suspensions. Such records are not openly publicized due to confidential information.

#### **Other key actors**

##### **(1) Endangered Species Advisory Committee**

([https://www.afcd.gov.hk/english/aboutus/abt\\_adv/abt\\_adv\\_c.html](https://www.afcd.gov.hk/english/aboutus/abt_adv/abt_adv_c.html))

- Terms of reference: to advise the Director of AFCD upon any question which he may refer to it in connection with the administration of the Protection of Endangered Species of Animals and Plants Ordinance, Cap. 586.
- Members include representatives from AFCD, C&ED.
- Collaborate with local universities, organization experts/specialists with investigations, tip-offs, species identification, capacity building, traceability.

**(2) Specialist/experts (“Hong Kong Wildlife Trade Working Group”)<sup>104</sup>**

- Assist AFCD on screening and inspection of wildlife products with species identification, and capacity building.
- Development and sharing of techniques that may better trace or detect endangered species, especially from processed wildlife products and derivatives that are otherwise hard to identify (e.g., the use of DNA forensics for shark species identification from a mixed shipment of dried fins).
- Assist in conduction of technical studies, NDFs.
- Intelligence-sharing and reports on illegal trade practices.

**(3) Transport industry (e.g., airline companies):** supports C&ED with reports of illegal or suspicious activities and cargo (if sighted or detected).

**(4) TCM associations (e.g., Chinese Medicine Merchants Association:** collaborated with Project Seahorse to recommend voluntary standards and industry pledges to support legal trade of dried seahorses (e.g., size restrictions). No clear collaborations with AFCD/C&ED to date.

## 8.2.4 Understanding of seahorse fisheries, trade and regulations

### 8.2.4.1. What do respondents understand/know about seahorse fisheries and trade?

#### Fisheries

At present, Hong Kong SAR does not have appear to have any local fisheries for seahorses in domestic waters. This is generally understood by respondents as attributed to small coastal populations, and thus minimal supply interest from domestic sources. As such, it is generally considered to be of higher priority to focus on population monitoring and conservation efforts regarding the management of domestic seahorse populations, and policing the trade of internationally-sourced, dried seahorses at the import, export or market level.

Overall, respondents are generally unaware of any major concern or presence of supply-side regulatory efforts targeting seahorse captures from local fisheries. Nevertheless, some relevant knowledge is available from understanding of domestic fisheries and practices linked to the supply of other endangered marine species, such as wrasses, parrotfish, and sharks in domestic waters, which are commonly considered as high-profile focusses for management within the live reef fish and dried seafood sector. Particular mentions were of the domestic coastal trawling ban that extends coverage to seahorse habitats, as seahorse captures are generally understood as most likely resultant of violations by local fishing vessels from illegal trawling practices at Hong Kong SAR’s coastlines. This was more familiar amongst the civil society sector,<sup>105</sup> particularly academics with expertise on in-depth research in domestic marine fisheries, and institutions with conservation or monitoring programs on domestic seahorse populations, or initiatives directed at coastal habitats.

As the Licensing and Enforcement divisions at AFCD are focused on CITES implementation and policy regulation, local CITES Authorities generally deferred to the Fisheries Department at AFCD for further information regarding general dynamics of Hong Kong SAR fisheries, fishery records, other industry practices or encounters that may be relevant to coastal habitats, and regulations imposed on the supply and trade of marine fish stocks in Hong Kong SAR. However, relevance to seahorses is likely limited in the context of domestic fisheries.

#### **Localized seahorse captures and bycatch**

Although previous market surveys by Project Seahorse had encountered few retailers marketing dried seahorses with claimed “local” origin (“本地”; Foster et al. 2019), little was known amongst respondents on

<sup>104</sup> <https://www.admcf.org/timeline/hk-wildlife-trade-working-group/>

<sup>105</sup> i.e. NGO respondents, academics

any localized small-scale captures of domestic seahorse populations, or the extent of potential bycatch by commercial fisheries. This was generally attributed to understanding of low sightings of seahorses in recent decades, and seahorse habitats in constant threat from coastal development projects, such as that in Sam Mun Tsai in Tai Po, east Hong Kong SAR.

Nevertheless, one respondent from the civil society sector shared some internal observations and anecdotal accounts of local harvests during past interviews with local fishermen. According to their reports, local captures of seahorses are rare incidents in Hong Kong SAR waters. But if encountered, these are generally attributed to incidental bycatch by coastal fisheries, and usually yield small quantities of no more than 10 individuals at a time. Upon live capture, individuals are commonly dried outdoors in private settings, and claimed at times visible in the front yard of houses. Such incidents have been sighted among fishermen residing in Lantau Island.

If found for sale in the market (e.g., by small-scale TCM retailers), dried seahorses described to be from local waters have been seen labelled as “Guangdong seahorses” (“廣東海馬”), or described to be from “around here” in the “South China Sea” (南中國海; encountered during research for Foster et al. 2019). Nevertheless, the accuracy of such claims on product source and method of capture remains unclear and untested. Moreover, as such stocks are often accumulated with dried specimens collected over the course of a few years, local bycatch of seahorses is generally considered by respondents as small incidences, and thus of likely minimal trade significance.

## **Trade**

Hong Kong SAR CITES Authorities maintain several databases that record legal and illegal trade in seahorses (among other wildlife and commodities).

### **(1) CSD trade census & statistics database (public)**

- Records of consignments with declared licensing information (provided by AFCD)
- Aggregated data: Trade type (import, re-export, export, country of origin or consignment (CO, CC), consignment details (content, volume)
- Live: # of specimens, Dead: by kg
- Centralized system with other departments by commodity code (HKHH)
- Live and dried seahorses HKHH
- Live and dried pipefishes HKHH
- Seahorses are not recorded at the species level.

### **(2) AFCD licensing and consignment records (internal)**

- Database with additional records on licensing details (such as info on the permit holder, expiry date, authorized stamp on documents, consignment details (declared content) and inspection notes (such as non-compliances or inconsistencies).
- Data on CC/CO, consignment content, volume and value are summarized and reported to CSD database for public records.
- Seahorses are not recorded at the species level.
- Most other data are not openly publicized due to confidential information on licensee details, private records and criminal intelligence. Nevertheless, some data may be available upon special requests to AFCD, and should be enquired for more information on specific accessibility.

### **(3) CED seizure database and prosecution records (internal)**

- Records with species-specific information, tallied by AFCD.
- Data: may include control points, country of origin, export/re-export destination, prosecution details, consignment details (content, volume).
- CED Seizure records and trade data by control point are kept in an internal database and confidential (internal, not publicly available). Special requests can be made to AFCD to

obtain/inquire for data above (excluding information on control points and additional details on consignment packaging/content).

### ***Domestic trade dynamics & characteristics***

Dried seahorse specimens are primarily traded as traditional Chinese medicine. There is a much small trade in live seahorses for aquarium display. The following are key findings derived from respondents interviewed for this report:

#### **AFCD:**

- AFCD respondents reported that illegal trade in dried seahorses is mainly through airports – trafficking of dried seahorses into Hong Kong SAR is most common via passenger suitcases. Other smuggling attempts include concealment with other cargo such as frozen seafood, dried seafood, electronics, inter alia.
- Respondents had minimal awareness of the fact that Hong Kong SAR is reported as largest reported importer of dried seahorses in official CITES data.
- Respondents were aware of illegal trade in seahorses into and through Hong Kong SAR, but were unaware of the magnitude of the trade. Upon further discussion, respondents were unsurprised to learn of the purported scale of illegal trade considering continued challenges in dealing with other high-profile species that are lucrative in trade e.g., ivory.

#### **NGOs/academics:**

- Reported little information on seahorse markets specifically.
- NGO respondents suggested that the few live seahorses (1 or 2 individuals per shop) could be seen for sale in Tung Choi Street, Mongkok (otherwise known locally as ‘Goldfish Street’) are likely sourced from accidental capture near domestic coastal waters, or as bycatch.

#### **All respondents considered more information was needed on:**

- Data discrepancies between export/import of specimens across Hong Kong SAR-Mainland China borders (e.g., the volume of seahorses that remained in Hong Kong SAR vs being re-exported to Mainland China).
- Consumer motivations/demand for dried seahorses in Hong Kong SAR.
- The extent of public awareness on seahorse trade and regulations.

### **Policy/regulations**

#### ***CITES & domestic legislation***

- **All respondents** were familiar with CITES regulations for seahorses (Appendix II) and national export bans/suspensions for some source countries (common mentions being Thailand and the Philippines). They were also familiar with the general local enforcement mechanism applicable to the trade of live/dried seahorses, especially regarding the types of permits issued by AFCD (import, export, re-export, license to possess, introduction by the sea).
- However, **respondents from the civil society sector** (particularly with greater expertise in other marine fishes, or in conservation instead of policy) were less aware of certain licensing conditions, particularly with regards to the exemption of import or possession licenses for dead (dried) seahorses (see also Table 8.2.2). Most assumed that this was required for both live and dead (dried) seahorses, similar to that of exports.
- **All respondents** were also less aware of specific bans/suspensions by select exporting countries that seemed to be less openly marketed or directly labelled with products when sold in the domestic market (e.g., Senegal – dried seahorses often just grouped/referred together as “African seahorses” (非洲海馬)).
- Overall, the **civil society sector** respondents were less aware that re-exports rely on ‘voluntary’ declaration from the consignee. Although it is required for re-exports to be declared to the AFCD.

### **Regulation on trade standards and practices**

- Overall, respondents from **both government/civil society sectors** were generally less aware of trade/industry standards, or current regulations and practices. This includes industry-specific regulations on TCM products.
- Respondents were also unaware of any current domestic monitoring/patrol efforts directed at the TCM/dried seafood sector at the policing level (apart from ad-hoc encounters during existing patrols).
- However, it is generally understood that all inspection of commercial possession licenses (which are relevant to live marine fish) are performed as scheduled visits to retailers with prior notification.
- **Civil society groups** with expertise in marine fish were relatively more familiar of industry standards in relation to the trade of live reef fish or dried marine products linked to the seafood sector (e.g., FMO labelling, in-store quotas, fishing regulations), but more for particular species (e.g., wrasses, groupers, sharks for fin trade).

#### **8.2.4.2. What is respondent awareness of, and use of, existing information and tools for seahorses?**

##### **a) IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group/Project Seahorse resources**

- Content: Species identification guide to help practitioners identify unique species characteristics and variations between particular countries of origin, NDF framework
- Access: Project Seahorse website
- Awareness: LOW-NONE
  - AFCD: heard of the ID guide but was not aware of details – they had not used it because all seahorse species are listed in Appendix II. Respondents considered seahorses to be outside the scope/priority of AFCD for species identification.
  - Most NGO/academics (working group/advisory committee): Respondents considered seahorse species generally difficult to identify, especially when dried. Respondents considered that seahorse identification/implementing CITES at a species level was of low priority for AFCD due to the backlog of work needed for other endangered marine fish species. However, two respondents with conservation background were familiar/aware of the toolkits due to involvement in seahorse population surveys/sightings. They reported using the identification guides for differentiating between species during coastal dive surveys, and they were aware of Project Seahorse guides for population monitoring.

##### **b) Exposure to Project Seahorse research on seahorse trade and conservation**

- Content: Trade research that documented large volume of dried seahorses being imported into Hong Kong SAR from countries with trade bans/suspensions (Foster et al. 2019), latest information on seahorse regulations/export bans/suspensions.
- Access: peer reviewed literature databases, Project Seahorse website, NGO reports
- Awareness: LOW-MEDIUM
  - AFCD: Unaware of PS trade/other seahorse conservation papers. Aware of seahorse trafficking issues cross borders due to exposure during enforcement. Aware of seahorses being common in domestic markets, but unaware of origin, whether stocks are old/new. Nevertheless, expressed interest in reading the Foster et al. 2019 paper to understand findings and research methods. Ultimately, respondents were unsurprised that illegal supplies persist, due to the common technique of trafficking via concealed package/passenger suitcases noted previously.
  - NGOs/academics: Most have read Foster et al. 2019, or articles mentioning/summarizing the study, and find it very informative/important to highlight the significance of Hong Kong SAR as a hub for illegal trade (seahorses and other dried marine fish/TCM products). More aware of domestic markets due to personal observations/exposure or related research in similar venues (e.g., dried seafood/TCM markets etc.), but unclear about details such as origin of dried seahorses for sale in Hong Kong SAR. Apart from one respondent, experts not focused on

seahorses/marine fish were generally less aware of related articles or information about TCM trade on seahorses – but were interested to read more (particularly on the extent of continued supply from countries with export bans or suspensions), due to relevance in signifying the importance of policy reform and/or strengthened enforcement to tackle illegal wildlife trade.

**c) Export policies among historically important seahorse exporting Parties**

- Content: latest information on seahorse export bans/suspensions by country
- Access: CITES meeting documents; also Foster et al. 2019
- Awareness: MEDIUM
  - AFCD: more aware of bans/suspensions from key importing Parties – those that are historically important sources of seahorse imports into Hong Kong SAR (e.g., Thailand).
    - Less clear on specific regulation details from other countries (suggested needed direct contact to other Parties' CITES MAs to confirm).
  - NGOs/academics: aware of bans/suspensions for select Parties (e.g., Thailand, Philippines).
    - Experts with conservation background were aware of the export bans/suspensions as they related to bans on other marine fishes.
    - Experts with policy background were aware of the export bans/suspensions for Parties that were historically important sources of seahorse imports into Hong Kong SAR (based on observations and historic trade records).

**d) HKU wildlife legislation toolkits for prosecution support on cases relevant to wildlife trafficking**

- Content: Species-specific guides summarizing relevant international and domestic wildlife and animal welfare legislation, prosecution history and supplementary documents. Seahorse toolkit in early development at time of writing.
  - Used for capacity building/training to lawmakers and DOJ judges (have been used for training workshops to lawmakers/authorities in Hong Kong SAR and in Mainland China). Also provided to judges/lawmakers/jury for immediate legislative use at relevant court trials, to provide knowledge on the local context and significance in relation to wildlife smuggling, and thus encourage more informed decisions and appropriate sentencing to wildlife offenders.
- Access: Academic (organizer)
- Awareness: NONE (except for respondent responsible for designing toolkits)
  - AFCD/NGOs/other academics: no awareness
  - Toolkit at present only made available (directly from organizer) to Hong Kong SAR's lawmakers and judges to increase contextual awareness (encourage more appropriate ruling in judiciary courts), and used in enforcement training of local Authorities and lawmakers.

**Respondents identified a number of tools and sources of information that are not focused on seahorses but could potentially be expanded to include them:**

***NGO toolkits and guides***

**(1) Species Identification toolkits and guides**

- By local NGOs or conservation academia, but more focussed on high profile species/products such as shark fin, elephant ivory, redwood etc. There are very few focused on marine species.
- Used to support or train AFCD officers in building capacity for species identification, or improving detection skills and equipment (such as DNA sampling/isotopes).

**(2) Situation reports or literature:**

- By C&ED: large-scale/internationals smuggling cases and networks.
- By local NGOs or conservation academics: technical/monitoring studies to reflect domestic situations and trade dynamics.

### 8.2.4.3. Seahorse export/import paths

#### Knowledge of key actors along trade pathways

AFCD: Regulations for App II species

- Some understanding of trade of seahorses in Hong Kong SAR markets (predominantly TCM, smaller aquarium trade).
- Aware of seahorse export suspensions for some Parties – primarily Thailand, as it has always been a dominate source of dried seahorses into Hong Kong SAR.
- Knowledge of main trade hotspots and illegal paths (marine, land borders).
- Knowledge of common trafficking methods (suitcases).
- Minimal expertise on seahorse species identification.
- Unclear regarding discrepancies in trade statistics between Mainland China and Macau SAR borders, specific to seahorses.

C&E at control points:

- Knowledge of common trafficking methods, main trafficking routes for marine fishes (those associated with shark fin trade).
- Minimal expertise on seahorse species identification.

Hong Kong SAR Police (including Marine Police):

- Unclear, likely knowledge of seashore trade is minimal compared to that of CITES Appendix I/higher profile species (e.g., ivory) – though aware of main trade pathways/trafficking routes for wildlife trade in general between Mainland China and Hong Kong SAR

China and Macau SAR MA/CED at borders:

- Unclear, likely lesser on knowledge specific to seahorses for similar reasons as Hong Kong SAR Police.

Merchants (information from interviews carried out for Foster et al. 2019):

- Aware of source of seahorses by countries of origin.
- Some awareness of seahorse species identification.
- Some awareness of export regulations in key source countries (e.g., Thailand), and of certification requirements for trade of dried marine products in/out of Hong Kong SAR.
- Mixed awareness regarding legality and illegality of seahorses in trade.
- Highly knowledgeable about seahorse uses in TCM / domestic demand for seahorses.
- Aware of main trade pathways between Mainland China and Hong Kong SAR.

Practitioners (based on interviews carried out for Foster et al. 2019):

- Highly knowledgeable about seahorse uses in TCM.
- Less knowledgeable on specifics with regards to seahorse regulation by countries of origin.
- Less knowledgeable on seahorse species identification.

### 8.2.4.4. Seahorse conservation status and taxon-specific regulations

#### a) CAP. 586 Protection of Endangered Species of Animals and Plants Ordinance

In Hong Kong SAR, CITES regulations are implemented in local legislation under Cap. 586, the Protection of Endangered Species of Animals and Plants Ordinance.<sup>106</sup> Under Cap. 586, CITES-listed animals and plant species are categorized by Schedules to the Ordinance based on CITES Appendices.

- **Schedule 1** defines regulations for species classified under CITES Appendix I (Part 2, stricter provisions) and Appendix II and III (Part 3). The Appendices are construed and interpreted accordingly, with the exception of animals or any part/derivative of animals that are “bred in captivity for commercial purposes by a captive-breeding operation registered by the Secretariat for breeding animals of an App I species.” In this case, for the purposes of CAP 586, enforcement on App

<sup>106</sup> <https://www.elegislation.gov.hk/hk/cap586>

I species with conditions relevant to the aforementioned exception will be treated as App II, and regulated as such.

- **Schedule 2** describes the relevant licenses, issuing conditions and fees.
- **Schedule 3** defines the relevant interpretation and conditional application of Convention instruments for hybrid animals, appropriate and acceptable destinations, artificially propagated, bred in captivity etc.; and the standardization of Convention-issued permits and certifications.
- **Schedule 4** defines stricter regulations on elephant hunting trophies and elephant ivory, specifically.

**Table 8.2.2.** Guidelines on AFCD licensing requirements and conditions for CITES-listed marine fishes, and applications to seahorses under Cap. 586. Appendix = CITES Appendix.

License type	Requirement by:		Seahorse requirement by AFCD		AFCD licensing guidelines for seahorses
	CITES	AFCD	Live	Dried	
Import	Appendix I	Appendix I Appendix II* Appendix III*	Yes	No	Issue: By CITES MA at destined country of import (AFCD, HK SAR).  Conditions: For live specimens of wild or captive-bred origin.
Export	Appendix I Appendix II Appendix III	Appendix I Appendix II Appendix III	Yes	Yes	Issue: By CITES MA at country of export origin (including from Mainland China or Macau SAR).  Conditions: For live or dead specimens of wild or captive-bred origin.
Re-export	Appendix I Appendix II Appendix III	Appendix I Appendix II Appendix III	Yes	Yes	Issue: By CITES MA at country of transit (AFCD, HK SAR).  Conditions: For live or dead specimens of wild or captive-bred origin. Applicable to consignments destined for Mainland China or Macau SAR.
Possession or control	No	Appendix I Appendix II* Appendix III*	Yes	No	Issue: By AFCD (HK SAR).  Conditions: For live specimens of wild or captive origin. Applicable for commercial purposes only (exempted for personal use).
Introduction from the sea	Appendix I Appendix II	Appendix I Appendix II	No	No	Issue: By AFCD (domestic only).  Conditions: For live or dead specimens of wild origin. Applicable to marine fishes landed from the high seas.

\* Select relevance to listed species, conditions apply.

Hong Kong SAR's regulations on marine fishes complies with CITES requirements for Appendix II species (Table 8.2.2). Relevant to seahorses, this refers to licenses/permits to export and re-export, which are required for live or dead specimens of wild or captive bred origin. Re-exports between Hong Kong SAR and Mainland China or Macau SAR are also required for declaration or notice to AFCD, prior to cross-border transport. However, re-export permits are exempted if goods remain in the transport vessel on transit (such as cargo held within an aircraft), and has not officially been removed from the vessel or considered 'landed'



in Hong Kong SAR to go through inspection. At present, it is unclear among respondents how much or to what extent this situation could apply to the transport of dried seahorses.

In addition, Hong Kong SAR Authorities apply stricter domestic measures to support CITES implementation (Table 8.2.2). Although import permits are not required for Appendix II species, all live specimens are required to obtain a valid license/permit upon import, regardless of CITES Appendix. This is mostly administered to provide support and an alternative route to processing live specimens (such as live marine fish), which are susceptible to health impacts from transport challenges (e.g., Dead-On-Arrivals, DOAs), and would need to be quickly brought to a temporary holding facility for animal health inspections and quarantine. At the same time, the additional requirement supports authorities to allow closer monitoring and recording of live animal transports across borders. As dead specimens do not require urgent removal in this context, this requirement is exempted for such consignments.

Hong Kong SAR Authorities also require consignees to obtain a valid license to possess live specimens for commercial use (Table 8.2.2). Although not required by CITES, this licensing system was implemented by AFCD to allow monitoring of live animal/plant trade into domestic markets. As licenses require indication of source country, this is particularly significant for marine fishes with often mixed legal standards between countries of origin, such as the live aquarium trade, live reef fish for the seafood trade, or captive-bred industries. As traders are required to indicate the display possession licenses openly, AFCD officers will perform on-site inspections to allow quick screening on the validity of documents and compliance to license conditions (such as stock quotas, expiry dates). However, all inspection visits are scheduled with prior notice to traders. This is also exempted for goods declared for personal use, and not required for dried specimens.

Generally, officers tend to focus on criteria that is most prone to non-compliance, such as permit validity in relation to expiration dates and country of origin with key export regulations (e.g., export bans/suspensions; Table 8.2.3). Application histories of permit holders may also be reviewed for frequent applications as persons of interest, or reviewed in conjunction with the nature of declared packing lists for potential matches to trafficking profiles. Officers may also seek inconsistencies in estimated times of arrival/departure (such as prolonged stays on transit, or mismatches) to identify suspicious behaviour. Offenders of non-compliance will be arrested for violation against CAP. 586. Depending on the severity of the offense, offenders may receive a maximum sentence of up to 10 years imprisonment, and a fine of HK\$10 million. Severity in this context is considered often dependent on the prohibited article identified, quantity, the offender's criminal history, and their overall connection to larger organized cases of crime.

**Table 8.2.3.** Key criteria declared and inspected (blue) on CITES paperwork or transport documents, by C&ED and AFCD

Permit holder	<ul style="list-style-type: none"> <li>● <a href="#">Application history (frequency, license type)</a></li> <li>● Signature history</li> </ul>
General	<ul style="list-style-type: none"> <li>● <a href="#">Permit validity (expiration period)</a></li> <li>● Permit authenticity (CITES authorization)</li> <li>● <a href="#">Packing list: Description of goods/items</a></li> <li>● Volume of goods/items (no. of units or kinds of packages)</li> <li>● Endorsement signature of affiliated businesses (contextual relevance, authenticity of company stamp)</li> <li>● Shipment invoice and other relevant shipping documents</li> </ul>
Import*	<ul style="list-style-type: none"> <li>● <a href="#">Country/territory of origin (CO)</a></li> <li>● <a href="#">Estimated date of arrival/entry</a> into importing country/territory (HK SAR)</li> </ul>
Export	<ul style="list-style-type: none"> <li>● <a href="#">Country/territory of export origin (CO)</a></li> <li>● <a href="#">Estimated date of departure/exit</a> from exporting country/territory (CO)</li> </ul>
Re-export	<ul style="list-style-type: none"> <li>● <a href="#">Country/territory of consignment destination (CC)</a></li> <li>● <a href="#">Duration of stay in re-exporting country/territory</a> (HK SAR)</li> <li>● Address of holding facility in re-exporting country/territory (HK SAR)</li> <li>● <a href="#">Estimated date of departure/exit</a> from re-exporting country/territory (HK SAR)</li> </ul>
Possession or control*	<ul style="list-style-type: none"> <li>● Country/territory of origin (CO)</li> <li>● <a href="#">Address</a> of holding facilities/ commercial premises</li> <li>● <a href="#">Stock volume</a></li> <li>● <a href="#">Date of stock possession</a></li> </ul>

\*Not relevant to dried seahorses

**b) Standards for commercial retail practices of TCM products, set up by the Hong Kong Chinese Medicine Merchants Association (HK CMMA)**

- Voluntary pledges among merchants (members) to comply to the recommended sizing standards with their seahorse supplies. Unclear if currently being applied.

#### 8.2.4.5. General laws and regulations of benefit to seahorses

**a) CAP. 60 Import and Export Ordinance<sup>107</sup>**

Main policy administered by the C&ED with regards to managing all import and export of goods and effects (including wildlife products) into and out of Hong Kong SAR. This legislation is applied at all C&ED control points, and supports implementation with an outline of trade regulations by transport vessel or mode.

#### Industry-specific regulations

**b) CAP. 171 Fisheries Protection Ordinance<sup>108</sup>**

This policy covers regulatory measures and associated enforcement actions on fishing practices undertaken within Hong Kong SAR's territorial waters. These measures are set in place to prevent conducts of activities that detriment the conservation of domestic fish and aquatic populations, and to promote sustainable practices within the commercial fishing industry.

- Effective as of 29 December 2012, CAP. 171 included **a complete trawling ban** in Hong Kong SAR's domestic waters (stringent measure that covers all coastlines and relevant seahorse habitats).

<sup>107</sup> <https://www.elegislation.gov.hk/hk/cap60>

<sup>108</sup> <https://www.elegislation.gov.hk/hk/cap171>

**c) CAP. 549 Chinese Medicine Ordinance<sup>109</sup>**

- Legislation enforced by the Department of Health, and supported by the Chinese Medicine Council of Hong Kong SAR. Mainly applies to regulation of raw animal and plant materials for medicinal use in TCM.
- Unclear of specific coverage to seahorses (no direct mention).

**d) CAP. 455 Organized & Serious Crimes Ordinance (OSCO)<sup>110</sup>**

Policy amended in August 2021. Recognizing the significance of Hong Kong SAR as a prime hub for illegal trafficking of high value wildlife into Southeast Asian countries, and a key location with links to organized crime networks in the region, wildlife crime has been listed under OSCO. This allows authorities from the HKPF to apply their investigative powers tackling wildlife trade, and increase the resources placed on criminal investigation against wildlife syndicates.<sup>111</sup>

#### **8.2.4.6. Seahorse seizures**

Hong Kong SAR Customs and Excise Department (C&ED) maintains an internal database of seizures data and prosecution records. The records may include species, control points, country of origin, export/re-export destination, prosecution details, and consignment details (content, volume). The C&ED seizure records and trade data are kept in a confidential internal database. Special requests can be made to AFCD to obtain some of the data (excluding information on control points and additional details on consignment packaging/content). AFCD made enforcement records on dried seahorses seized at C&ED control points from 2015 to April 2021 available for this report (Table 8.2.4).

The data report a range of 15-84 seizures of dried seahorses from 2015-2020, with the majority being seizures on import (Table 8.2.4). None were reported to the species level. The number of seizures increased from 2015-2017, was highest in 2017 and 2018, and then declined in 2019 and 2020. The lowest number of seizures was in 2020. The total weight of seized imports was 2,172.7 kg or ~808,000 individuals<sup>112</sup> across 2015-2020. The mean weight per seized import was 7.9 kg or ~3,000 individuals across this same time frame. On the other hand, the total weight of seized exports was 228 kg or ~85,000 individuals, and the mean weight per seized import was 11.4 kg or ~4,200 individuals, across 2015-2020.

Following 2018 revisions to CAP. 586, which heightened maximum penalties for non-compliance, enforcement records suggest an increasing percentage of seized cases in dried seahorses that resulted in successful prosecutions, and the severity of sentences over time (Table 8.2.4). However, offenders are often given only small fines (some as low as HK\$1300), and/or charged with short prison sentences (under 1 year), unless cases involve violations of other Ordinances or paired with other endangered wildlife products such as shark fin or pangolin.

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<sup>109</sup> <https://www.elegislation.gov.hk/hk/cap549>

<sup>110</sup> <https://www.elegislation.gov.hk/hk/cap455>

<sup>111</sup> [https://www.scmp.com/news/hong-kong/law-and-crime/article/3145530/hong-kong-authorities-get-new-legal-powers-fight?module=perpetual\\_scroll&pgtype=article&campaign=3145530](https://www.scmp.com/news/hong-kong/law-and-crime/article/3145530/hong-kong-authorities-get-new-legal-powers-fight?module=perpetual_scroll&pgtype=article&campaign=3145530)

<sup>112</sup> Using the universal conversation factor of 2.69 g per dried seahorse (Foster et al. 2016).

**Table 8.2.4.** Enforcement records on dried seahorses seized at C&ED control points from 2015 to April 2021. Source: data provided by AFCD and C&ED records, updated as of May 2021).

	2015	2016	2017	2018	2019	2020	2021 (Jan-Apr)
Seized cases	38	40	84	70	47	15	5
Imports	38	39	76	60	46	15	5
Exports	0	1	8	10	1	0	0
Seized quantity	318.8kg	353.7kg	340.4kg	997.4kg	266kg	124.4kg	17.9kg
Imports total	318.8kg	352.5kg	329kg	811kg	237kg	124.4kg	17.9kg
Imports per seizure event	8.4kg	9.0kg	4.5kg	13.5kg	5.2kg	8.3kg	3.6kg
Exports total	0	1.2kg	11.4kg	186.4kg	29kg	0	0
Exports per seizure event	0	1.2kg	1.4kg	18.6kg	29kg	0	0
Convicted cases	1 (2.6%)	3 (7.5%)	2 (2.4%)	8 (11.4%)	16 (34%)	5 (33.3%)	2 (40%)
Max. penalty	Fine	Imprisonment & Fine	Imprisonment	Imprisonment	Imprisonment	Fine	Imprisonment
Sentence	HK\$3,000	2 weeks (suspended 12 months) & HK\$15,000	2 weeks	2 months	9 months	HK\$15,000	18 months**
Min. penalty	-	Fine	Imprisonment	Fine	Fine	Fine	Fine
Sentence	-	HK\$10,000	4 weeks (suspended 12 months)	HK\$1,300	HK\$1,500	HK\$5,000	HK\$8,000
Major CO* Africa	Mozambique	Mozambique	Mozambique	Mozambique	-	Senegal	-
Major CO Asia	Malaysia Philippines	India -	- -	Indonesia Malaysia	China (Mainland) Indonesia	Indonesia -	China (Mainland) -
Major CO Other	-	-	Mexico	-	-	-	-
Species ID	-	-	-	-	-	-	-

\* CO = Countries of Origin

\*\* Sentence for mixed trafficking case with multiple wildlife products (48.11kg shark fin and 0.56kg dried seahorses)

As noted above, 2020 saw a lower number of reported seizures of dried seahorses (Table 8.2.4). This is potentially related to impacts from pandemic related personal and commercial travel restrictions, impacting existing trade pathways. Nevertheless, seizures reported in 2020 and 2021 suggested trade was still active across land and maritime borders despite COVID restrictions (see details in Table 8.2.5). No relevant regulations were deemed revised in response to COVID-19, with relations to the trade or consumption of live or dried seahorses in Hong Kong SAR.

**Table 8.2.5.** Case details on recent seizures of dried seahorses in Hong Kong SAR, as of May 2021.

	<b>2020 case: Largest seizure in 2 years</b>	<b>2021 case: Maritime smuggling</b>
Source	<a href="https://www.info.gov.hk/gia/general/202012/01/P2020113000666.htm">https://www.info.gov.hk/gia/general/202012/01/P2020113000666.htm</a>	<a href="https://www.hkalpo.com/new-blog/first-smuggling-bust-2021">https://www.hkalpo.com/new-blog/first-smuggling-bust-2021</a>
Seizure Date	25-26 November 2020	7 January 2021 (1:30AM)
Location	Tuen Mun (HK-Shenzhen land border) - Seizure: Lok Ma Chau Control Point - Bust: Residential apartment (storehouse)	Lau Fau Shan (HK-Shenzhen maritime border) - Bust: Nim Wan Road Waterfront, near Ha Pak Nai Tsuen
Seized goods	Dried seahorses	Dried seahorses
Volume	- Seizure: 25kg (airmail parcel) - Bust: 50kg (sacks)	- Bust: 8 boxes (volume NA) - Other: Dried shark fin (77 sacks), Red wine (1 box)
Value	Est. HK\$ 1 million (US\$ 129,000)	Est. HK\$ 4 million (combined)
Operation	Inbound express consignment	Maritime cargo
Method of concealment	- Declared as “body scrub”	- Concealed in boxes with electronic components and medical products (pain relief patches)
Transport mode	Air (postal services)	Land (moving truck) >Sea (speedboat)
Route	Indonesia > Mainland China (Shenzhen) > Hong Kong SAR* (seized)	Hong Kong SAR* (seized) > Mainland China > (Suspected: Shekou, Guangdong province)
<b>Enforcement</b>		
Key actors	C&ED - Inspection & seizure - Undercover operation on intended recipient AFCD - Follow-up investigation & ID of endangered species	HK Police, C&ED - Intelligence gathering - Shoreline stakeout, interception & seizure AFCD - Follow-up investigation & ID of endangered species
Arrests	Violation of Cap. 586: Import/export of endangered species without a license - 1 male (age 63 years)	Violation of Cap. 586: Import/export of endangered species without a license - 4 males, unloading goods to boat (3 intercepted 100m offshore) Suspected violation of Cap. 60: Attempt to export unmanifested cargo - 1 male (age 39 years), driver (affiliated arrest, 8 January 2021)
Case status	Prosecution (ongoing, under investigation) - Cap. 586 maximum penalty: 10 years imprisonment & HK\$10 million fine	Prosecution (ongoing) - Cap. 586 maximum penalty: 10 years imprisonment & HK\$10 million fine - Cap. 60 maximum penalty: 7 years imprisonment & HK\$2 million fine

Seized CITES specimens, including dried seahorses, are kept in custody of AFCD. Specimens will be disposed at an undisclosed facility according to the recommendations and guidelines of CITES, including donation for scientific research, education, enforcement training. Disposal of dried seahorses by dumping (e.g., incinerated) is the last resort, if no other option is available. There is no definite time of keeping the specimens.

At present, no species-level records for seahorses have been collected on traded or seized specimens (live or dried). This is because all seahorses are listed on CITES Appendix II, and due to challenges in identifying differences between species for dried specimens. The genus level listing is perceived positively by Authorities, as it is considered to increase efficiency during inspections – non-compliances in relation to seahorses will be met with immediate confiscation, regardless of species differences. As such, under current conditions and guidelines, AFCD considers additional species identification for seahorses of relatively lower interest or priority than other CITES-listed marine fish species. Nevertheless, photos of seized specimens can be made available on request (see Figure 8.2.7).



**Figure 8.2.7.** Scaled photos of seized dried seahorse specimens (provided by AFCD in November 2020).

To aid in enforcement, AFCD has set up a local hotline for domestic wildlife trade reports and a “Public Reward Scheme”.<sup>113</sup> Members of the public are encouraged to provide information on illegal import, export and possession of endangered species by calling (150 6978) or emailing (espint@afcd.gov.hk). Registered Informers who provide reliable information leading to successful seizure of endangered species or conviction will be rewarded with cash. Similarly, members of the public may report any suspected smuggling activities to Hong Kong SAR Customs' 24-hour hotline (2545 6182) or its dedicated crime-reporting email account (crimereport@customs.gov.hk).<sup>114</sup> Screening process for tip-offs are stringent to ensure authenticity, security and trustworthiness of information. The list of pre-vetted or trusted members includes specialists that are part of the HK Wildlife Trade Working Group, as well as other industry or public informants.

Another source of information on seized wildlife in Hong Kong SAR is the ADMCF Wildlife Products Seizure (WiPS) & court case proceedings database.<sup>115</sup> The Wildlife WiPS Database provides seizure details and specificity not available in C&ED's data. Data may be made available upon request, but were not analysed for this report.

<sup>113</sup> [https://www.afcd.gov.hk/english/conservation/con\\_end/con\\_end\\_rew/con\\_end\\_rew.html](https://www.afcd.gov.hk/english/conservation/con_end/con_end_rew/con_end_rew.html)

<sup>114</sup> <https://www.info.gov.hk/gia/general/202012/01/P2020113000666.htm>

<sup>115</sup> [https://www.admcf.org/wp-content/uploads/2021/03/STIE\\_Full-report-.pdf](https://www.admcf.org/wp-content/uploads/2021/03/STIE_Full-report-.pdf)

## **8.2.5 Challenges, opportunities and recommendations**

The following challenges, associated opportunities, and recommendations, were identified by the author during the course of the study.

**Challenge: Seahorse species ID is challenging for live and dead specimens.** Identifying dried specimens is made harder from broken parts, darkened features and discoloration from the drying process.

- Limited expertise in seahorse species identification among key enforcement actors (AFCD, C&ED).
- At present, frontline officers (AFCD/C&ED on inspection) do not use seahorse species identification tools as all seahorses are listed on Appendix II. AFCD finds this helpful in increasing efficiency for enforcement to focus on other Appendix I or select Appendix II species for identification. However, CITES should be implemented on a species level, and species names can be key to understanding trade routes.

### **Opportunities and recommendations:**

- **Explore use of DNA forensics and technology for species identification.**
  - Continue collaborations with civil society organizations (e.g., the HKU Conservation Forensics Lab, BLOOM) and other experts to explore innovative methods with respect to species identification (e.g., testing use of DNA technology to identify species, determine geographic origin of specimens, identify seahorses in prepared TCM).
  - AFCD is already collaborating with experts on DNA profiling for dried shark fin specimens and on using digital mark recognition to identify individual live wrasses/groupers via digital markers.
- **Capacity building and training workshops in species identification and enforcement detection for frontline officers (AFCD, C&ED).**
  - Hold joint capacity building workshops with local experts or the IUCN SSC SPS SG to improve expertise of AFCD and C&ED officers in species identification upon inspection for improved traceability. Such workshops can also create an opportunity to promote the use of existing tools provided on species identification, outline challenges, and discuss alternative ways that can be mutually beneficial (such as having enforcement officials record species data without compromising departmental priorities).
- **Raise awareness on importance of species identification for dried seahorses destined for the TCM sector.**
  - Through dialogue and workshops, raise awareness on the importance of species identification in monitoring international trade for dried seahorses. This is particularly crucial to Hong Kong SAR, in light of its regional significance as the largest documented importer of dried seahorses.
- **Collaborate with the TCM industry, including regulatory agencies (such as CMMA), merchant associations and relevant TCM academics, to assist AFCD and C&ED officers in species/product identification.**

**Challenge: Hong Kong SAR enforcement authorities are not fully aware of regulations imposed on seahorse exports by source countries.**

### **Opportunities and recommendations:**

- CITES Parties should inform the Secretariat of any national management measures that regulate or restrict international trade in seahorses. The Secretariat should make a list of national measures available on the CITES website for importing Parties to consult.
- Once such a list is available, Hong Kong SAR CITES Authorities should make sure all relevant authorities are aware of its contents.

**Challenge: Enforcement efforts for /detection of illegal shipments of dried seahorses is opportunistic.**

- Most seizures to date are opportunistic, and consist of small volumes being moved in passenger baggage through airports, when large volume shipments are moving by sea cargo.
- Limited ad hoc inspections of shipments are ineffectual in combating illegal trade, and only intelligence-based enforcement has a chance to effectively combat trafficking.
- Data are needed to support in intelligence-led enforcement, instead of the more opportunistic seizures that occur now.

**Opportunities and recommendations:**

- Consider establishing designated ports of entry for wildlife to allow clear identification of legal/illegal sources of trade. This would allow for efficient coordination of resources, personnel and expertise at focal control points (including screening, inspection and assistance), and easy identification of illegal trade pathways outside of control points
- Authorities should coordinate with the transport industry to support C&ED efforts in early detection of wildlife traffickers, detaining consignments in question, and providing data to increase enforcement efficiency and coverage at all major entry/exit points.
- Improve coordination and intelligence sharing among key actors within Hong Kong SAR with respect to marine trade routes – i.e., among enforcement authorities in the fisheries sector, C&ED officers at marine control points, and the Marine Police.
- Improve intelligence sharing among authorities in Hong Kong SAR, Mainland China and Macau SAR (CITES MAs, as well as key enforcement actors such as national Customs and police departments) to help inform targeted enforcement efforts.

**Challenge: Current levels of enforcement/prosecutions are too low to deter illegal wildlife trade**

- Prosecutors and lawmakers in Hong Kong SAR are challenged by limited awareness of relevant wildlife laws and insufficient knowledge of the domestic context of illegal trade to impose appropriate sentences to wildlife offenders.
- There are limited incentives for frontline officers to crackdown on illegal shipments, other than press releases/media coverage for larger seizures.
- Current sentences for wildlife crimes are often deemed too low and ineffective to be a deterrent against repeat offenders and overall engagement in wildlife trafficking.
- Most arrests are on traffickers (small players), low penalty (e.g., often simply fined at the airport, few cases reach the district/magistrate court that allows more severe sentencing).
- Only the really large seizures are made public.

**Opportunities and recommendations:**

- Hong Kong SAR has made a significant step on August 2021, by including wildlife crime as part of the CAP. 455 Organized and Serious Crime Ordinance in Hong Kong SAR to improve investigative power and resources.
- Endorse and promote the establishment or use of species-specific, legislative toolkits to better inform enforcement officials, policymakers and prosecutors on the relevant international and national-specific regulations for CITES listed species, regional prosecution history, regional trade context and recognize discrepancies to allow appropriate prosecution (e.g., HKU toolkits).
- Explore ways to build capacity of enforcement authorities and relevant key stakeholders (e.g., lawmakers) to be better equipped in detecting, policing and managing illicit trade in dried TCM products (such as seahorses).
- Share information on court records and prosecution outcomes with NGOs/experts that attend wildlife case hearings, to improve species and enforcement knowledge of all involving actors, and collective



understanding on characteristics of trafficked cases and trafficking behaviour for illicit wildlife products. At the same time, such efforts will create an active dialogue between groups, allowing opportunities to share expertise, and fill knowledge gaps on relevant seahorse conservation, trade and policy information to all relevant individuals.

- Establish reward schemes and accreditation efforts for front line officers to incentivize detection of illicit wildlife trade.
- Require records of small fines and prosecution data for tracking the extent of illicit trade.
- Increase media coverage of IWT cases – seizures and prosecutions.

**Challenge: Lack of data/transparency on dried seahorse re-exports from Hong Kong SAR into Mainland China.**

- Re-exports rely on ‘voluntary’ declaration from the consignee. Considering the major role that Hong Kong SAR plays as a key re-export hub and prime target for wildlife trafficking, this loophole facilitates unreported re-exports across borders, particularly with respect to alternative/informal transport routes by land/sea where monitoring and enforcement is limited.
- Under reporting of re-exports paints an incomplete picture of Hong Kong SAR as a key re-export hub. Reported re-exports from government records are often perceived by civil society groups to vastly underestimate trade volumes for dried seahorses or other dried marine products. This is particularly relevant for dried seahorses, as interviewees and personal reports from TCM merchants considered that most of the imported specimens do not stay in Hong Kong SAR, but are rather held temporarily awaiting eventual export to Mainland China.

***Opportunities and recommendations:***

- Improve traceability of seahorse shipments through the use of individual identifiers, possibly GPS microchipping, to improve traceability of imports and re-exports and facilitate monitoring of domestic trade/markets (if kept within jurisdictions).
- Increase frontline resources at control points, particularly at land boundaries and ports. Strengthen enforcement protocols to maximize inspection coverage, and increased training in frontline detection to maximize enforcement personnel and capacity.
- Seek support from the transport industry to maximize points of detection and coverage at key land boundaries and marine ports (e.g., discuss possible standardized inspection protocols for incoming cargo, which can be used to supply information to frontline officers (C&ED) to support detection/inspections.
- Enforcement authorities from Hong Kong SAR, China a Mainland and Macao should discuss the establishment of regular discussions to build capacity of frontline officers, and standardized mechanisms to increase the efficacy and efficiency of coordinative efforts to tackle cross-border trade.

**Challenge: domestic trade of dried seahorses, within Hong Kong SAR, is not monitored and thus not well known.**

- Import and domestic possession licenses do not apply to dead specimens/dried seahorses, but are deemed highly relevant to improve the detection of illicit domestic trade within Hong Kong SAR.
- The scale and nature of Hong Kong SAR’s domestic seahorse market is not well known.
- This challenge relates to that regarding a lack of understanding about trade flows from Hong Kong SAR to Mainland China.

***Opportunities and recommendations:***

- Amend policies for import and possession licenses to cover dead seahorses, to increase traceability of products in the TCM trade, and allow for domestic monitoring of trade flows and wildlife markets within Hong Kong SAR.
- Create an active dialogue with regular meetings between key enforcing actors and the private sector (TCM practitioners, TCM merchants) to better communicate and discuss solutions to address industry

concerns, and allow opportunities for multi-stakeholder engagement in supporting and improving efficacy with regulating and reducing illegal trade within the industry.

- Consider establishing industry/trading standards for licensed merchants to purchase/supply TCM products (including dried seahorses) that complies to both sustainable fishing practices and international regulations (consider bans/suspensions in source countries).

**Challenge: Limited publication and awareness of urgency or severity of wildlife trade issues.**

- Low public awareness of illicit trade origins of dried seahorses marketed in Hong Kong SAR.
- Limited public use and awareness of the Public Intelligence hotline and Reward Scheme for reporting illicit trade of wildlife products.

**Opportunities and recommendations:**

- Raise awareness on domestic illegal trade of wildlife products through information and education campaigns.
- Promote reward schemes and intelligence-sharing in the public sector – increase awareness of public intelligence hotline: increase incentives to use the system, support enforcement officials in detection.
- Expand reward scheme applications to related industries, such as TCM practitioners and pharmacists, to increase incentives in intelligence-sharing among major stakeholders (with direct contacts to local suppliers and consumers).

## 8.2.6 Key references

- Foster, S., Wiswedel, S. & A.C.J. Vincent (2016) Opportunities and challenges for analysis of wildlife trade using CITES data – seahorses as a case study. *Aquatic Conservation: Marine and Freshwater Ecosystems* 26(1):154-172.
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- Foster, S.J. & A.C.J. Vincent (2021) Holding governments accountable for their commitments: CITES Review of Significant Trade for a very high-volume taxon. *Global Ecology and Conservation* 27:e01572. <https://doi.org/10.1016/j.gecco.2021.e01572>
- Vincent, A.C.J. (1996) *The international trade in seahorses*. TRAFFIC International. 172 pp.

## Annex 8.2.

### Annex 8.2.i. Acronyms and abbreviations.

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<b>Glossary I: Agencies and organizations</b>	
ADMCF	ADM Capital Foundation
AFCD	Agriculture, Fisheries and Conservation Department
C&ED	Customs and Excise Department
CSD	Census and Statistics Department
DOJ	Department of Justice
DOH	Department of Health
ESAC	Endangered Species Advisory Committee
ESPLG	Endangered Species Protection Liaison Group
HKCMMMA	Hong Kong SAR Chinese Medicine Merchants Association
HKPF	Hong Kong SAR Police Force
HKWTWG	Hong Kong Wildlife Trade Working Group
NICECG	National Inter-Agencies CITES Enforcement Coordination Group (China)
OPCF-HK	Ocean Park Conservation Foundation, Hong Kong SAR
PICECG	Provincial Inter-Agencies CITES Enforcement Coordination Group (China)
WWF-HK	World Wildlife Fund, Hong Kong SAR

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<b>Glossary II: Key references</b>	
Catty	Unit of measurement (1 catty = 0.61 kg)
CEPA	Hong Kong SAR and Macau SAR Closer Economic Partnership Agreement
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CITES MA	CITES Management Authority
CITES SA	CITES Scientific Authority
HKD	Hong Kong Dollar (USD 1 = HKD 7.7659, as of 10 May 2021)
Hong Kong SAR	Hong Kong Special Administrative Region of China
HS codes	Harmonized System codes
Macau SAR	Macau Special Administrative Region of China
NDF	Non-Detriment Findings
NES	Locations Not Elsewhere Specified (NES) or included
TCM	Traditional Chinese medicine
USD	United States Dollar

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**Annex 8.2.ii. Relevant Hong Kong SAR legislation.**

<b>Relevant Hong Kong SAR legislation</b>	
Cap. 60	Import and Export Ordinance <ul style="list-style-type: none"> <li>• Cap. 60A: Import and Export (General) Regulations</li> <li>• Cap. 60E: Import and Export (Registration) Regulations</li> <li>• Cap. 60H: Export (Certificates of Origin) Regulations</li> <li>• Cap. 60I: Import and Export (Carriage of Articles) Regulations</li> <li>• Cap. 60L: Import and Export (Electronic Cargo Information) Regulations</li> </ul>
<b>(1) Endangered species and Animal law</b>	
Cap. 586	Protection of Endangered Species of Animals and Plants Ordinance (Old legislation under Cap 187: Animals and Plants (Protection of Endangered Species) Ordinance) <ul style="list-style-type: none"> <li>• Cap. 586A: Protection of Endangered Species of Animals and Plants (Exemption for Appendix I Species) Order</li> <li>• Cap. 586B: Protection of Endangered Species of Animals and Plants (Exemption for Appendices II and III Species) Order</li> </ul>
<b>(2) Fisheries &amp; Ports</b>	
Cap. 171	Fisheries Protection Ordinance <ul style="list-style-type: none"> <li>• Cap. 171A: Fisheries Protection Regulations</li> <li>• Cap. 171B: Fisheries Protection (Specification of Apparatus) Notice</li> </ul>
Cap. 291	Marine Fish (Marketing) Ordinance <ul style="list-style-type: none"> <li>• Cap. 291A: Marine Fish (Marketing and Exploration) Regulations</li> <li>• Cap. 291B: Marine Fish (Marketing) By-laws</li> <li>• Cap. 291C: Assumption of Responsibility for Markets (Consolidation) Notification</li> </ul>
Cap. 313	Shipping and Port Control Ordinance
(3) Medicine	
Cap. 549	Chinese Medicine Ordinance <ul style="list-style-type: none"> <li>• Cap. 549D: Chinese Medicine Practitioners (Discipline) Regulation</li> <li>• Cap. 549F: Chinese Medicines Regulation</li> <li>• Cap. 549G: Chinese Medicines Traders (Regulatory) Regulation</li> </ul>

## **8.3. Taiwan Province of China**

### **8.3.1 Background**

Taiwan Province of China is a historically important consumer of dried seahorses, predominantly for use in traditional Chinese medicine (TCM). Project Seahorse trade research carried out in 2000 documented that although some consumed seahorses were caught locally as bycatch, the majority were imported, primarily from Southeast Asia and Mainland China (Kwan & Vincent 2006). Volume estimates obtained from traders suggested that annual domestic consumption may have exceeded 10 tonnes (~37,000 individuals). Various sources also reported the use of seahorses as curios, aquarium fish and as snack foods, but these practices were not observed during the survey. Taiwan Province of China's own Customs records analysed at that time suggested that between 1983 and 1987, 4-6 tonnes of dried seahorses were imported annually (~15,000 – 22,000 individuals based on a global conversion rate of 2.69 g per seahorse, Evanson et al. 2011). Recorded annual imports then increased to 7-12 tonnes between 1988 and 1998 (~26,000 – 45,000 individuals). Recorded exports were much lower, indicating that most imported seahorses were consumed locally.

After seahorses were listed on CITES in 2002, with implementation in 2004, CITES Parties began to report their trade with Taiwan Province of China – and the CITES trade data from 2004-2011 suggested much higher imports of dried seahorses into Taiwan than documented in the 80s and 90s. Indeed, Taiwan Province of China ranked the second-largest importer of dried seahorses based on the declared trade volume in CITES trade database – supposedly importing between 179,000 and 1.8 million individual per year across the eight-year period (Foster et al. 2016).

As a historically major destination for dried seahorses and emerging source of live seahorses for ornamental trade, Taiwan Province of China has an important role to play in ensuring successful implementation of CITES for seahorses. This report explores how Taiwan Province of China manages the export/import of seahorses, and whether and how it responds to the existing export bans or suspensions from the major source countries.

### **8.3.2 Methods**

This study was carried out by Prof. Ting-Chun Kuo, Assistant Professor, Institute of Marine Affairs and Nature Resource Management, National Taiwan Ocean University. Dr. Kuo has a PhD from the Institute for the Oceans and Fisheries at The University of British Columbia, where she worked with Project Seahorse studying how international trade agreements impact the movement of at-risk species across international borders.

This study took place in May 2020 to August 2020. To gather information for the study, Dr. Kuo interviewed representatives of the following agencies, institutions and expertise:

1. Marine Wildlife Conservation Division, Ocean Conservation Administration (n = 2)
2. Bureau of Foreign Trade (n = 1)
3. Customs Administration (n = 1)
4. A traditional Chinese medicine trader (n = 1)
5. Department of Aquaculture, National Taiwan Ocean University (n = 1)

The respondents included senior and government officers at the frontline dealing with CITES-relevant business, a former importer, as well as academics. Since TRAFFIC closed its office in Taipei in 2017, there is no NGO specifically focusing on wildlife trade in Taiwan Taiwan Province of China. Other wildlife and marine-related NGOs in Taiwan Province of China are not familiar with seahorse conservation or trade; thus, they were not interviewed for this report. Each interview took 15 minutes to 1.5 hours, with an average of 40 minutes, depending on the respondents' knowledge and willingness to share. All interviews were conducted in Mandarin. Questions asked in the interviews included their understanding of seahorse trade and fisheries in Taiwan Province of China, current regulations, their responsibility in managing seahorse trade (and other

CITES species), the tools they use/expect to use for the management, the difficulties they encounter, and any relevant things regarding seahorse/CITES marine species trade they would like to share.

The study also reports on the trend of seahorse imports/exports of Taiwan Province of China from official datasets. There are two datasets used in this report: the data from Taiwan Province of China Customs and the data reported in CITES trade database. Taiwan Province of China Customs data is independent of the data in the CITES trade database. Seahorse trade data were retrieved from Taiwan Province of China Customs from 1983–2018 (<https://portal.sw.nat.gov.tw/APGA/GA30>, accessed August 11, 2020). The Customs data included declared annual dried seahorse import weights from putative export country and the import values (in USD), though the import values in the dataset were only broken down by country after 2002. Seahorse trade data were also retrieved from the CITES database for 2004-2018 (<https://trade.cites.org/>, accessed August 11, 2020). Data involving Taiwan Province of China in the CITES database are reported by other Parties – imports into Taiwan Province of China are reported by the exporter, exports out of Taiwan Province of China are reported by importer. The global conversion rate of 2.69 grams per individual seahorse (Evanson et al. 2011) was used to convert weights into number of individuals for dried trade, whereas all live seahorses were assumed to be traded in individuals (Foster et al. 2016).

### 8.3.3 The Actors

Taiwan Province of China has agencies that act as equivalents to CITES Management, Scientific and Enforcement Authorities.

Taiwan Province of China regulates the international trade of CITES-listed species based on the first part of the Article 13-1 of Taiwan Province of China's Foreign Trade Act (貿易法):<sup>116</sup>

#### Article 13-1

Exportation of endangered species of wild fauna and flora, and products thereof, is not allowed without authorization by the competent authority. No importation is allowed without submitting an export permit issued by the exporting country.

Endangered species of wild fauna and flora, and products thereof, are governed by the Wildlife Conservation Act (including wildlife bred or raised in captivity that have been announced as governed by the Wildlife Conservation Act), and require authorized documentation issued by the central competent authority prior to importation or exportation.

#### 第 13-1 條

瀕臨絕種動植物及其產製品，非經主管機關許可，不得輸出；未經取得出口國之許可文件，不得輸入。

前項瀕臨絕種動植物及其產製品，屬野生動物保育法公告之保育類野生動物及其產製品者，於申請輸出許可或輸入前，應先依野生動物保育法規定，申請中央目的事業主管機關同意。

That said, while the core law for wildlife conservation is the Wildlife Conservation Act (WCA; (野生動物保育法)<sup>117</sup> in Taiwan Province of China, the export and import of CITES-listed wildlife are regulated even if they are not listed as endangered species in the WCA.

There are three types of agencies responsible for regulating the international trade of CITES-listed wildlife in Taiwan Province of China:

- (1) Management Agency: The Bureau of Foreign Trade (國際貿易局)

<sup>116</sup> <https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=J0090004>

<sup>117</sup> <https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=M0120001>

The management agency is responsible for legalizing the list of species for trade regulation, designing the procedure of exporting/importing, approving the trade permits, and communicating/cooperating with other domestic and international agencies and organizations for CITES implementation matters.

- (2) Scientific Agencies: Council of Agriculture (the Conservation Division in the Forestry Bureau and the Fishery Agency; 農業委員會林務局保育科及漁業署) and the Ocean Affairs Council (Ocean Conservation Administration; 海洋委員會海洋保育署)

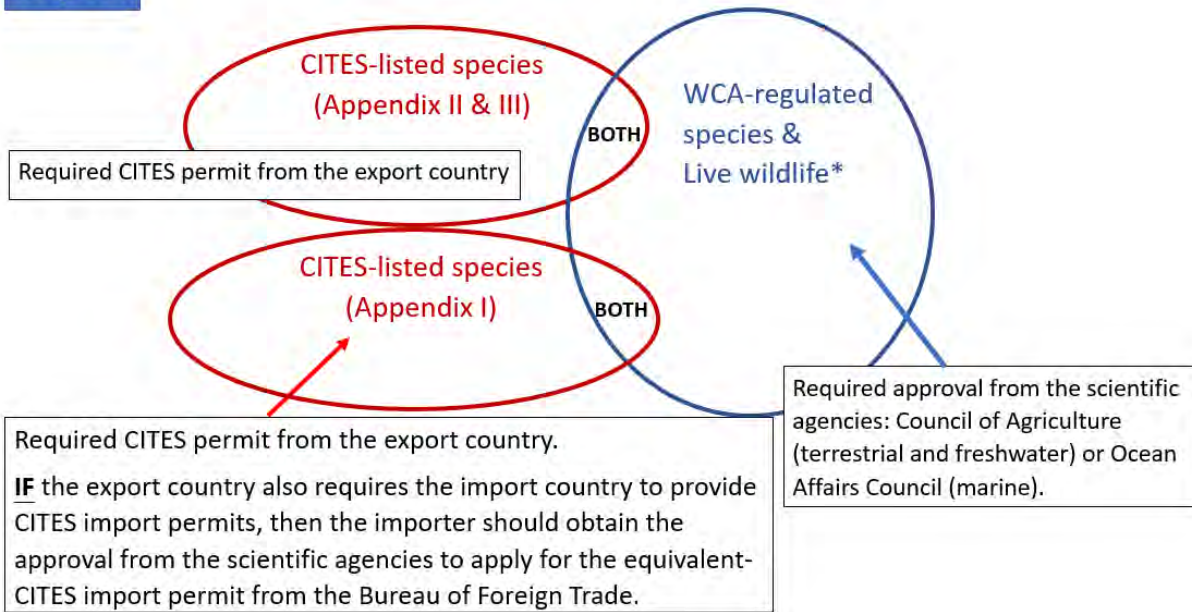
The scientific agencies provide scientific advice in species identification, ecology, aquaculture and farming. They also design and implement conservation plans for species with concerns (including CITES-listed species and WCA-regulated species). In general, the Conservation Division in the Forestry Bureau is the main scientific agency for conserving the wildlife (including CITES-listed species) in Taiwan Province of China. The Fishery Agency (FA) is in charge of managing the fisheries and aquaculture industry that affects the aquatic CITES-species. Since the Ocean Conservation Agency (OCA) was founded in 2018, the responsibility of conserving CITES-listed marine species has shifted from the Forestry Bureau to the OCA. In principle, the OCA leads the conservation strategy for CITES-listed marine species, and the FA determines regulations for fisheries that would affect those species. However, it is hard to split responsibilities between the OCA and FA sometimes, and the two agencies are still exploring ways to share responsibility. For now, both agencies are consulted for seahorse issues.

- (3) Examination Agency: The Customs Administration (關務署)

The examination agency is responsible for examining the application forms at the Customs, as well as the exported/imported specimens and their products. They also inspect the imported/exported products at air/sea ports to prevent illegal trade.

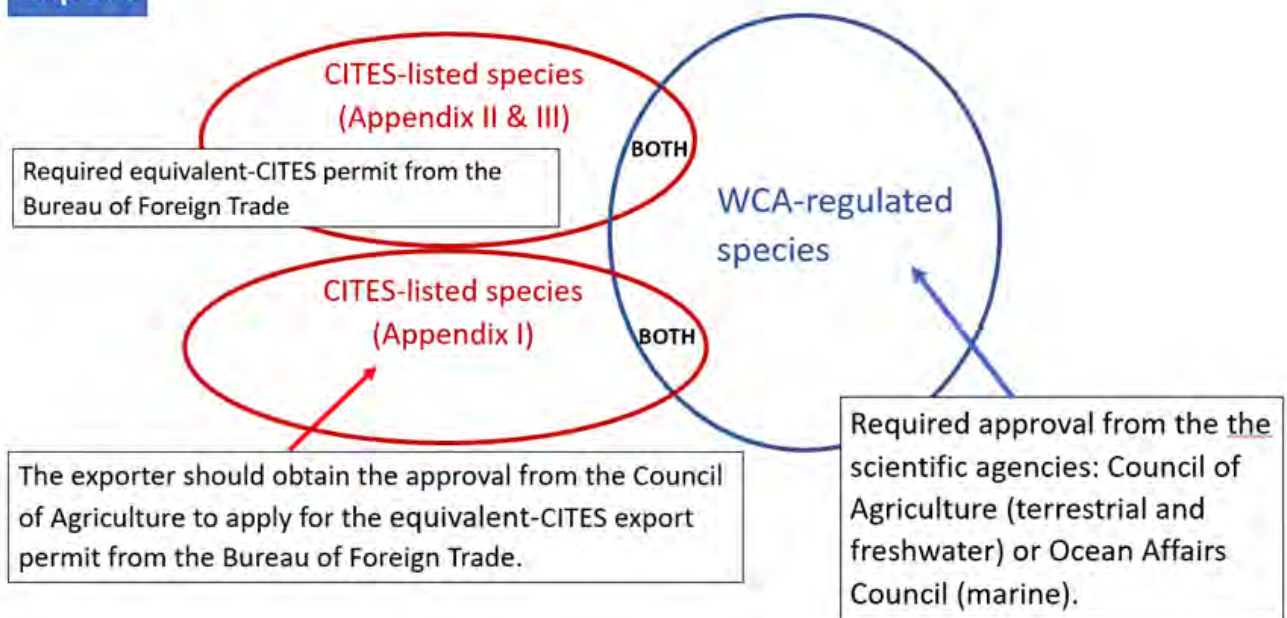
Note that the regulations for CITES-listed species and species regulated by the WCA require different approval processes and agencies involved, as shown in the Figures 10.1-10.4. The WCA restricts the capture and trade (domestic and international) of listed endangered species. In addition, for species not considered endangered in Taiwan Province of China, Article 26 of the WCA allows the Council of Agriculture to ask the Bureau of Foreign Trade to ban the export and import of certain wildlife and its products, if there is culture, public health, conservation or policy needs (e.g., the endemic plant species *Amentotaxus formosana*, based on the Cultural Heritage Preservation Act). Those species under regulation by WCA are referred as “WCA-regulated” species in this report.

**Import**



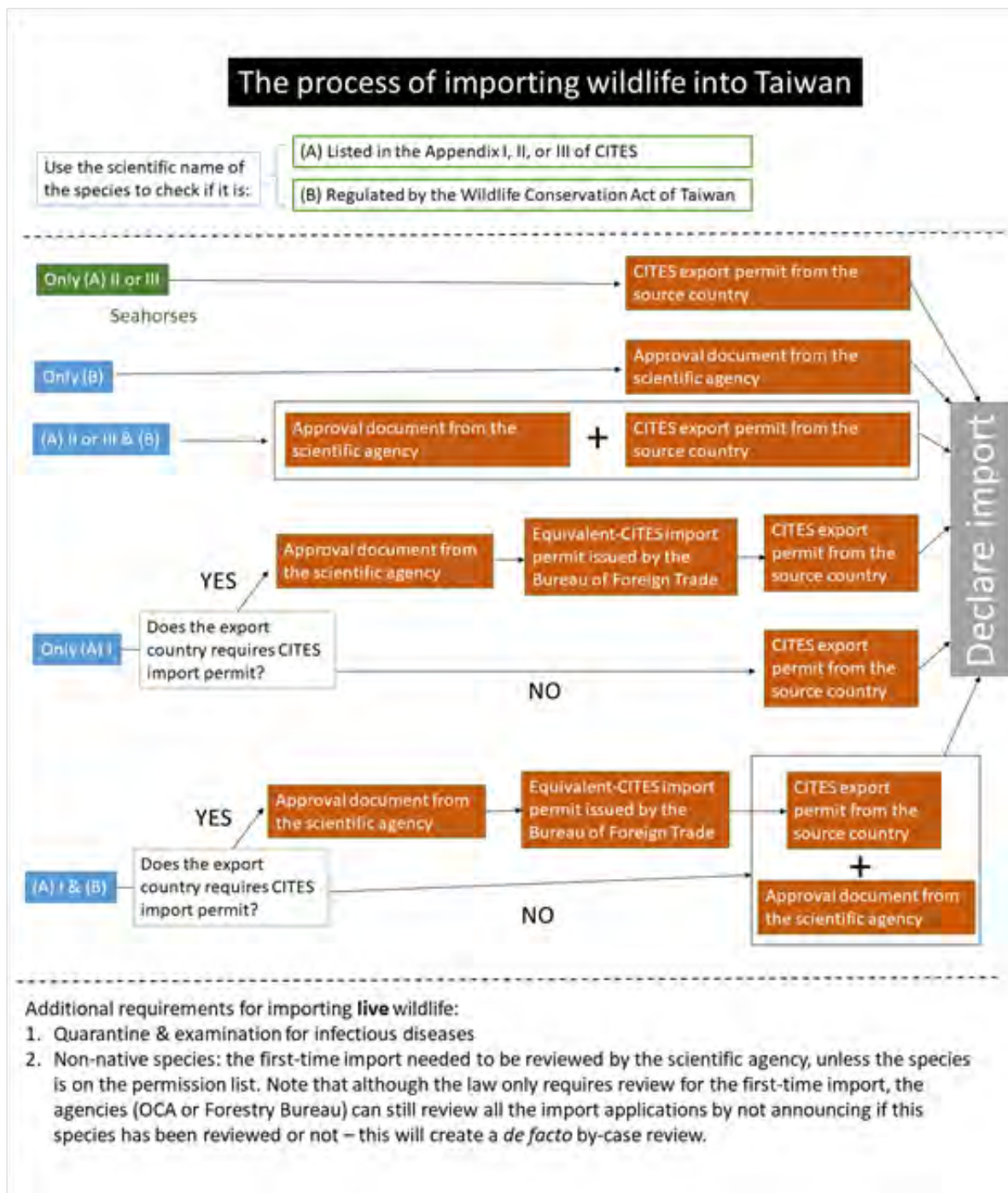
**Figure 8.3.1.** The required permits for importing CITES-listed and WCA-listed species in Taiwan Province of China. \*According to the WCA, the import of all non-native live wildlife require approval from the scientific agency, except for the species listed in the “Permission of import for live aquatic/terrestrial animal species.” At the time of writing, the whole *Hippocampus* genus is on this permission list and so do not require approval from the scientific agency.

**Export**



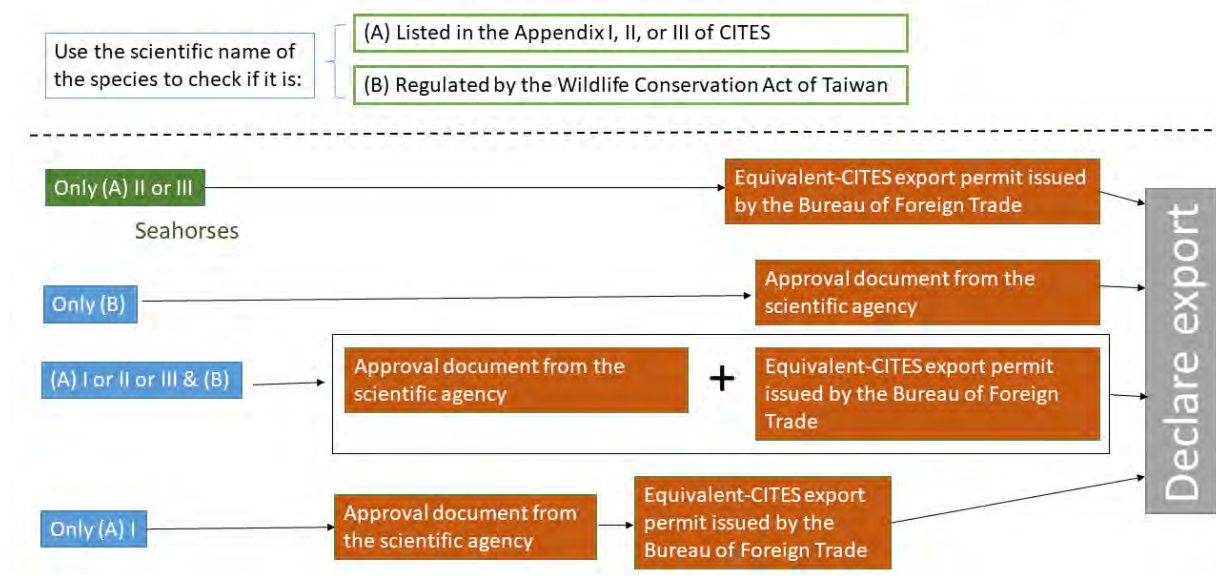
**Figure 8.3.2.** The required permits for exporting CITES-listed and WCA-listed species in Taiwan Province of China.





**Figure 8.3.3.** The process of importing wildlife into Taiwan Province of China. Regarding the 2nd point of additional requirement of importing live wildlife, at the time of writing, the whole *Hippocampus* genus is on the permission list.

## The process of exporting wildlife from Taiwan



**Figure 8.3.4.** The process of exporting wildlife from Taiwan Province of China.

### Import

Since seahorses are listed in CITES Appendix II but not regulated by the WCA of Taiwan Province of China, the import of seahorses into Taiwan Province of China is permitted by Customs as long as the importer provides a CITES export permit issued by the source country (Figure 8.3.3).

According to the WCA, the import of all non-native live wildlife requires approval from the OCA, except for the species listed in the “Permission of import for live aquatic/terrestrial animal species” (‘the white list’). The whole *Hippocampus* genus is currently on this permission list so their import does not require review by OCA. The OCA is, however, in the process of moving toward a new online system for importers to apply for importing live marine animals which is expected at the end of 2020. With this new system, the OCA will not publish the permission list anymore, such that importers have to submit application for importing any live marine animals. That means, all imports of live marine animals (but not dried) would have to be reviewed by OCA and experts. Although the original idea of reviewing imported live species is to prevent invasives, respondents for this study suggested that the review in the future may also consider the conservation impacts of the import to the source countries and in general.

### Export

Permission for exporting seahorses is determined by the Bureau of Foreign Trade (Figure 8.3.4). The Bureau of Foreign Trade will consult the scientific agencies (the Fishery Agency and the Ocean Conservation Agency in the case of aquatic species) if they have difficulties in determining the approval of the export application.

### **Captive-bred live seahorses**

Until now, the Bureau of Foreign Trade has only consulted the scientific agencies about seahorses when issuing export and re-export permits of captive-bred live animals. Only F2 live seahorses are allowed to be exported. In each year, the scientific agencies and experts (see the list in Section 8.3.3) visit and examine the seahorse-breeding facilities. The points they examine include: whether this facility is legal, the species bred, the number of seahorses bred, the spawning information of seahorses in this facility (fecundity, spawning rate, survival rate...etc.), the source document of the parent seahorses (e.g., the export permit issued by the

source country if the parents are imported as F1 or wild-caught). The local experts and the scientific agencies will then use that information to calculate an export quota for each species for each qualified facility. The quota is based on the facilities estimated annual production, which is in turn based on the number of parent seahorses the facility has, the species fecundity, spawning rate, juvenile survival rate, and so on. Each facility has to submit a list of the companies they will sell seahorses to, and the Bureau of Foreign Trade will examine if the total seahorses exported by those companies is equal or below the quota permitted. For now, there are about ten seahorse breeding facilities qualified for providing live seahorses for export.

### ***Wild-caught seahorses (dried and live)***

The export permit required when exporting wild seahorses from Taiwan Province of China to a CITES Party would be provided as long as the species is not listed in the WCA. Only very, very few species (including terrestrial species) have NDFs specific to Taiwan Province of China. Instead, the evaluation of the permission of trade has been basically equivalent to the assessment of the conservation status of the species (e.g., if the species should be listed as the endangered species in the WCA). However, species being regulated by the WCA means the prohibition of commercial trade. Therefore, while an increasing number of marine species are listed in CITES in recent years, the Fishery Agency and the Ocean Conservation Agency attempted to conduct NDF evaluation for some CITES-listed marine species (e.g., hammerhead sharks). However, those NDFs have not resulted in any policy decisions yet. The catch of some CITES Appendix II listed marine species (e.g., sharks) was regulated by the Fishery Act. For seahorses, no NDF has been conducted yet, and if it will be conducted, the OCA will be the agency responsible for leading the evaluation. Thus, for now, if the Bureau of Foreign Trade has to determine the permission of exporting wild-caught seahorses, it would confirm with the Fishery Agency if there is any restriction in catching seahorses (similar to the CITES “legal acquisition finding”). Since there is no restriction in catching seahorses now, the applications of exporting wild seahorses will most likely be approved (i.e., the export permit will be issued).

### **Re-export**

Any re-export should follow the procedure of import then export. The traders should apply for the re-export permit rather than export permit when re-exporting. When applying for the re-export permit, the traders need to provide the document proving that the source is from a foreign country (e.g., the export permit issued by the source country when importing the species).

### ***Other interactions among the agencies***

A joint forum for the scientific, management and examination agencies is held annually. In the forum, all of the agencies raise their questions and suggestions to the procedure of Customs clearance. In addition to the annual forum, the agencies communicate with each other by phone or email when needed. If there is any disputes or controversial cases on Customs clearance process that needs formal arbitration or discussion between agencies or having other agencies to involve, the "Form of Customs clearance dispute" will be used to establish a formal case for arbitration.

### ***Inter-governmental cooperation***

Communication between Taiwan Province of China, CITES, and other governments is mainly through NGOs. For example, since the late 90s until 2018, TRAFFIC East Asia-Taipei had conducted trade surveys on orchids, whale sharks, and other CITES species in Taiwan Province of China, and provided that information to other organizations and governments. The government officials of Taiwan Province of China attend CITES meetings under SWAN (Society for Wildlife and Nature) International, a non-profit, non-governmental organization.<sup>118</sup> Of direct relevance to seahorses, the Taiwan Province of China Forestry Bureau, Council of Agriculture, has historically provided funding to support Project Seahorse with its CITES implementation efforts for seahorses.

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<sup>118</sup> <http://www.swan.org.tw/eng/index.htm>

Considering the frequent exchanges of wildlife between Taiwan Province of China and Mainland China, since 2002 their representatives started holding annual meetings to discuss and exchange information about the conservation and management of CITES species. Things discussed in the meeting include exchanging information about the important conservation work done in each place, the ways to reduce illegal trade of certain species, differences in the management of CITES species, the ways and challenges in managing the trade of certain species etc. However, the meeting has not been held since 2017. In addition, the governments of Taiwan Province of China and Hong Kong Special Administrative Region of China (hereafter Hong Kong SAR) held a meeting on exchanging information and enhancing communication on wildlife in trade in 2018. Seahorses have never been discussed in those meetings, according to the published meeting reports.

### **8.3.4 Understanding of seahorse fisheries, trade and bans/suspensions**

This Section reports on the understanding of Taiwan Province of China's seahorse fisheries and trade based on: (1) official data (Taiwan Province of China Customs data and CITES trade database), and (2) information about managing seahorse trade reported by individuals interviewed for this report.

#### **8.3.4.1 What do respondents understand/know about seahorse fisheries and trade?**

The understanding of seahorse fisheries and trade in Taiwan Province of China was very limited for most respondents, such that the main information sources about seahorse trade were the official records of export/import held by Taiwan Province of China Customs and in the CITES trade database. Overall, the interviewed agencies generally believed that the trade of wild seahorses both into and from Taiwan Province of China is currently minimal in volume, at least compared to other CITES-listed marine species such as sharks and coral, and so they do not consider it a priority focus for their efforts. This position contradicts the well documented role Taiwan Province of China has held as a historically important destination for dried seahorses (see Section 8.3.1). Instead of paying attention to dried seahorse trade, the relevant agencies in Taiwan Province of China are focusing their management efforts on the export of live captive-bred seahorses.

#### **8.3.4.2 What is respondent awareness and use of existing tools and information for seahorses?**

Since seahorses are not listed as endangered species in the WCA, the Bureau of Foreign Trade takes the main responsibility of determining the export/import of seahorses. For importing seahorses, the Bureau of Foreign Trade required the permits issued by the export countries. However, the imports of live seahorses may require expert reviews in near future when the new live marine animal import system of OCA gets online. The Bureau of Foreign Trade approves the exports based on the document declaring the sources of seahorses (wild-caught or captive-bred) and the CITES permit issued by the counterpart country. They also seek advice from the scientific agencies when determining the export of live seahorses (see Section 8.3.3).

#### **Existing tools for decision making**

For approving the import and export of seahorses, the Bureau of Foreign Trade mainly depends on evaluating the application documents. For imports, the most important document is the export permits issued from the source country. To evaluate the validity of the export permits, the CITES website is where the Bureau of Foreign Trade receives information about new regulations, including newly-established bans or suspensions. The Bureau of Foreign Trade also flags countries that need additional attention and conduct a stricter examination for the permits issued from those countries. The ways that countries are flagged include warnings from the government of those countries, previous records of illegal trade/seizures by Taiwan Province of China Customs (if they exist, at the time of writing, no such records existed for seahorses), or CITES announcements. For example, whenever receiving a CITES permit issued from the Philippines for a CITES listed species, the Bureau of Foreign Trade would confirm with the government of the Philippines to validate the permit, since the Philippines government has warned about the popularity of fake permits.

For exports, the Bureau of Foreign Trade basically would permit all applications to export wild-caught, dried seahorses because: (1) the declared amount is minimal, (2) the exporters often claim that the stock has been kept from a long time ago, (3) the seahorses are not endangered species in Taiwan Province of China, and, (4) there is no fishing regulation for seahorses in Taiwan Province of China (except for the no-take MPAs, see 10.4.5). For export of captive-bred live seahorses, the Bureau of Foreign Trade permit annual quota for qualified facilities (see Section 8.3.3 for details), based on advice from the scientific agencies and experts. Only F2 captive-bred seahorses are allowed to be exported. The experts determine quota based on whether this facility is legal, the species bred, the number of seahorses bred, the spawning information (fecundity, spawning rate, survival rate...etc.), the source document of the parent seahorses (e.g., the export permit issued by the source country if the parents are F1 or wild-caught). Each facility has to submit a list of the companies that they sell seahorses to, and the Bureau of Foreign Trade will examine if the total seahorses exported by those companies equal or below the quota permitted. For seahorses, the local experts consulted by the scientific agencies for evaluating seahorse breeding facilities include:

1. Chung-Kang Hsu, Assistant Researcher, Peng-Hu Marine Biology Research Center
2. Prof. Chi-Yang Huang, Associate Professor, Department of Aquaculture, National Taiwan Ocean University
3. Prof. Ming-Chang Hong, Assistant Professor, Department of Aquaculture, National Kaohsiung University of Science and Technology.

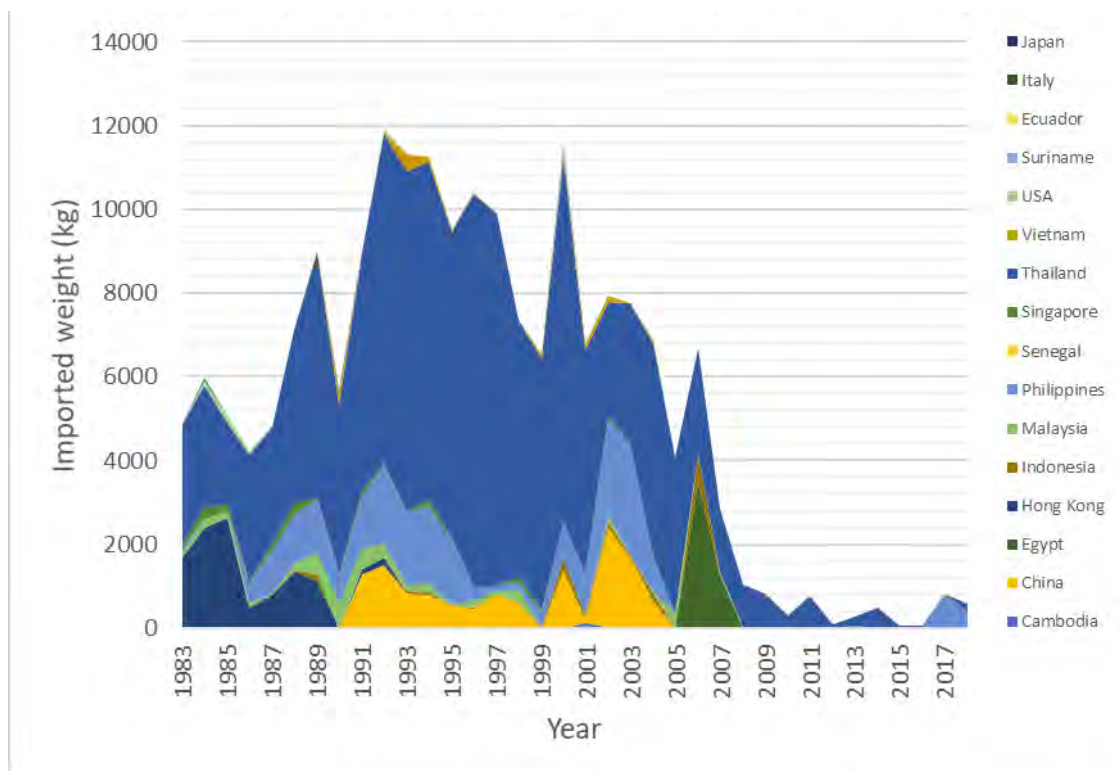
#### **8.3.4.3 Seahorse export/import paths**

##### ***Fisheries***

Some respondents have mentioned that seahorses were caught by the trawlers, gillnet, and crab cages, and landed in Northern (Ta-hsi and Guihou fishing harbour) and Southern Taiwan Province of China (Tong-kang fishing harbour). In Guihou, most seahorses were caught by crab cages and sold alive for aquarium owners. For the seahorses caught by trawlers, local traders collect the dried seahorses from the crew once in a while, but it is unclear whether these seahorses are retained for domestic use or are exported. One respondent has been collecting seahorse specimens at these places over the years. As his observation, the size of seahorses has been decreasing (unpublished data). Intriguingly, the ratio of male seahorses has also been decreasing. However, no systematic research has been conducted for understanding the fisheries' impacts on seahorses in Taiwan Province of China.

##### ***Trade***

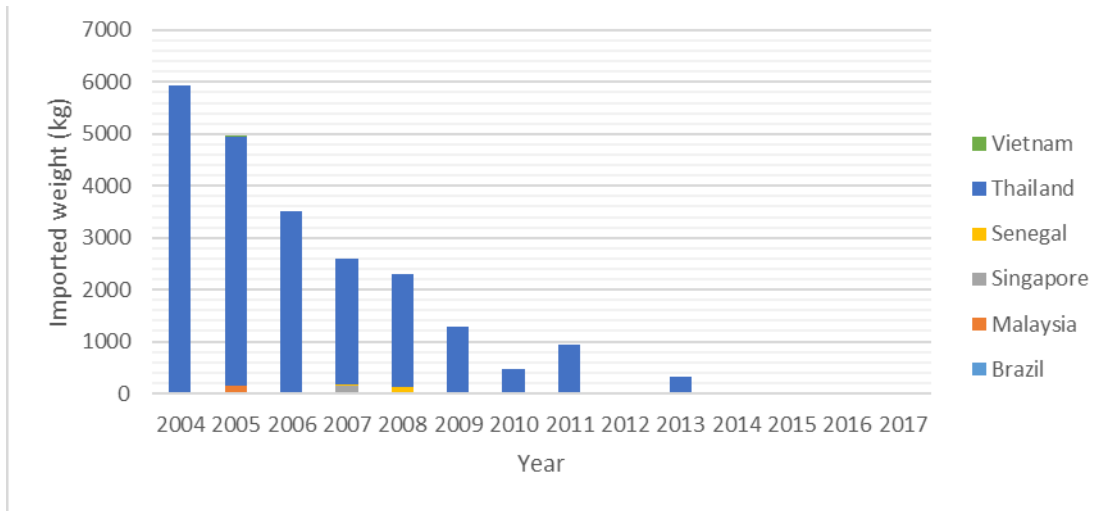
Taiwan Province of China's own Customs data show that the weight of declared seahorse import has decreased dramatically since 2006. Before then, it was 7,733.9 kg p.a. In the past ten years (2008-2018), the mean declared imported weight of dried seahorses was 482.6 kg per year. Thailand was recorded as the biggest source country of seahorses imported to Taiwan Province of China, followed by the Philippines and Hong Kong SAR (presumably re-exports). However, although many countries have banned/suspended the export of seahorses, Taiwan Province of China Customs records still show imports from some of those countries from time to time (e.g., imported from Thailand and Philippines in 2017-2018, after both had suspended legal exports; Figure 8.3.5).



**Figure 8.3.5.** Taiwan Province of China Customs records of dried seahorses declared as imported to Taiwan Province of China from 1983-2018.

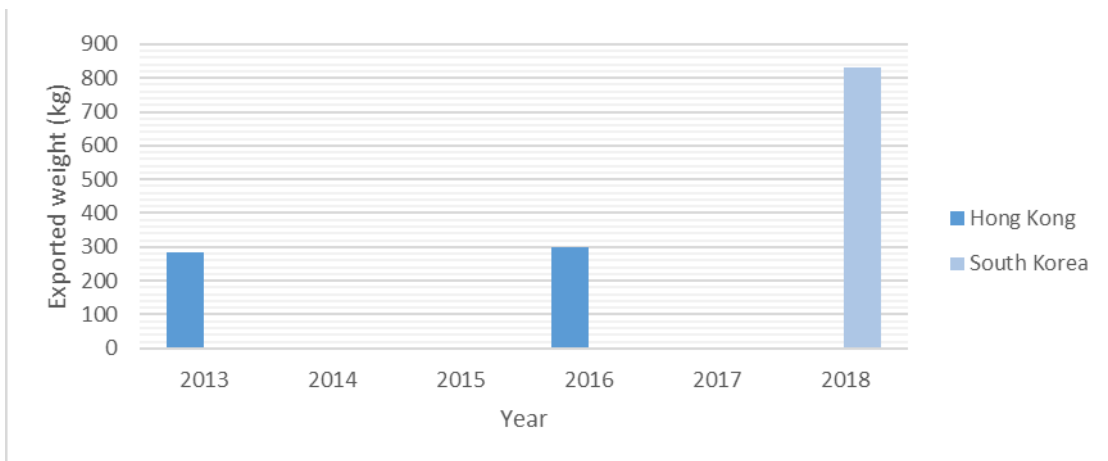
In the CITES trade database, the weight of dried seahorses reportedly exported to Taiwan Province of China has gradually decreased over time (Figure 8.3.6). Compared to Taiwan Province of China Customs data, CITES data reported fewer and different countries as sources of dried seahorses into Taiwan Province of China. Thailand has been the biggest source country, though it reported zero export to Taiwan Province of China since 2016 (when Thailand established its national export suspension for all seahorses). Despite the differences in the reported source countries, from 2008-2018 the declared seahorses sent to Taiwan Province of China in the CITES trade database was at a mean of 484.2 kg per year, which was close to Taiwan Province of China Customs records.

It is probable that the real trade volumes are higher than those in official datasets as seahorses are easily smuggled. However, the author’s own conversations with TCM retailers suggest that more recent import volumes are indeed much lower than in the past. Retailers frequently report that the seahorses they have in stock were obtained at least 10 years ago.



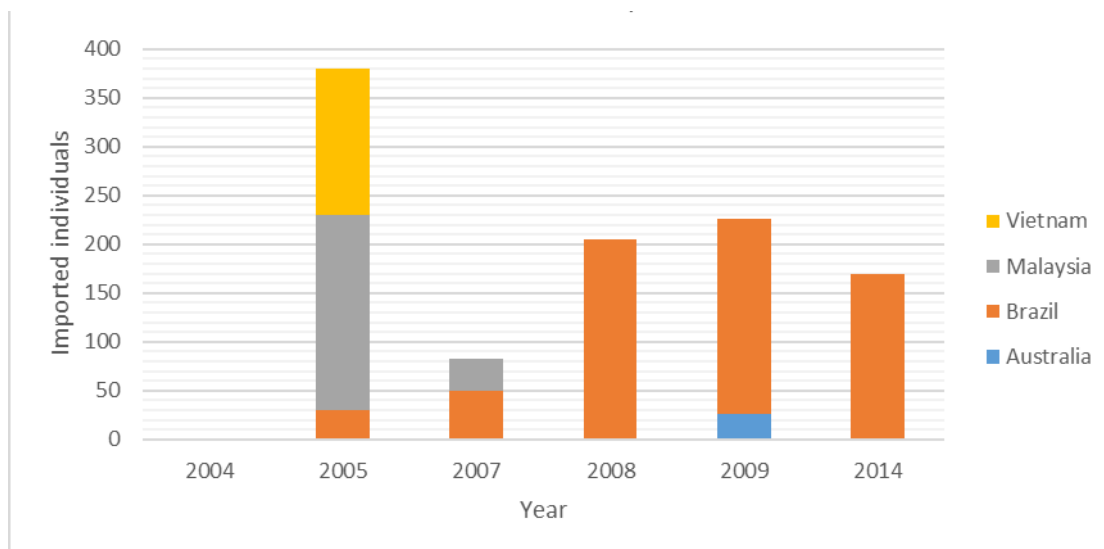
**Figure 8.3.6.** CITES trade database records of declared wild dried seahorses exported to Taiwan Province of China from 2004-2017.

While no export of dried seahorses is recorded in Taiwan Province of China Customs data, the data showed that declared dried seahorse re-exports from Taiwan Province of China started in 2013 and peaked in 2018 (Figure 8.3.7). Unfortunately, the database does not reveal the origin countries of these seahorses. In contrast, the CITES trade database held no records of exporting or re-exporting dried seahorses from Taiwan Province of China.

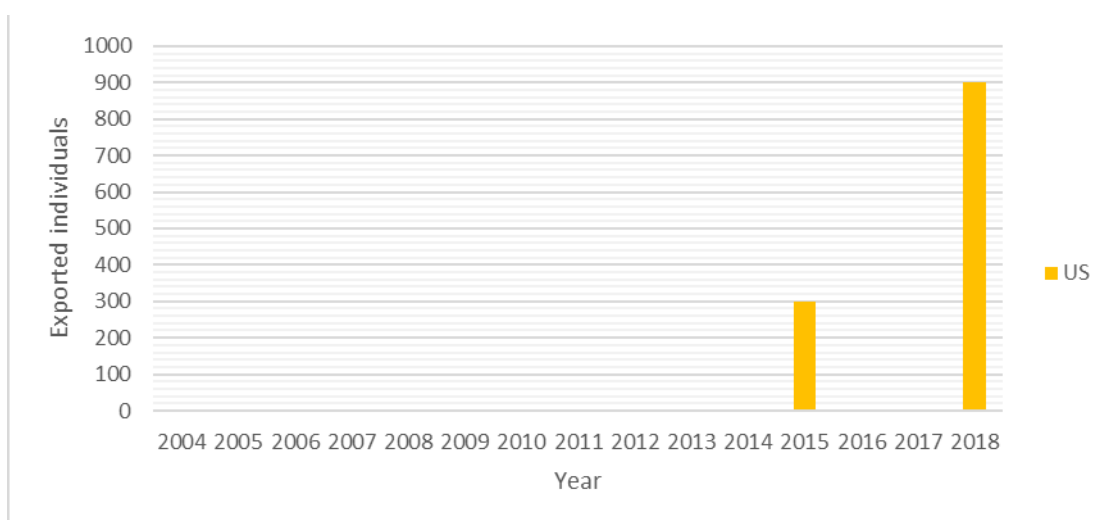


**Figure 8.3.7.** Taiwan Province of China Customs records of dried seahorses declared to be re-exported from Taiwan Province of China from 2013-2018 (the data was from 1983 to 2018, but years before 2013 were removed from the figure because of zero re-export).

Taiwan Province of China Customs data do not separate the trade of live seahorses from other ornamental fishes. Indeed, all live ornamental fishes are categorized as “tropical fishes (熱帶魚)” or “conservation tropical fishes (保育類熱帶魚)”. In contrast, CITES trade data shows that Taiwan Province of China has imported wild live seahorses from Brazil, Malaysia, Vietnam, and Australia, ranged from 83-380 individuals per year (Figure 8.3.8). The United States also reported importing 300 and 900 wild live seahorses from Taiwan Province of China in 2015 and 2018, respectively (Figure 8.3.9).



**Figure 8.3.8.** CITES trade database records of declared wild live seahorses exported to Taiwan Province of China from 2004-2018.



**Figure 8.3.9.** CITES trade database records of declared wild live seahorses imported from Taiwan Province of China from 2004-2018.

#### 8.3.4.4 Seahorse conservation status and regulations

There are no conservation assessments for seahorses specific to Taiwan Province of China, and no regulations on catch and trade are specifically for seahorses in Taiwan Province of China, because seahorses are not listed as endangered wildlife in the WCA. The WCA restricts the catch and trade of endangered wildlife in Taiwan Province of China. To list a marine species in the WCA, citizens or agencies can propose an assessment to the Ocean Affairs Council. Then the assessment committee will be formed by the government officers, researchers, and NGOs. The assessment of endangered marine wildlife includes the consideration of the trend of distribution, changes in abundance, endemic species, threats, and international conservation status. If a species is listed as endangered in the WCA, the use, catch, and trade (domestic and international) of the species are prohibited, except special cases permitted by the authorities (the Council of Agriculture and the Ocean Conservation Administration). For seahorses, no proposal for assessment has ever been made.

In 2020, the Ocean Conservation Administration funded a project to evaluate the research gap of CITES marine species with distributions in Taiwan Province of China's EEZ, including ten seahorse species (*Hippocampus bargibanti*, *H. colemani*, *H. histrix*, *H. japapigu*, *H. kelloggi*, *H. kuda*, *H. pontohi*, *H. sindonis*, *H. spinosissimus*, and *H. trimaculatus*; Lourie et al. 2016, see also Heard et al. 2019, Shao et al. 2021). According to this on-going review, which is conducted by the author of this report (T.-C. Kuo), almost



no research has been conducted for the ecology and fisheries of these species in Taiwan Province of China. Only a few sightings have been recorded for some species in the wild, and most of the previous researches were focusing on the captive-breeding of *H. kuda*, *H. spinosissimus*, and *H. trimaculatus* (Chen et al. 2011). The outcome of the review will be used to guide future research and management for seahorses, all of which are listed on CITES App II, for the Ocean Conservation Administration.

#### 8.3.4.5 Other relevant laws and regulations

All bottom trawling is prohibited within three nautical miles from the coast of Taiwan Province of China. However, about 100-200 cases of illegal trawling have been reported from 2014-2018, and only about half of these cases were prosecuted (FA COA 2018). The regulation of gillnet varies among counties. Regulations for gillnets include close season, close area, and the prohibition of using multi-layer gillnets. There is no regulation for the use of crab cages (except for controlling the number of licenses).

Some seahorse species (e.g., *H. bargibanti*, *H. colemani*, *H. kuda*) have been found in marine protected areas, where no fishing is permitted. No marine protected area was established specifically for seahorses.

#### 8.3.4.6 Seahorse seizures

No seahorse has ever been seized by Taiwan Province of China Customs, according to respondents, as well as the court verdict database (<https://law.judicial.gov.tw/FJUD/default.aspx>, in traditional Chinese). The respondents expressed the difficulties in finding smuggled dried seahorses, as they could be carried in the pockets or suitcase easily. However, if seahorses were found without the necessary CITES permits, they would be seized. For example, queen conch is listed on CITES Appendix II but not on the WCA, and their products have been seized from time to time due to a lack of CITES export permits issued by the source country. However, respondents expressed less concern for the illegal trade of live seahorses, because 1) transporting live marine animals requires them to be held in seawater, which is easily detected by officials, 2) it is easier to identify the species of live seahorses and thus the possible source country, 3) the high mortality rate of live seahorses means smugglers think they are not worth the effort (as they may not survive to their destination).

### 8.3.5 Challenges and opportunities

This section reports the reality, challenges and opportunities of how Taiwan Province of China enforces the seahorse ban/suspension of some export countries.

#### Reality

Seahorses are not listed in the WCA of Taiwan Province of China, so the Bureau of Foreign Trade mainly depends on the CITES export permit issued by the export country to determine if the import should be allowed. The Bureau of Foreign Trade does pay special attention to the permits issued by certain countries, and the Bureau of Foreign Trade would try to contact the government issued the export permit to confirm its validity if it is suspicious.

Customs seizing smuggled wildlife mainly depends on the information from informants. For seahorses, since they are not listed in the WCA, Customs allow import as long as there are CITES permits from the export country. Seahorses are not a major focus for Customs, because of the (believed) low trade volume, the difficulties in detecting the smuggled dried seahorses (especially if in a small volume), and there were no records/experiences of seizing illegally imported seahorses into Taiwan Province of China in the past.

#### Challenges

There are two main challenges that the Bureau of Foreign Trade encounters when determining the validity of export permits. First, it is unclear which countries have banned/suspended the export of seahorses. There is no such information disclosed on the CITES website, which is the main source that authorities use to receive

updates from CITES. However, even if CITES publishes this information on its website, receiving such information will depend on when the officers check the CITES website, which may not be timely.

Second, the communication between Taiwan Province of China and other countries could be difficult. Except for some countries that Taiwan Province of China often exchanges information with, the Bureau of Foreign Trade does not have contact information with the national CITES Authorities in other countries. When it is needed, the Bureau of Foreign Trade goes to the CITES website to search for the contact information of national CITES Authorities listed on the website. However, respondents reported that the information on the website is usually outdated. If the national CITES Authority cannot be reached, the Bureau of Foreign Trade will ask Taiwanese representations in the country of export to help contact the national CITES Authority. Such representations are only found in the big cities of some countries, and so this provides challenges for the Bureau of Foreign Trade to communicate and validate the permits with the issued government.

All the respondents interviewed, including the Bureau of Foreign Trade, Customs, the Ocean Conservation Administration, the trader and the academic expert perceived a low quantity of seahorse trade happen into and from Taiwan Province of China. Therefore, the examination of seahorse import/export is not a focus comparing to other species. Given Taiwan Province of China's historically important role as an importer of dried seahorses, it is essential to probe the reality of Taiwan Province of China's current role in the international seahorse trade, particularly as studies have shown that official data are not representative of what is happening on the ground when it comes to dried seahorses (Foster et al. 2019).

### Opportunities

1. The new online application system for importing live marine animals that the OCA is developing will benefit the management of trade in live seahorses. With this new system, all imports of live seahorses have to be reviewed. In such case, there will be experts involved in examining the import application. They will consider if the imported species are likely from the reported source country, if the species are known to be bred in captivity at reliable levels, and if such imports may lead to significantly negative conservation impacts.
2. While the Fishery Agency has funded to conduct NDF for sharks and relevant workshops have been held by NGOs and academics, it will be beneficial for such assessment and training to be expanded to seahorses and other CITES marine species.
3. Considering that importing and exporting seahorses have to provide CITES or equivalent CITES permit, Customs is supposed to have records of the import/export reported to species level. However, the current Customs data only presents to the genus level. It will be beneficial if the permit data stored in the Customs' system can be parsed and organized to provide more detailed information.

### 8.3.6 Conclusions and recommendations

The declared import of seahorses has declined dramatically since 2016, reflecting the bans or suspensions from previous important source countries (e.g., Thailand). Official data as well as the author's own experience suggest that more recent seahorse trade into Taiwan Province of China is much lower than historically documented.

However, over the past decade, there were still records showing importing seahorses from countries with national export bans or suspensions. This indicates that the permission to import seahorses is lacking an effective validation system. Furthermore, no record of seizing illegal seahorse import may reflect the difficulties in detecting the smuggling or/and the lack of awareness of the importance of the issue.

To improve the implementation of seahorse export bans/suspensions, the following recommendations are given:

1. Countries that establish an export ban or suspension on CITES-listed species should actively inform CITES and other countries/states.
2. CITES should provide, and regularly update, a list of countries with export and catch bans/suspensions on CITES-listed species. The list should be posted on the CITES website, as well as sent to the Bureau of Foreign Trade and relevant agencies via email.
3. The contact details of national CITES Authorities on the CITES website should be updated more regularly.
4. Improve the sharing of experiences and information of illegal seahorse trade. If there is verified information about the possible illegal trade, e.g., from the government of other countries, the authorities relevant to CITES in Taiwan Province of China will take the information seriously and pay more attention to the potential routes/importers/exporters. One example is that in recent years, the Customs and the Bureau of Foreign Trade started to pay more attention to the smuggled live corals since they receive warnings, and have seized several cases of corals illegally imported from the Philippines.
5. Education and outreach to Customs for increasing the awareness of potential seahorse smuggling should be conducted. Experiences sharing about how to identify illegal seahorses from other countries will be beneficial.
6. Taiwan Province of China Customs data should be incorporated into the CITES trade database. This study found that there is more information regarding the source countries of dried seahorses in Taiwan Province of China Customs data than CITES records. That means excluding Taiwan Province of China's recorded trade data could create a loophole for the international community to understand and monitor the trade.
7. Capacity building for conducting NDFs, monitoring the trade, and conservation of CITES-listed species. In general, the government, academia, and NGOs in Taiwan Province of China lack experience and knowledge to conduct NDFs for CITES-listed species. Taiwan has benefited from workshops held by WWF to conduct NDFs for sharks. Similar activities can benefit the management and conservation of other CITES marine species.
8. Survey trade, with particular reference to undocumented import and sales, to understand if the import for seahorses to Taiwan Province of China has changed as official data suggest and if the demand has changed as some respondents reported.
9. Enhance research for the ecology, fisheries, and trade of seahorses in Taiwan Province of China for assessing the conservation status of those species locally. The seahorses have never been assessed for listing in the WCA, because of the lack of data. Based on the example of listing humphead wrasse and whale sharks in the WCA, a workplan for collecting data for assessment should be developed.

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## 9. Singapore

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### 9.1 Background

#### Management of CITES in Singapore

Singapore has been a Party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 30 November 1986 (NParks 2019). The Ministry of National Development has been the overarching ministry that oversees the appointment of statutory boards to enforce CITES. As a signatory, Singapore strives to regulate the import, export and re-export of CITES-listed species through a system of permits and certificates.

After Singapore had formally acceded to CITES on 28 February 1987, the Primary Production Department (PPD) was appointed the Management and Scientific Authority (NAS 1986). The PPD was responsible for the enforcement of the requirements of CITES, where permits from PPD were required for the import and export of protected wildlife and their products. The PPD was also responsible for drafting new legislation to comply with the requirements of CITES. Before the enactment of the new Act, the PPD had used existing legislations (such as the Wild Animals & Birds Act) in the interim to implement some of the CITES requirements.

The PPD was later restructured into a statutory board and renamed the Agri-Food and Veterinary Authority of Singapore (AVA) on 1 April 2000 (History SG 2019), which continued to serve as the national authority for the implementation and enforcement of CITES. Since AVA became defunct as of 1 April 2019, the National Parks Board (NParks) has taken over the duties as the national authority overseeing CITES (NParks 2020a), serving as both the CITES' Management Authority (MA) and Scientific Authority (SA). Singapore has two major legislations, the Endangered Species (Import and Export) Act (ESA) (Cap 92A) and Wildlife Act (WA) (Cap 351), which support and complement the implementation and enforcement of CITES to some extent (see Section 9.2).

Following the listing of seahorses in CITES Appendix II at the 12th Meeting of the Conference of the Parties (CoP) to the CITES in November 2002 (with implementation deferred for 18 months), the previous national authority AVA released a statement on 7 April 2004 to state that “*with effect from 15 May 2004, the Agri-Food and Veterinary Authority (AVA) will regulate the import and export of seahorses through the issuance of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) permits and approval of trade declarations. Live and dried seahorse specimens will be subject to CITES controls*” (AVA 2004). This meant that all traders of seahorse products are required to obtain CITES permits from the national authority when they import, export or re-export seahorses. Publicly accessible materials such as brochures in English (NParks 2014a) and Mandarin (NParks 2014b) are available to inform traders and travelers on bringing CITES-listed species into Singapore, as well as the traditional Chinese medicine (TCM) trade in Singapore.

#### Seahorses and their uses in Singapore

##### Biodiversity of seahorses

Wild seahorses have been observed in Singapore waters by scientists and citizen scientists. There appear to be at least six species of seahorses recorded in Singapore (Tan et al. 1998) (Table 9.1). According to Mr. Lim

Kok Peng, Curator of Vertebrate Collections at the Lee Kong Chian Natural History Museum (Interviewee NUS2), approximately 100 specimens from Singapore and its surrounding waters are catalogued in the museum collections.

**Table 9.1.** An overview of the seahorse species and sightings from Singapore. Only *Hippocampus comes* and *H. kuda* are assessed as Vulnerable in the Singapore Red Data Book 2008 (Davison et al. 2008).

<b>Species name (common name used in Singapore)</b>	<b>Where seen in Singapore?</b>	<b>References</b>
<i>Hippocampus comes</i> (Tiger-tailed seahorse)	Often seen on Southern shores (e.g., Pulau Hantu, Kusu Island, Pulau Jong), with 1 record from Changi in 2019.  Based on the Singapore Red Databook, it is usually found in coral reefs, mainly around the Southern Islands.	Davison et al. 2008
<i>Hippocampus kuda</i> (Estuarine seahorse)	Sometimes seen on Northern shores (e.g., Changi, Tanah Merah, Pulau Ubin, Punggol) among seagrasses.  Based on the Singapore Red Data Book, it is mainly found in seagrass areas near sources of freshwater and found all around Singapore in shallow waters.	Tweedie 1934; Palmer 1954; Lim & Low 1998; Davison et al. 2008
<i>Hippocampus mohnikei</i> (Japanese seahorse)	Sometimes seen on Northern shores (e.g., Changi). Species appear to prefer the estuarine intertidal zone with silty soft sand substrata and patches of macroalgae and seagrass.	Wee & Ng 1994; Lim 2013
<i>Hippocampus histrix</i> <i>Hippocampus spinosissimus</i> (Hedgehog seahorse)	Presumably, three other species have been reportedly collected from Siglap (east coast of Singapore) with no further information on habitats or recent sightings.	Tweedie 1934; Palmer 1954; Wee & Ng 1994
<i>Hippocampus trimaculatus</i> (Three-spot seahorse)	Although records suggest the presence of <i>H. histrix</i> , the specimens were later identified as <i>H. spinosissimus</i> (Lim, K.K.P. pers. comm., 2020).	

Very little is known of the seahorse populations in Singapore. According to the Singapore Red Data Book 2008 (Davison et al. 2008), a local version of the IUCN Red List of Threatened Species, the tiger-tailed (*H. comes*) and estuarine (*H. kuda*) seahorses are both listed as Vulnerable (i.e., a status defined as species considered to be facing a high risk of extinction in the wild within the country). The book also pointed out that seahorses face threats such as habitat destruction and excessive collecting. However, the criteria assessment and evaluation for both seahorse species were not given in the book. Furthermore, national status information of the remaining four species is lacking (all four are assessed as Vulnerable on the global IUCN Red List).

### **Singapore's position as a seahorse trade hub**

**1990s - 2003:** Singapore historically was a major trade hub for seahorses, according to data from a trade study carried out by Project Seahorse in 1998 and 2000 (Perry et al. 2006). Information for the study was generated by interviewing 65 traders and retailers of live and dried seahorses. The study concluded that Singapore was a major import and re-export centre for the global seahorse trade.

Singapore had a pivotal position as a distribution centre where dried seahorses may undergo re-packing before exiting the country. In 2004, AVA reported that each year Singapore imported some two tonnes of

dried seahorses worth about SGD\$170,000 for use in TCM (AVA 2004). The Project Seahorse study from 1998 and 2000 reported that Singapore imported dried whole seahorses from India, the Philippines and Indonesia, with exception of an account from one trader trading in locally sourced seahorses (Perry et al. 2006). According to the trade surveys, local businesses were also found to purchase dried seahorses from independent agents who possibly hand-carried small quantities (about 1-2 kg) across borders from Indonesia to supply the retail stores and wholesale businesses in Singapore as often as every few months. Only a small proportion of the dried seahorses imported into Singapore were estimated to support domestic consumption (e.g., between 1300 and 3500 kg) while the remaining were reportedly re-exported to other jurisdictions such as Hong Kong Special Administrative Region of China (hereafter Hong Kong SAR), Taiwan Province of China, Mainland China and USA (Perry et al. 2006).

Singapore was also a historically important hub for international trade in live seahorses, with estimates of 73,000 live animals exported annually from 1998 to 2000 (Perry et al. 2006). AVA reported that in 2003 alone, Singapore imported approximately 47,700 live seahorses worth about SGD\$40,000 for the aquarium trade, though most of the seahorses were not for local sale (AVA 2004). Project Seahorse surveys reported that, in the late 1990s, Singapore had predominantly served as a transit hub and was ranked as one of the primary centres for seahorse exports from Southeast Asia (along with Manila, Cebu, Denpasar and Jakarta) (Perry et al. 2006). Live seahorses imported into Singapore were largely sourced from Indonesia (caught off western Indonesia and then transported via land into Singapore; Vincent 1996), followed by the Philippines and Malaysia (Perry et al. 2006). Singapore also imported live seahorses from Brazil (Vincent et al. 2011). Notably, there were accounts of local collection from Singapore waters, where traders pointedly mentioned that it was cheaper than importing from Indonesia (Perry et al. 2006). One trader had noted that local fishers had to travel further in search of seahorses over time, suggesting that local populations were already declining as early as 1998 (Perry et al. 2006). Live seahorses were mainly re-exported from Singapore to supply markets in North America (Canada, USA) and Europe (Austria, Belgium, Denmark, Netherlands, Germany, Italy, Portugal, Spain, Sweden, and the United Kingdom) (Perry et al. 2006, Vincent et al. 2011).

**Post-listing of seahorses in Appendix II:** As there have been no on-the-ground trade surveys carried out after 2000, information on Singapore's trade in seahorses post-listing can only be deduced from the CITES Trade Database. On the trade data regarding seahorses, Singapore has submitted its annual reports to CITES for all years through to 2019, comprising data between 2004 and 2018. Compared to earlier data, CITES data suggest that the country's importance as a seahorse trade hub has greatly diminished with time; for instance, there were no trade records for direct imports of dried seahorses between 2015 and 2018 (Table 9.2). Coincidentally, this observed trend may have overlapped with the listing of seahorses on Appendix II in 2002 and Singapore's commitment to regulate seahorse trade since May 2004. Between 2016 and 2018, dried seahorses were reportedly not imported and there was only one re-export for commercial purposes; in 2016 Singapore reported re-exporting 7 kg of dried seahorses to Hong Kong SAR that had supposedly originated in Thailand. Live seahorses have been continually imported, with average reported imports of 480 individuals per year from 2016-2018, and in 2016 Singapore reported re-exporting 55 live individuals to Malaysia that had supposedly originated in Australia (see Section 9.3.1). There remains the possibility that trade is still ongoing, but unnoticed or undetected by authorities (see Section 9.3.4).

**Table 9.2.** A breakdown of the import, export and re-export records for seahorses based on the CITES Trade Database for Singapore.

Year	Dried seahorses (number of records)		Live seahorses (number of records)	
	Import	Export/Re-export	Import	Export/Re-export
2004	3	1	4	13
2005	5	0	8	2
2006	3	0	3	0
2007	3	1	10	0
2008	7	1	8	6
2009	3	5	9	5
2010	8	1	7	4
2011	7	0	5	8
2012	1	2	9	4
2013	0	0	5	1
2014	6	2	6	0
2015	0	0	7	0
2016	0	2	4	3
2017	0	2	7	0
2018	0	1	3	0

### Uses of seahorses in Singapore

In Singapore, dried seahorses are often overtly displayed in baskets or jars in TCM shops (Annex 9.i). As raw ingredients, they are believed to cure “*asthma, urinary issues, male erectile dysfunction and premature ejaculation*” (Fang 2019). They are also included as an ingredient in TCM soup packets such as the Blood Cleansing Soup (Figure 9.1 and Annex 9.ii) with a purpose to “*cleanse blood stasis and impurity, neutralize toxins and cools blood, removes moisture and swelling*” (Eu Yan Sang 2020), as well as “*treating skin infections, relieving itchiness and nourishing the kidneys*” (Cai 2017). This particular product also contains a close seahorse relative, the pipefish (genus *Syngnathus*).



**Figure 9.1** A major TCM retailer in Singapore sold dried seahorses as part of the Blood Cleansing Soup packet.

Other TCM products incorporate seahorses as powdered form in finished tablets sold to boost men’s vitality. In Singapore, these medicinal products (i.e., finished dosage form) are referred to as Chinese Proprietary Medicines (CPM), which are regulated by the Health Sciences Authority (HSA) (see Section 9.2.3). Nearly 11,000 CPM have been inventoried with the HSA, but fewer than 10 products are said to contain seahorses. It is said to be an uncommon ingredient used in TCM. Notably, these CPM are

predominantly manufactured locally, and manufacturers likely obtain their seahorses from local suppliers (e.g., existing old stocks) (pers. comms., Interviewee HSA1, 2020).

Live seahorses are regularly imported from overseas to supply the local aquarium trade and hobbyists. While live seahorses have been seen on display in public aquariums (e.g., S.E.A Aquarium, RW Sentosa, n.d.), they appear to be highly sought after by local hobbyists. For instance, the Caribbean subtropical species, *H. reidi* are seen for sale at local retail aquarium shops (Singapore Reef Club, 2015) (Annex 9.iii). On a side note, live pipefishes and seadragons, close relatives of seahorses, have also been seen in the aquarium trade (Sunbeam Aquarium. n.d.).

## 9.2 Methods

Christina Choy holds a Bachelor of Science (Life Sciences, specialising in Environmental Biology) and a Master of Science (Environmental Management) from the National University of Singapore. Her master's dissertation topic on the trade and supply chain of wedgefishes and giant guitarfishes in Singapore received "The Shell Medal and Prize" as well as "The Shell Best Dissertation Award (2019/2020)". She also undertook a consultancy role for shark and ray conservation at Wildlife Conservation Society Singapore and had five years of experience as a Conservation Manager with the National Parks Board. She is passionate about sustainable, legal and equitable wildlife trade, and aspires to take an interdisciplinary approach to understand issues and inform management.

Mei Lin Neo is a trained marine ecologist, whose research mainly focused on the use of experimental approaches to studying the interactions of marine organisms with the marine environment. She has been enamoured with the giant clams as her model species for the past decade, and remains steadfast in her mission to champion for their conservation in Singapore and the region. Mei Lin is also an avid science communicator of marine conservation issues in Singapore. She believes that science needs to be accessible to the public for it to generate societal awareness and impacts.

This study took place in October 2020 to January 2021. Between October and December 2020, various people from national agencies, academic institutions and non-governmental organizations (NGOs) were sought out for interviews. The explanation for these interviews was to gather and synthesize information regarding the implementation and enforcement of trade controls for seahorses through CITES, the roles of various agencies in implementation and/or enforcement, as well as the strengths and challenges for implementation and/or enforcement mechanisms at the national level.

Due to the global COVID-19 pandemic, all interviews were conducted by two interviewers (C. Choy and M.L. Neo) through online conference calls or emails. A total of 13 interviewees accepted our request for interviews from the following organizations stated in Table 9.3. Interviews were guided based on a set of proposed questions, which adhered to the requirements from Project Seahorse. For the national agencies, questions were focused on understanding their role in the implementation and/or enforcement of CITES for seahorses. For academic institutions and NGOs, questions were focused on general knowledge of seahorse trade controls, local biodiversity and fisheries, and their perceived effectiveness of CITES implementation in Singapore.

Identities of all interviewees have been redacted throughout the report, and referred to as "Interviewee XX N" where XX is the abbreviation of organization and N is the interviewee number. This information was then synthesized into three results sections: 1) understanding the local actors and their cooperation with national, regional and international agencies; 2) current legislations relevant to trade and fisheries for seahorses; and, 3) understanding the trade and fisheries of seahorses. Outcomes from this study are also discussed in the form of challenges and opportunities, with concluding remarks.

**Table 9.3.** An overview of the various interviewees representing national agencies, academic institutions and NGOs. For the full lists of proposed questions. The numbers indicated in brackets refer to the number of interviewees from each respective organization.



	<b>Organization name</b>	<b>Interviewees with abbreviations</b>
<b>National agencies</b>	National Parks Board (NParks) (n=3)	NP1, NP2, NP3
	Singapore Customs (Customs) (n=2)	SC1, SC2
	Immigrations and Checkpoints Authority (ICA) (n=1)	ICA1
	Health Sciences Authority (HSA) (n=1)	HSA1
	Singapore Food Agency (SFA) (n=1)	SFA1
<b>Academia</b>	National University of Singapore (NUS) (n=3)	NUS1, NUS2, NUS3
<b>NGOs</b>	WildSingapore (n=1)	WS1
	TRAFFIC (n=1)	TRAFFIC1

### 9.3 Results of Study

#### 9.3.1 Understanding the local actors and their cooperation with national, regional and international agencies

##### Local actors involved in the surveillance, implementation and enforcement of CITES

The [Agri-Food and Veterinary Authority of Singapore \(AVA\)](#) was the Management and Scientific Authority for Singapore between 2000 and 2019 (Section 9.1), but their role as the Scientific Authority was not clear. A brief correspondence with interviewee NP3 revealed that AVA had consulted with the National Biodiversity Centre (NBC) under NParks on several occasions related to CITES matters, when the trade in CITES-listed species was under AVA's management. AVA was also the national authority administering ESA previously, but the Act is now under the purview of NParks.

Presently, Singapore takes a Whole-of-Government (WOG) approach (CSC 2016)<sup>119</sup> in the surveillance, implementation and enforcement of CITES. Here, at least three agencies worked most closely with each other to oversee the execution of CITES on trade in endangered species, such as seahorses. They are the National Parks Board, Singapore Customs and Immigrations & Checkpoints Authority. The Singapore Food Agency is also discussed as an actor managing the fishery ports (with imports and catch landings) and administering the local Fisheries Act.

[National Parks Board \(NParks\)](#) is the agency in Singapore “responsible for nature conservation, greenery and recreation, and veterinary care”. Since 2019, the agency has functioned as both the Management and Scientific Authority of CITES in Singapore. Within NParks, the Wildlife Trade branch within the Wildlife Management division is the department that reviews the applications for CITES permits and enforces ESA when suspicious cargoes are encountered (Section 9.2.1). The National Biodiversity Centre (NBC) division was established by NParks to represent the government as a Scientific Authority on nature conservation, and to represent Singapore in various biodiversity-related international/regional conventions and fora (NParks 2020b). Another of NBC's functions is to give feedback and advice on issues relating to flora and fauna biodiversity conservation in international agreements (NParks, 2020c). Within NBC, the Coastal and Marine (CME) branch (~13 personnel) has relevant expertise on coastal and marine environment and biodiversity (NParks 2020d), though not specific to seahorses.

<sup>119</sup> Since 2004, the public service agencies in Singapore have adopted a Whole-of-Government (WOG) approach to dealing with highly complex issues which could come under the jurisdiction of multiple agencies. The WOG mindset inculcated across Singapore's public agencies aims to bring together inter-agency collaborations and towards greater synergies for government-wide responses. (CSC, 2016).

Information regarding CITES-listed species (e.g., seahorses are included in Appendix II) is publicly available, via the NParks website (NParks 2020e), to personnel intending to import, export and transship wildlife through Singapore. Also, the conditions and documents required by traders prior to import and export of CITES-listed species are clearly stated on their website (Figure 9.2) (NParks 2020e).

**Singapore Customs (Customs)** is the “*lead agency for trade facilitation and revenue enforcement*” (SGD n.d.-a), which includes trade in wildlife. The agency implements “*revenue collection and enforcement, trade documentation, trade facilitation and security functions*”. TradeNet (NTP 2020)<sup>120</sup> is the main communication platform used by Customs to engage with traders and allow them “*to submit permit applications electronically for processing, via a single point of entry to government agencies*”, which demonstrates the WOG approach (SGC 2015). Within Customs, the International Relations branch, under the Policy and Planning division, is one of the key departments that ‘*participates in international/regional customs meetings and free trade agreement negotiations* (SGC n.d.-a)’ and therefore works closely with NParks and overseas customs counterparts on matters relating to CITES. On CITES enforcement in Singapore, Customs is an intermediary between NParks and ICA.

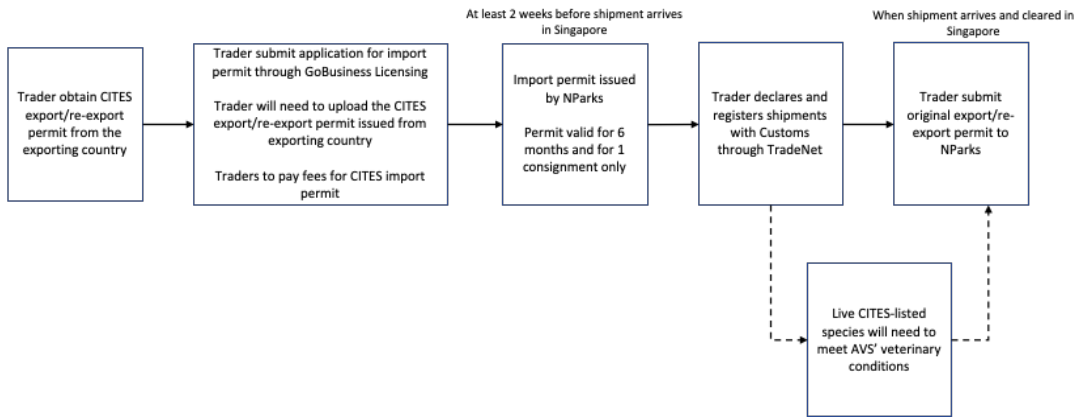
**Immigrations & Checkpoint Authority (ICA)** is “*responsible for the security of Singapore’s borders against the entry of undesirable persons, cargo and conveyances through the country’s land, air and sea*” (ICA 2020). Hence, they carry out immigration enforcement, border controls and border customs services. All cargoes entering Singapore, whether hand-carried by travelers, shipped or flown in, are subjected to rigorous checks of proper documentation and cargo contents. Among the three agencies, ICA serves as the frontline that deals with the direct handling of incoming or transiting cargoes, while Customs serves as the intermediary between ICA and NParks, where the latter serves as the enforcer of CITES through its ESA.

**Singapore Food Agency (SFA)** is the agency “*overseeing food safety and security from farm-to-fork*” (SFA 2020). Food-related functions carried out by the former AVA, the National Environment Agency and the HSA were transferred to SFA when the agency was established. Specifically, the agency operates Singapore’s two fishery ports [Jurong Fishery Port (JFP), Senoko Fishery Port (SFP)] and administers the Fisheries Act, which were formerly under the management of AVA (along with CITES implementation) before the latter was disbanded in mid-2019. Within SFA, the Licensing & Permits division manages the licensing of commercial fishing vessels etc, the Food Infrastructure Development & Management division deals with the infrastructure of the fishery ports etc, whereas fish catches at the fishery ports are under the purview of the South-west Regional Office.

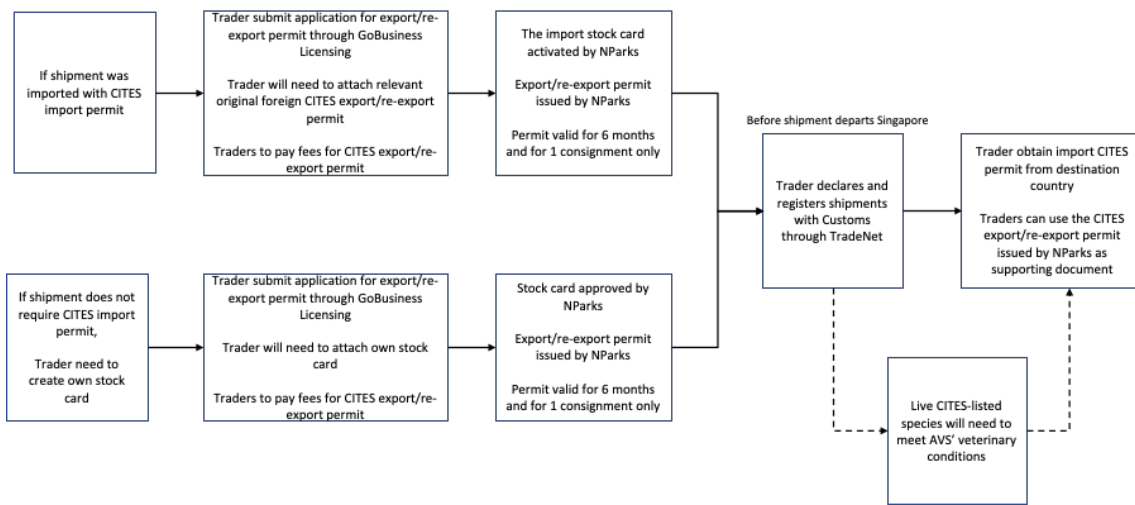
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<sup>120</sup> TradeNet integrates import, export and transshipment documentation processing procedures and enables the trade and logistics communities to fulfil their trade formalities. TradeNet provides services such as Cargo clearance permit printout, Permit listing, retrieving information and status of applications submitted in TradeNet (NTP, 2020).

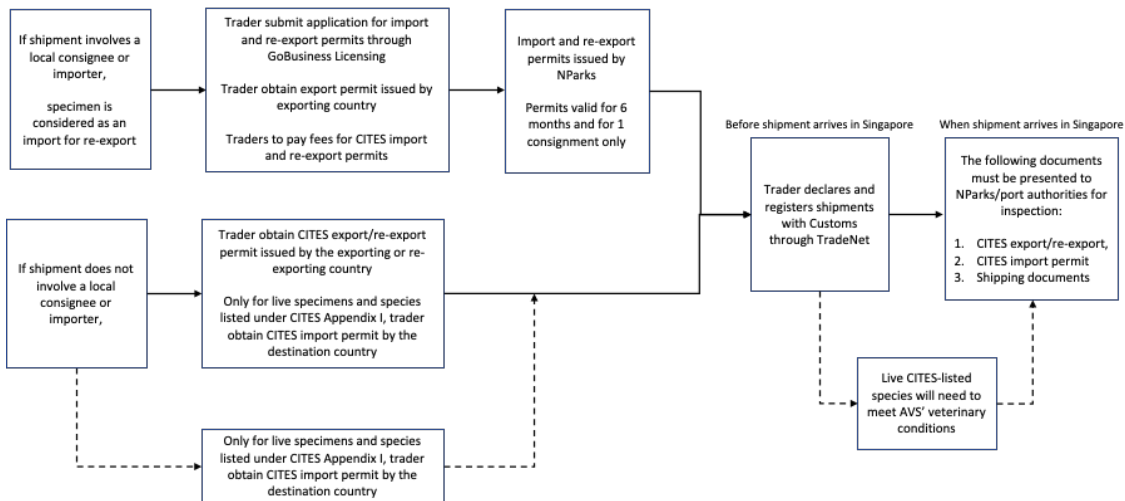
**(a) Importing CITES-listed species into Singapore**



**(b) Exporting CITES-listed species into Singapore**



**(c) For CITES-listed species transiting in Singapore**



**Figure 9.2.** Information on the NPAKs' website available to traders, which detailed steps and applications required prior to (a) importing wildlife, (b) exporting, or (c) re-exporting of any CITES-listed species including Appendices II and III (AVS 2019).

### Cooperation and communication among the local actors on the import/export/re-export of dried seahorses

For any CITES-listed species and its recognizable derivatives, such as the dried seahorses, potential traders must first apply for CITES permits for import/export/re-export from the NParks via LicenceOne (Figure 9.3). With effect from 1 October 2019, all CITES permits issued by Singapore included electronic signatures, and foreign authorities can use the LicenceOne platform (an online licensing portal, [www.gobusiness.gov.sg](http://www.gobusiness.gov.sg)) to verify the authenticity of CITES permits and certificates issued by Singapore (CITES 2019).

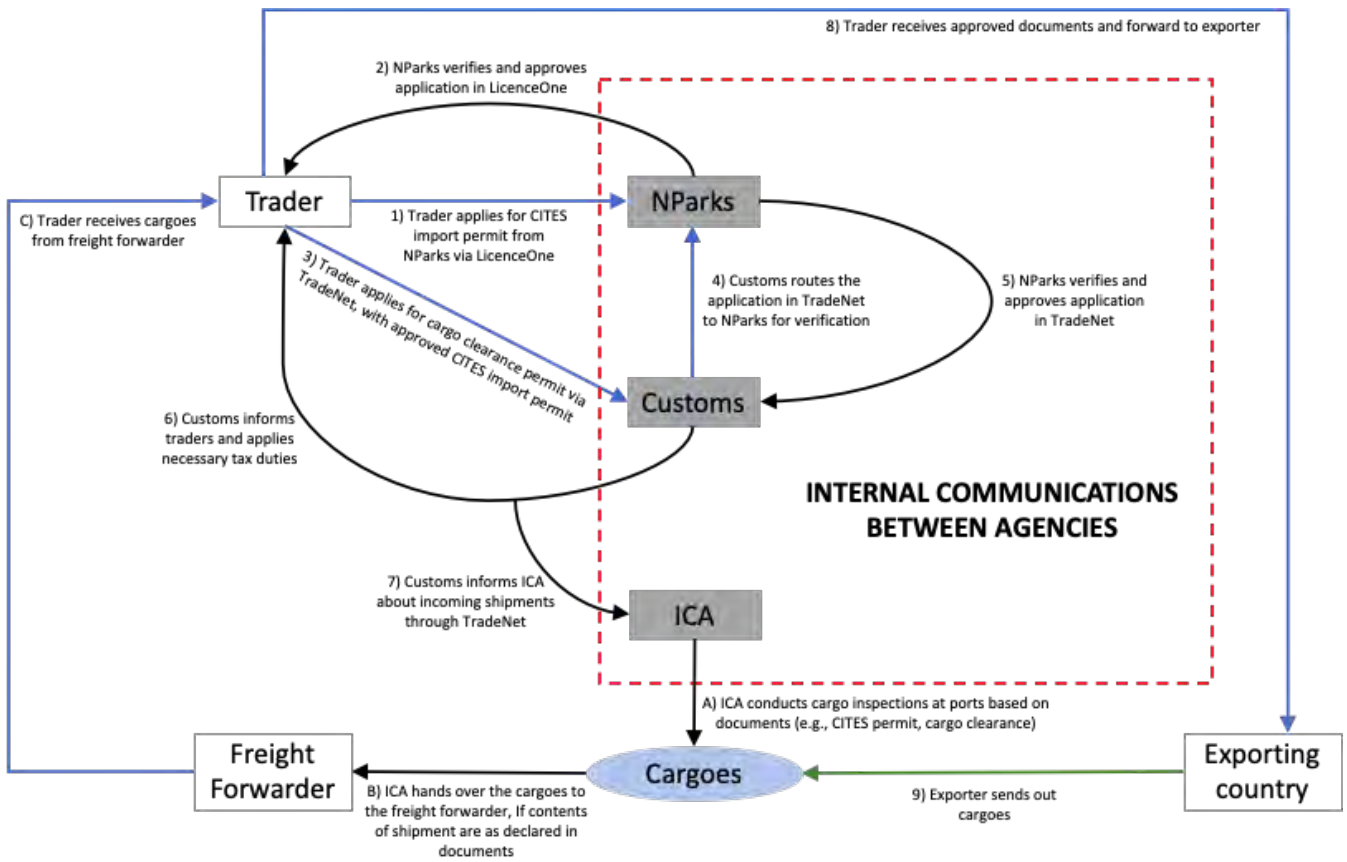
Once the CITES permit application has been approved, the next step is submitting declarations to Customs via TradeNet. All importers, exporters and common carriers of goods need to register or declare all goods with Customs through TradeNet, whether imported into, exported from, transported in or in transit through Singapore. Apart from submitting their approved CITES permits, traders also declare the type of products using Harmonized System (HS) codes. In Singapore, HS codes comprise two parts: the first 6 digits are for international use while the last 2 digits are added to harmonize codes across ASEAN member states -- for instance, dried seahorses, and dried seadragons use 05119190 and live ornamental marine fish which includes (but is not specific to) seahorses and pipefishes (excluding fry) use 03011999 (SGC n.d.-b).



**Figure 9.3.** Sample of CITES permit issued by NParks which will 'contain details of CITES specimen or shipment, such as name and address of importer/exporter/re-exporter, scientific and common name of the species, Appendix number and source code, description, quantity, Units of Measurement, etc. (NParks, n.d.).

Upon submission to TradeNet, the application will be routed to the relevant Competent Authorities for Controlled Items (SGC n.d.-c) for the backend verification and approval (such as NParks for endangered species). TradeNet thus serves as the coordinating platform, primarily managed by Customs, with the assistance of Competent Authorities to check the necessary documentation. For cargoes containing endangered species (species listed on CITES), NParks would receive notifications on these declarations via TradeNet from traders, process their regulatory requirements and grant approval for the cargoes (SGC 2015). When the Competent Authorities give clearance for the application to import/export/re-export cargoes,

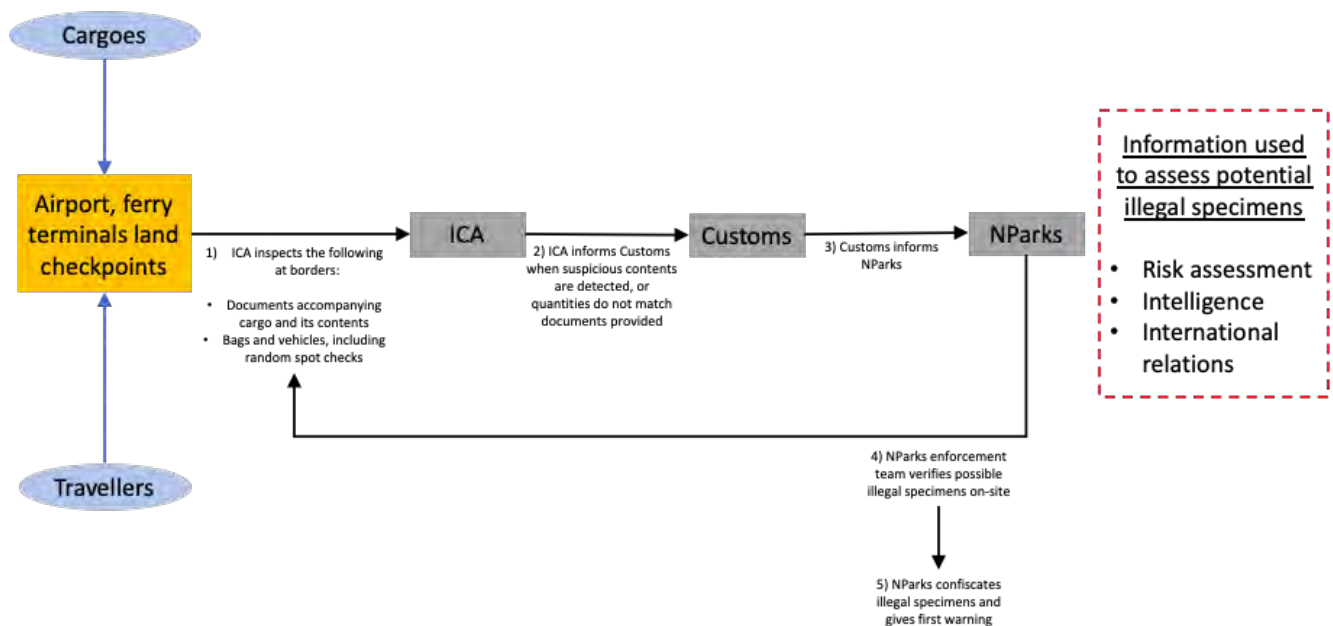
Customs will apply the tax duties accordingly and route the declarations to ICA to inform their officers of incoming cargoes at the borders. Figure 9.4 illustrates inter-agency cooperation and communication in handling applications for import/export/re-export of CITES-listed species.



**Figure 9.4.** An illustration of the cooperation and communication among local agencies in handling import/export/re-export of CITES-listed species into Singapore. Actions carried by authorities are represented with black lines, blue lines indicate actions carried by the trader, while green lines represent actions by the exporter. Numbered text refers to the process of obtaining permits, and text in alphabetical order refers to the process upon arrival to Singapore.

Surveillance and enforcement at the borders are carried out by ICA, with the help from Customs and NParks. The latter agencies adopt a risk assessment approach such as risk profiles and intelligence to facilitate the identification of suspicious cargoes containing trafficked wildlife (Figure 9.5), but details of such operations are confidential (CITES 2017).<sup>121</sup> At the borders, ICA conducts thorough checks of cargoes and travelers’ personal luggage via scanning. Should there be suspicious-looking content that cannot be verified with documentation, ICA will intercept these goods and immediately inform Customs and NParks for further actions (e.g., search and confiscation of trafficked goods). Interviewee NP2 shared that it is not ICA’s responsibility to identify specimens to species, and such arrangement exists so as to reduce burden on the frontline officers.

<sup>121</sup> The report states the following: “...our robust and evolving risk assessment framework which allows us to target passengers and shipments from high-risk sources. We shared some of the confidential criteria used in our risk assessment frameworks. Shipments and passengers matching our risk profiles and risk indicators are flagged out for further checks. We continually improve these profiles and indicators by collecting intelligence from international partners, conducting analysis, and reviewing trafficking trends.” (CITES, 2017)



**Figure 9.5.** Enforcement of CITES at various borders. Actions carried by authorities are represented with black lines, blue lines indicate incoming goods encountered by ICA at borders.

### **Cooperation and communication between local actors and regional and international bodies**

Singapore collaborates with other ASEAN member states through the ASEAN Working Group on CITES and Wildlife Enforcement (AWG-CITES & WE) (DENR 2019). This regional initiative was established in 2016 with the merger of ASEAN Wildlife Enforcement Network (ASEAN-WEN) and the ASEAN Experts Group on CITES (AEG-CITES) (AWG CITES & WE 2017). Unlike other ASEAN nations, Singapore does not have a formal National Wildlife Enforcement Network structure but has an interagency cooperation mechanism (Krishnasamy & Zavagli 2020).

For biodiversity meetings such as the Convention on Biological Diversity (CBD), the NParks serves as the national focal point and the International Biodiversity Conservation division led by Dr. Lena Chan and Ms. Wendy Yap attends these meetings (CBD n.d.). Similarly, NParks, specifically the Wildlife Trade branch, has been an active participant to CITES CoP meetings, particularly on combating illegal ivory trade and other wildlife such as rosewood. However, we found no publicly-available reports pertaining to seizures or enforcement actions against illegal trade in marine species.

### **9.3.2 Current legislations relevant to trade and fisheries for seahorses**

#### **National legislations pertaining to trade of recognizable derivatives of seahorses**

**Endangered Species Act (ESA):** The ESA is the national legislation that gives effect to CITES regulations in Singapore (NParks 2020f). Under Sections 4(1) and 5(1) of the ESA, all imports, transits, exports, re-exports or introduction from sea of CITES-listed specimens (live, dead or recognizable derivatives) shall be accompanied by relevant CITES permits. “Syngnathidae (pipefishes, seahorses)” are listed in the Schedule of ESA. It is also an offence under Section 4(2) for anyone to possess or have in his control, sell, offer, or expose or advertise for sale, or display to the public, any specimens that was imported or introduced from the sea in contravention of Section 4(1). Separately, regardless of any import or introduction of the sea, or the legality of such import or introduction, Section 4(3) of the Act also prohibits the ‘sale, offer, advertisement or display to the public, specimens of gazetted CITES-listed species’,<sup>122</sup> but seahorses have not been gazetted so

<sup>122</sup> According to the Endangered Species (Import and Export) (Prohibition of Sale) Notification (<https://sso.agc.gov.sg/SL/ESIEA2006-N1?DocDate=20080401>), only the following CITES listed species are gazetted:

domestic trade in Singapore is not prohibited under this sub-section (SSO 2008). Customs, NParks and Police officers are authorized to exercise their powers under the ESA, and enter and search any premises without warrant, to seize any illegal wildlife. They can also investigate cases of CITES-listed species transiting Singapore. Individuals or corporations found in violation of this Act are fined up to SGD\$50,000 per specimen (not exceeding SGD\$500,000 in total) and/or imprisonment for up to two years.

*Wildlife Act (WA)*: NParks also administers the WA that protects wild fauna and flora in Singapore (Wildlife Act, Cap 351) (NParks 2020g). Under this Act, the intentional killing, trapping, taking and keeping of any wildlife is prohibited unless with written approval from the Director-General (DG). This legislation also complements the ESA as the sale, export of wildlife and import of living wildlife are regulated under Sections 8 and 9 of WA. Seahorses belonging to “*Hippocampus* spp.” are protected wildlife under the Wildlife (Protected Wildlife Species) Rules 2020, regardless of whether it is live or dried, local (domestic) or imported. Individuals guilty of sale or exporting protected wildlife without written approval from the DG are liable to a fine of not exceeding SGD\$50,000 or to imprisonment for two years or to both whereas for offences related to importing living wildlife without written approval from the DG (whether protected wildlife or not), individuals are liable to be fined not exceeding SGD\$10,000 or to imprisonment not exceeding 12 months or to both. For CITES-listed species, “members of the public, companies, or registered animal welfare/rescue organisations apply for approvals from the DG of Wildlife Management to conduct specific activities that are restricted by the Wildlife Act” through an online form (<https://form.gov.sg/#!/5ec4b995f8667c0011c01acd>).

*Regulation of Imports and Exports Regulations (RIEA)*: The RIEA is administered by Customs, and mandates that goods imported into, exported from, transported in or in transit through Singapore as well as importers, exporters and common carriers of goods shall be registered and declared with Customs. Additional approval shall be sought from Competent Authorities [e.g., NParks, Singapore Food Agency (SFA)] for the import, export or transshipment of controlled items – which includes scheduled species under the ESA and wildlife under the WA – before they may be imported into Singapore. Section 18 of the RIEA also empowers NParks to conduct sampling and testing of suspected controlled items (SGC n.d.-d).

### ***National legislations pertaining to potential seahorse fisheries***

*Fisheries Act*: Under the Fisheries (Fishing Vessels) Rules, a license is required for the plying of a fishing vessel at any port in Singapore. However, only Singapore-registered commercial fishing vessels can apply for a license to operate in local waters, and it is mandatory to declare their landed catch to the authority: SFA (Latun et al. 2016). Foreign fishing vessels are not allowed to fish in Singapore waters, but can land catches at designated ports (i.e., JFP) where inspections are carried out. Notably for seahorses, the use of trawl nets within Singapore is prohibited under the Fisheries Act (Cap 111) administered by SFA (SSO 2020a), with the exception of five local trawlers that have been granted exemption to conduct trawling operations within Singapore (SFA 2019), specifically around Pedra Branca where historic fishing activities used to occur in that area (ICJ 2008).<sup>123</sup> However, based on local researchers’ observations at the fishery ports, no seahorses (live or dead) have been seen, regardless of the origins of the fishing boats (more in Section 9.3.3). In addition, according to past literature (Table 9.1), there haven’t been any records of seahorses at Pedra Branca. The Fisheries Act was first introduced in the 1960s for the “*control of fishing, marketing and distribution of fish, fishing ports and harbour*” (SSO 2020b) as well as licensing of fishing vessels. Hence, provisions relating to protection of endangered animals and fishes are not within the scope of this Act. Moving forward, we understand that changes to the Act are coming soon.

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rhinoceros, elephants, tigers. To gazette a species, the Minister must publish the rule in the Government Gazette (s4(3) and 29 of the ESA).

<sup>123</sup>Pedra Branca is an outlying island representing the easternmost point of Singapore. It is approximately 44 km to the east of mainland Singapore, located between Singapore Strait and South China Sea. (ICJ, 2008)

**Parks and Trees Act (PTA):** Under the PTA (Cap 216), approval by the Commissioner of Parks and Recreation is required for fishing at certain areas that are kept as sanctuaries for the mangroves and marine habitats to flourish and fish population to grow to maturity (Tan 2020). These areas include the Sisters' Islands Marine Park, Labrador Nature Reserve rocky shore, Chek Jawa Wetlands, Sungei Buloh Wetland Reserve, and the waters around Coney Island Park.

### **Regulation of Chinese Proprietary Medicines (CPM) containing seahorses**

In Singapore, whole dried seahorses are classified as traditional medicinal materials (TMM) (HSA 2019)<sup>124</sup> by the Health Sciences Authority (HSA). As such, they are not subjected to pre-market approval and licensing for their import and sale in Singapore. This means that it is the responsibility of dealers/suppliers to ensure that they have complied with the guidelines before supplying TMM into Singapore, such as obtaining the necessary CITES import and export permits for substances from listed species. However, we were unable to confirm if retailers keep copies of permits for import or licenses for their whole dried seahorses, as well as whether any enforcement actions have been carried out by authorities.

When dried seahorses are used as an active ingredient in TCM products, they are referred to as Chinese Proprietary Medicines (CPM) - medicinal products that are in the form of a finished product, such as capsule or tablets (HSA 2020). Dealers/suppliers of CPM must obtain relevant licenses and product approvals prior to the import, wholesale, manufacture or assembly of CPM (Interviewee HSA1, pers. comm., 2020). It appears that products containing seahorses are manufactured or assembled in Singapore (see Section 9.2.3), where their sale is regulated by HSA. Interviewee HSA1 also acknowledged that it was the responsibility of dealers/suppliers to declare the substances used in CPM products, as the detection of endangered species/seahorses when in powdered forms is very difficult. According to interviewee HSA1, they do not check for CITES documentation. Interviewee NP1 further mentioned the challenge of regulating and enforcing finished products such as capsules or tablets when they are processed to a form that is not recognizable.

### **9.3.3 Understanding the trade and fisheries of seahorses**

#### **Trade and export bans/suspensions**

Interviewee NP1 confirmed that they submit records of all permitted trade to CITES in their annual reports for inclusion in the CITES Trade Database ([www.trade.cites.org](http://www.trade.cites.org)). These official CITES trade records suggest that Singapore has historically imported, exported, and re-exported both dried and live seahorses (see also Section 9.2.2). According to the CITES Trade Database, five species of dried seahorses including *Hippocampus* spp. were imported from three countries (Thailand, Mainland China, and Australia) between 2004 and 2012 and in 2014.<sup>125</sup> But in the last three years (2016-2018), dried seahorses were not imported although they were declared to be re-exported. For exports and re-exports, six species including *Hippocampus* spp. were sent to seven countries (mainly Hong Kong SAR and US) intermittently over the last 13 years (i.e., 2004, 2007-2010, 2012, 2014, 2016-2018).<sup>126</sup> Of the 19 records in these 13 years, 13 of them were re-exports and the majority were reported to originate from Thailand. Notably, the last reported import of dried seahorses was in 2014. It remains questionable as to whether dried seahorses supplying ongoing re-exports in the last three years are from past stockpiles in retail of illegal imports or local sources (see Section 9.3.4).

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<sup>124</sup> Traditional medicinal materials (TMM) refer to medicinal materials from plants, animals or minerals in their natural states, or in processed forms that have undergone simple processing, such as cutting or drying. TMM are intended for medicinal purposes only (HSA, 2019).

<sup>125</sup> Summation import data for 2004-2012 and 2014: (importer reported quantities) 782.20 kg of bodies and 172.80 kg of derivatives; (exporter reported quantities) 1155.34 kg of bodies, 2.40 kg of derivatives and 402 bodies.

<sup>126</sup> Summation of export and re-export data for 2004, 2007-2010, 2012, 2014, 2016-2018: (importer reported quantities) 73.80 kg of bodies, 37 bodies, 2 derivatives, 3855 medicine and 3 specimens; (exporter reported quantities) 235.20 kg of bodies and 1 specimen.



The CITES Trade Database recorded 13 species of live seahorses including some merely designated as *Hippocampus* spp. imported from nine countries (mostly from Australia and Vietnam) between 2004 and 2018.<sup>127</sup> For exports and re-exports, seven species of live seahorses including *Hippocampus* spp. were sent to 16 countries from 2004-2005, 2008-2013, and in 2016.<sup>128</sup> Of the 46 records, 32 of them were re-exports and the majority were reported to originate from Australia. Contrary to the dried seahorses, live seahorses were not exported or re-exported between 2017 and 2018 but continued to be imported.

Among the interviewees NUS1, NUS2, NUS3, WS1, the general awareness of the seahorse trade appears to be limited to seeing the dried seahorses in TCM shops, as well as the live seahorses at commercial aquarium shops. Further understanding on their trade routes and sources, as well as the seahorse products and uses are lacking among this group of interviewees. Interviewees NP1 and NP2 also shared that they did background research prior to the interviews and expressed that they are generally less aware of the local trade and their uses in Singapore, but are confident that seahorses (dried or live) in Singapore are obtained with proper CITES documentation. They further confirmed that documentation of all trade of seahorses in Singapore has been recorded in the CITES Trade Database by the national authority. Another major perception from interviewee NP1 is that Singapore's importance as a seahorse trade hub has greatly diminished over time. However, we infer that there could be still ongoing trade that is unnoticed or undetected by authorities (see Section 9.3.4).

Both interviewees NP1 and NP2 confirmed that Singapore has never been a source of seahorses, but only a re-exporter, and so they have never had to make a non-detriment finding (NDF). A closer examination of the CITES Trade Database found ten records suggesting Singapore as a source (i.e., direct exports from the country), but these were not reported by Singapore and so might have been re-exports. Interviewee NP1 also shared that this may have occurred as Singapore does not have control over the declarations made by other importing countries. Furthermore, interviewee NP1 revealed that NParks would not have allowed direct export of seahorses from Singapore as the system (likely via TradeNet) is in use for monitoring.

### ***Seizures of illegally obtained seahorses***

On the seizures of illegally obtained seahorses from cargoes via air or sea, interviewees NP1, NP2, SC1 and SC2 shared that they have no cases to report. Instead, pathways of illegally obtained seahorses are said to be hand-carried across the borders (e.g., ferry terminals from Indonesia or the Johor-Singapore Causeway) by travelers, ranging between 1 and 2 cases every one to two years (Table 9.4). The travelers are generally found to be in possession of <100 pieces of dried seahorses and are often unaware that these wildlife species require CITES documents for export/import, thus are willing to surrender them to NParks. Interviewees NP1 and NP2 were confident in the authorities' ability to identify seahorses in illegal cargoes or travelers' bags, citing that the identification of seahorses as a group is very straightforward and all species of seahorses are listed in CITES Appendix II. NParks recorded information on quantities and form, but not species, of confiscated seahorses (Table 9.4), and data were reported to the CITES Secretariat in accordance with the required annual illegal trade reporting (CITES 2016).

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<sup>127</sup> Summation import data for 2004-2018: (importer reported quantities) 18,743 live individuals; (exporter reported quantities) 18,680 live individuals and 50 "fingerlings".

<sup>128</sup> Summation export and re-export data for 2004-2005, 2008-2013, 2016: (importer reported quantities) 4,789 live individuals; (exporter reported quantities) 6,307 live individuals.

**Table 9.4.** Reports provided by interviewee NP1 on dried seahorse seizures in recent years. The seized dried seahorses were not concealed.

<b>Year of seizure</b>	<b>Month of seizure</b>	<b>Species</b>	<b>Quantity (pcs)</b>	<b>Form</b>	<b>Actions</b>	<b>Remarks</b>
2018	Sep 2018	<i>Hippocampus</i> spp.	24	Dried	Fine and confiscation	Not concealed
	Oct 2018	<i>Hippocampus</i> spp.	12	Dried	Fine and confiscation	Not concealed
2019	Oct 2019	<i>Hippocampus</i> spp.	8	Dried	Warning and confiscation	Not concealed
	Jun 2019	<i>Hippocampus</i> spp.	57	Dried	Fine and confiscation	Not concealed
	Aug 2019	<i>Hippocampus</i> spp.	34	Dried	Fine and confiscation	Not concealed

### **Local fishing and fisheries**

With a small Exclusive Economic Zone, Singapore does not have large-scale commercial fisheries and it relies largely on imported fresh seafood to meet its demand. SFA manages the only two fishery ports in Singapore (i.e., JFP and SFP), which receive imported seafood and a small portion of local catches (SFA 2019). The bulk of seafood received at the fishery ports are fresh chilled, as well as a consistent supply of live fishes for local consumption (but not for ornamental purposes). Dried seafood is not imported through the fishery ports, but may be found at the fishery ports during seasonal periods, e.g., Lunar New Year. On declaration of landings, SFA expects merchants to indicate information such as the species of fish and their respective wet weight (in tonnage) on a monthly basis (SFA n.d). Their officers also conduct monitoring of landings to check the accuracy of declarations.

When asked about local catches of seahorses, interviewees NUS1, NUS2, NUS3, and WS1 generally reflected that deliberate harvesting by local recreational fishers and gleaners is rare. A single encounter by interviewee WS1 saw one seahorse left to die on Changi Boardwalk next to some fishermen. Seahorses have also not been observed as bycatches in fishing nets (WS1, NUS1, NUS3, pers. comms.). At the fishery ports, a local researcher (Clark-Shen N. pers. comm., 2020) who monitors the imports and local catches of elasmobranchs shared that seahorses (fresh or dried) have not been observed on sale at the stalls, with further confirmation from SFA.

Posters on CITES-listed species are installed at the fishery ports to inform the fish merchants. There also exists operational arrangements between SFA and NParks with respect to the enforcement of CITES at the fishery ports and both authorities work closely on the matter. For instance, when a CITES-listed species is suspected to be sighted at the fishery ports, SFA will engage NParks (Wildlife Trade branch) for their verification and hand over the case. A recent example is the listing of giant guitarfishes and wedgefishes (16 species from the families Glaucostegidae and Rhinidae) in the CITES Appendix II, where new actions were swiftly taken to comply with CITES; NParks visited the fishery ports and issued advisories on the imports and sales of these rays, and informed merchants on the penalties for non-compliance (Thiagarajan 2020).

### **Potential for smuggling seahorses into Singapore**

*“Singapore is being used against its will as a trans-shipment point so that ivory can reach destinations such as Vietnam and China... They (would-be smugglers) are also banking on the fact that 30 million containers move through Singapore every year so the odds are in their favour that their shipment will pass through without its contents detected... The criminal syndicates are using Singapore because they know that the emphasis is on the interdiction of drugs, but not wildlife contraband. They are exploiting the situation. For example, sniffer dogs here are used only to*

*detect drugs and not ivory and rhino horn. It would be good to expand the capabilities of the canine units to address wildlife crime – this has been very effectively done in a lot of other countries” - Tom Miliken, TRAFFIC’s Ivory Expert. Excerpt from an interview (Tralac 2016).*

Desiccated seahorses may be perceived to have a long shelf life, but a retailer remarked that they are actually susceptible to infestation by insects or damage as a result of ambient humidity and moisture in Singapore; hence if stored improperly, these products may have passed their shelf life and are less desired by customers (Perry et al. 2006). This leads us to question the sources of dried seahorses seen in retail today, given that there are no official records of direct import into Singapore between 2016 and 2018. Here, we postulate that dried seahorses (small and inconspicuous) may still enter Singapore as smuggled goods through three possible avenues discussed in the following.

**Mixing with other seafood cargoes:** Singapore’s huge reliance on imported fresh seafood, though unlikely for live seahorses, remains a possible avenue for smuggling dried seahorses amongst other large quantities of crates containing chilled or live seafood, across the borders from neighboring countries. Furthermore, as pointed out by interviewee NUS3, seahorses may be lumped with other marine fishes and imported/re-exported under multiple trade names or colloquial names (similar to marine fishes) to avoid detection. This would pose enforcement challenges to the authorities who monitor the trade, even though present regulatory terms provided by Singapore legislations are sufficient to protect seahorses (with specific mentions of *Hippocampus spp.*). Additional research to understand the local trading terms used by suppliers and dealers (e.g., in different languages or dialects) will be useful in strengthening enforcement.

**False declarations of cargoes:** In Singapore, back-to-back high-profile seizures of other wildlife in 2019 alone revealed the persistence of syndicates to make false declarations of transit cargoes. For instance, at least three transit shipments seized between April and July 2019 containing pangolin scales and ivory were all falsely declared by traders as food products or timber in the documentation (such as the Bill of Lading) (Reuters 2019, SGC 2019, TRAFFIC 2019). Notably, most of the seizures of trafficked wildlife in Singapore reported by the local media consisted of pangolin scales and elephant ivory, but there have been fewer reports (past or recent) for other CITES-listed wildlife, particularly of marine species (but see Boon 2017).<sup>129</sup> Although this seizure was not carried out by Singapore authorities, a 980 kg shipment of illegal shark fins consisting of endangered species was seized in Hong Kong SAR, the importing country (The Straits Times 2018). That shipment was originally from Colombo, Sri Lanka that was routed through Singapore before it reached Hong Kong SAR. It appeared that the shipment was overlooked by Singapore Airlines as it was labelled as ‘dry seafood’. This case study points to the fact that Singapore remains a popular transit hub for illegal shippers, and the likelihood of shipments being overlooked for sampling checks. Overall, we think that there remains insufficient information to assess the authorities’ rigor and commitment in detecting smuggled wildlife. Also, there have been seizures of other wildlife (such as songbirds, tortoises, and tarantulas), but it is apparent that greater media attention has been placed on the high-profile pangolin, elephant, and rhino.

**Declaration of cargoes as transit shipments:** Another potential avenue for smuggling dried seahorses into Singapore would be declaring cargoes as transit shipments, where they are not considered imported but in transit within Singapore. Under the ESA, the definition of imports is “*bringing in any scheduled species into Singapore by any mode of conveyance except when items are in transit (i.e., brought into Singapore solely for the purpose of taking it out of Singapore, remains at all times or on the conveyance, kept under the control of the Director-General or authorized officer while being so removed for a period not exceeding 14 days or such longer period)*”. However, there appears to be loopholes in this narrow definition of ‘imports’ as highlighted in a controversial case in 2015 concerning the final destination of scheduled species: rosewood (*Dalbergia sissoo*) logs, which saw the defendants eventually being acquitted in 2019. Under CITES, the CoP has resolved that to qualify as a shipment in transit and be exempted from import requirements, the final

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<sup>129</sup> According to Boon (2017), CITES shark product seizures have taken place in Singapore over the past 10 years, but seizure data was not available.

consignee and destination country must be named in the permits, rather than the third party handling the shipment in transit (CITES Res. Conf. 9.7 (Rev, CoP15)). This is to avoid having traders potentially taking advantage of the transit exemption to keep specimens in the transit country without having to apply for an import permit, while seeking buyers in other states for the shipment (Chun & Lye 2019).

In Singapore, the naming in the shipping document and non-CITES export permit of a local company as the consignee and Singapore as the destination were held by the Court as not necessarily conclusive that a shipment is an import for the purpose of the ESA. In the Singapore case in question, logs of rosewood (listed in Appendix II of CITES) were brought in from Madagascar, purportedly en route to Hong Kong SAR via Singapore. The shipment was accompanied by questionable export authorizations from the Malagasy authorities, and the shipping documentation stated Singapore and a Singapore party as the final destination and consignee respectively. Following the CITES regime, the local CITES management authority considered the shipment an import and the Singapore consignee and its managing director were charged with importing specimens of a CITES-listed species without an import permit. The defendants were however acquitted of the charge by a State Court (Ong et al. 2016). On appeal by the prosecution, the High Court found the defendants guilty of the charge. Faced with this conviction, the defendants filed a criminal reference to the Court of Appeal for clarification on what constitutes a transit of specimens of CITES-listed species under the ESA. The defendants were finally acquitted by the Court after it held that under the ESA, the rosewood were in transit and had not been imported because (i) the defendants had, when questioned by the local CITES management authority, identified a final destination outside Singapore (i.e., Hong Kong SAR) for the scheduled species and disclosed that plans had been put in place by the time of entry of the shipment into Singapore for the shipment to leave Singapore for the final destination within a reasonable time, even though no departure date had been fixed by this time; and, (ii) the shipment was under the control of the authorities while it was in the duty free zone, even though the authorities did not know that the shipment actually composed of rosewood logs (Chun 2019).

This Court of Appeal's decision will not only make it more challenging for NParks to carry out its responsibilities and fulfil obligations under CITES,<sup>130</sup> it also highlights a potential need for statutory reform to better align the definition of 'transit' under the ESA with that under CITES CoP Resolution Conf. 9.7 (Rev, CoP15) and to improve the reporting requirements for shipments of specimens of CITES-listed species in transit in Singapore. Areas for reform include requiring the provision of a named consignee outside Singapore for a shipment of scheduled species, and making it mandatory for a trader whose shipment of specimens of CITES-listed species enters Singapore in transit to notify NParks even though no transit permit is required (Chun 2019). Without such reforms, Singapore risks allowing traders to bring specimens of CITES-listed species into Singapore without satisfying its more stringent import requirements, and keeping these specimens in Singapore for a short period while still searching for buyers (Chun 2019).

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<sup>130</sup> The Court of Appeal has introduced greater uncertainty and set an authoritative interpretation that contrary to CITES requirements, for a shipment to be considered a transit under the ESA, it is not necessary for the final destination and consignee in that destination to be named in the CITES permit. For this reason, future shipments that could in the past be considered imports may now have to be classified as transits, and thereby require administration and enforcement under a different regime. Instead of the more straightforward approach under CITES, authorities here now need to weigh various factors in differentiating between an import and a transit of scheduled species, adding more difficulty for NParks and Customs officers on the ground to make the distinction. The final Court decision also has potential implications beyond Singapore for traders intending to bring in shipments of CITES-listed species, particularly on their understanding of the nature of their shipments. Where shipment is considered a transit under ESA, traders do not need to, and indeed cannot obtain CITES import and re-export permits from the CITES Management Authority (NParks), even if the authority at the final destination, applying CITES' criteria may consider Singapore to be the State of re-export and expect to be presented with a re-export permit issued by Singapore.

## **9.4 Challenges and opportunities**

### **Seahorses are highly recognizable species for CITES management, implementation and enforcement**

The identification of CITES-listed species is often regarded as a major challenge for effective implementation. In the case of seahorses, interviewee NP2 shared that managing their trade has been less complicated because all species are presently listed under Appendix II of CITES. Since there is no need to distinguish species apart, the confiscation of illegal specimens and enforcement of the ESA are straightforward procedures. Also, seahorses are easily recognizable through the X-ray scans at the checkpoints due to diagnostic features.

While the authorities here showed high confidence in identifying seahorses, on-site identification of seahorses becomes challenging when the product is no longer recognizable (i.e., in powdered form). Although the widespread use of genetic tools to enhance the process of species identification is in its infancy, the NParks has taken the first step by establishing a new Centre for Wildlife Forensics (NParks 2020h) that uses specialized genetic techniques and chemical methods. This would be helpful for authorities in differentiating lookalike species when the need arises, and detecting discrepancies in declarations of wildlife trade.

### **A need to build local expertise on seahorses and raise public awareness**

In Singapore, there is a general lack of seahorse specific expertise. When asked about possible expertise in seahorses/fish, among agencies, we understand that local expertise on zoology lies with NParks, Singapore Zoo and NUS. Among the academics and NGOs, they concurred on consulting two other ichthyologists from the National University of Singapore: Dr. Zeehan Jaafar and Mr. Lim Kok Peng. Our interviews with NUS1, NUS2 and NUS3 revealed that there is a paucity of information about seahorse population size and ecology in Singapore. All of them also reflected having very limited information and understanding of seahorses broadly, with sparse knowledge of occurrence. In addition, they were either uncertain or have misconceptions of the provisions in the national legislations regarding seahorses (i.e., unsure whether seahorses are protected under the Schedule of the WA).

Interviewees NUS1, NUS2, NUS3, and WS1 have also expressed the need for more public education and awareness on the plight of seahorses. There has only been one known effort: the iSeahorse Singapore (a collaboration with the international iSeahorse platform by Project Seahorse) was an initiative launched by NParks in 2013 with the aim to encourage citizen scientists to share their observations and identifications of seahorses. Despite the efforts to generate resources and trainings for volunteers, the local initiative was not well-known in Singapore and promotion activities ceased in 2015. Efforts to consolidate sightings of seahorses can still be done through iSeahorse ([www.iseahorse.org](http://www.iseahorse.org)) or through the SGBioAtlas mobile application managed by NParks, which stores the information into an online database (BIOME) (NParks 2020i). However, there is a need to increase the knowledge capacity of seahorses in Singapore.

### **A need to understand the current state of seahorse trade in Singapore**

Knowledge on the local seahorse trade in Singapore is very dated, with no recent market surveys conducted (see Annex 9.i). Our current understanding of the trade volumes of dried and live seahorses and their trade routes in Singapore was collected by Project Seahorse over 20 years ago (in 1998 and 2000). Furthermore, it has been pointed out that there is a lack of information on the different names (i.e., dialects, colloquial names, common names, etc.) that traders could have used to declare seahorses with other marine fishes (see Section 9.3.4). This may be a potential oversight where shipments containing seahorses have been overlooked or undetected by authorities. Implications include an underestimation of direct imports of seahorses into Singapore between 2016 and 2018 (see Section 9.3.1).

We strongly recommend new research be conducted with the aim to update on the current state of retail, customer demand and supply chain in Singapore. This is urgently needed to shed more light on this trade and bring more attention to the authorities, as well as to inform new management decisions.

### Stepping up the priorities for surveillance of marine species trafficking

With regards to combating against wildlife crimes, Singapore has put in place a range of measures, such as leveraging on technologies and deploying scanning equipment at borders, as well as using controlled deliveries and sniffer dogs to support effective law enforcement (CITES 2017). In Singapore, much of the discussed wildlife crimes tend to center on the high-profile wildlife such as elephant ivory and pangolin scales, but there has been lesser attention on CITES-listed marine species (with the exception of sharks and rays) (Section 9.3.4). It is therefore important that Singapore continues to enhance capabilities of detecting other smuggled wildlife, not just pangolin scales and elephant ivory.

### Engaging multi-stakeholders to enhance surveillance, implementation and enforcement of CITES

Although the following informants were not interviewed in this study, they have been identified as potential stakeholders that could play a further role in improving the implementation and enforcement of CITES (Table 9.5).

**Table 9.5.** Potential informants who may play a role in enhancing implementation and enforcement of CITES in Singapore.

<b>Organisation</b>	<b>Brief description of the organisation's scope with respect to CITES implementation for seahorses in Singapore</b>
Singapore Traditional Chinese Medicine (TCM) Organisation Committee	Umbrella association for the 5 main Traditional Chinese Medicine associations in Singapore. Members include medical halls, importers/exporters of Chinese medicines and raw herbs as well as manufacturers of Chinese medicines (pers. comms., Interviewee HSA1, 2020)
S.E.A Aquarium, Resorts World Sentosa	Aquarium in Singapore that is home to more than 100,000 marine animals of over 1,000 species, across 50 different habitats, including live seahorses <sup>21</sup>
Singapore Aquarium Fish Exporters Association (SAFEA)	Providing budding aquarium entrepreneurs valuable tips in forming their companies and know-how in breeding technology; large aquariums in Singapore are members of SAFEA (SAFEA 2014)

For instance, authors had attempted to reach the Chairman for the Singapore Traditional Chinese Medicine (TCM) Organisation Committee for insights into: (i) the level of awareness of seahorses among the TCM community and (ii) current local consumer demand for raw whole seahorses and CPM containing seahorses, but received no reply. Finally, it might be worthwhile to explore into the trade for live seahorses in Singapore given that local hobbyists are likely rearing them in their aquarium tanks (Annex 9.iii).

## 9.5 Conclusions

1. In Singapore, the principal authority (NParks) implementing CITES and other relevant wildlife laws is not necessarily the main enforcement body for illegal wildlife trade along the trade chain (OECD, 2021). Instead, supporting agencies (Customs and ICA) helm enforcement at borders, while NParks implements CITES through the ESA.
2. At the national level, Singapore takes the Whole-of-Government approach to facilitate communication and coordinate enforcement activities across agencies.

3. For traders, the information is publicly accessible online, which helps to reduce administrative burdens on agencies reviewing applications and eliminate chances where traders claim that they are unsure about the regulations and requirements associated with CITES-listed species.
4. Between 2016 and 2018, dried seahorses were not imported but were re-exported, though in very small volumes. However, given that dried seahorses do have a freshness shelf life, we cannot ascertain the sources of stocks for these re-exports (i.e., leftover stockpiles or illegally-obtained goods).
5. Live seahorses were still continually imported into Singapore from 2004 to 2018 to supply local hobbyists and it might be worthwhile to gain insights into this trade.
6. On seizures of illegally obtained dried seahorses, official records suggest relatively few incidents -- largely comprising travelers unfamiliar with CITES import/export regulations. There is still a possibility that dried seahorses are masked among other cargoes and undetected by authorities due to the sheer volume of cargoes handled at the Singapore ports. Traders could also exploit the narrow definition of imports under Singapore's statutory law, to bring scheduled species into Singapore while finding another buyer from other states with less rigorously enforced CITES laws.
7. The authorities displayed high confidence in identifying seahorses at borders, but they possessed little knowledge of the trade and general knowledge about seahorses, implying that there are knowledge gaps to fill in on different aspects concerning conservation of seahorses (e.g., trade, fisheries, ecology) in Singapore.

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*Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions*

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## Annex 9

### Annex 9.i. Local accounts of dried seahorses (and dried pipefishes) in the TCM trade in Singapore



Figure 9.i.1. Seahorses and pipefishes from Chinatown. Source: Choy C, 2021.



Figure 9.i.2. Seahorses and pipefishes from Albert Centre. Source: Choy C, 2021.



Figure 9.i.3. Pipefishes from Chinatown. Source: Flickr SM Tham, 2016.



Figure 9.i.4. Pipefishes from Chinatown. Source: Flickr Leslie W, 2012.



**Figure 9.i.5.** Pipefishes from Chinatown. Source: Flickr Jean-Pierre Hakimian, 2010.



**Figure 9.i.6.** Seahorses from Chinatown. Source: Flickr Sensaos, 2009.



**Figure 9.i.7.** Pipefishes from Chinatown. Source: Flickr Kat n Kim, 2008.



**Figure 9.i.8.** Seahorses from Chinatown. Source: Flickr mossko, 2006.



**Figure 9.i.9.** Dried pipefishes are sold together with dried seahorses in a market located at Serangoon. Source: Flickr digitalia, 2005.

## Annex 9.ii. Use of seahorse and pipefish in a local TCM product

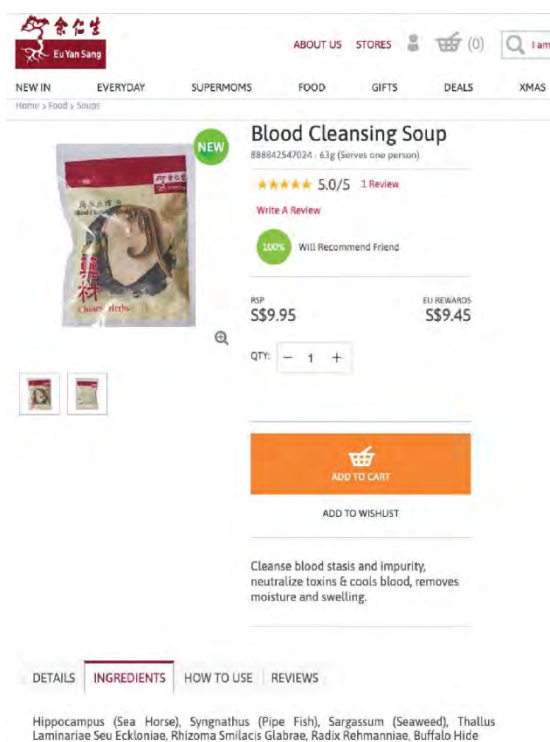


Figure 9.ii.1. Source: Eu Yan Sang. (<https://www.euyansang.com.sg/en/food-soups/blood-cleansing-soup-888842547024.html>)



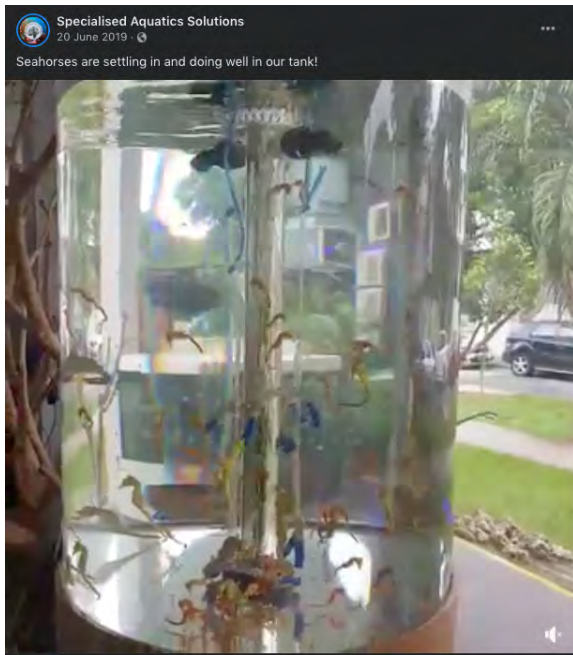
Figure 9.ii.2. Source: Thye Shan. (<https://thyesan.com/all-products/soups/skin-itch-relief-soup/>)



**Figure 9.ii.3** Source: Thye Hin Hoe. (<https://www.thyehinhoe.com/products/blood-cleansing-soup-2>)



### Annex 9.iii. Local accounts of live seahorses purchased by Singapore hobbyists



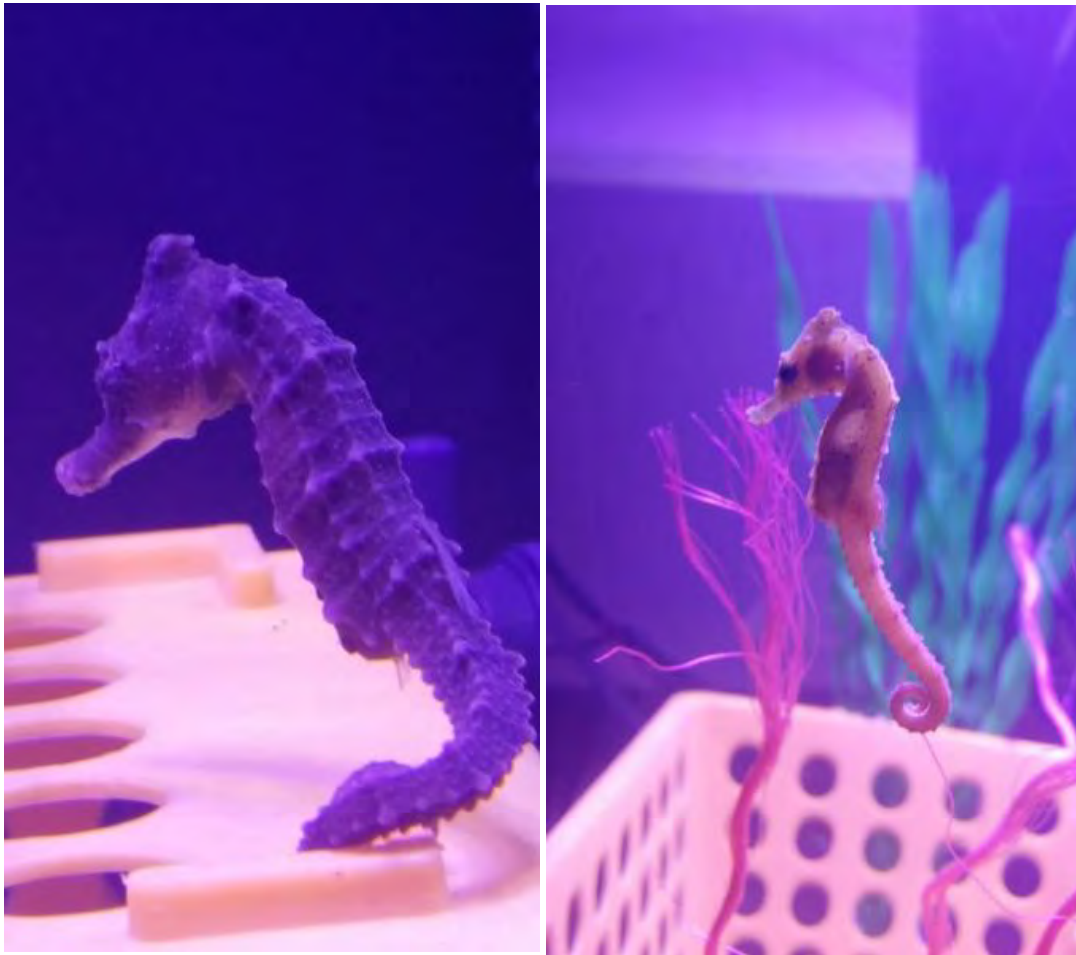
**Figure 9.iii.1.** Live seahorses advertised by a local aquarium shop. Source: Specialised Aquatics Solutions, 2019.



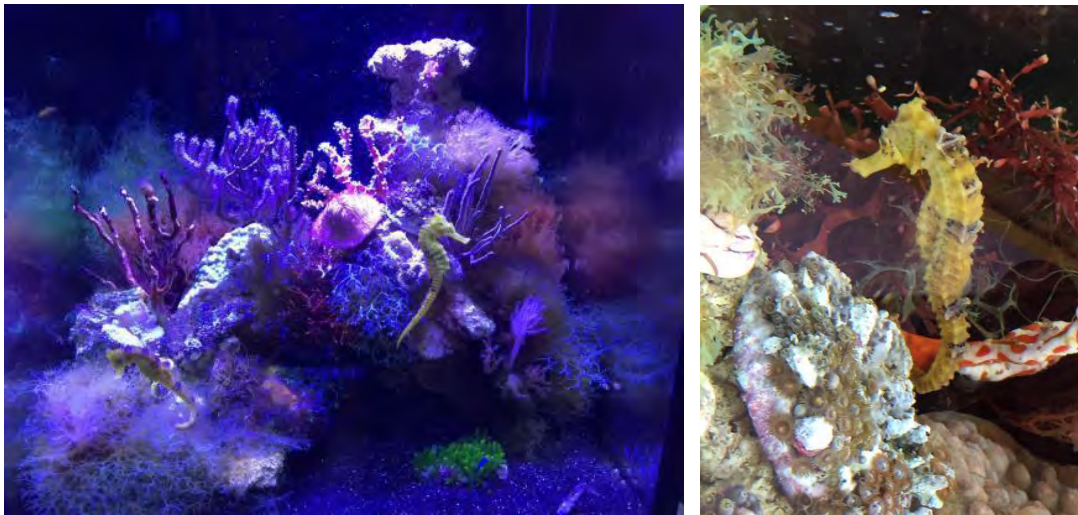
**Figure 9.iii.2.** Live seahorses purchased from a local aquarium shop “Aquamarine Marine Pet”. Source: Singapore Reef Club kakak99, 2018.



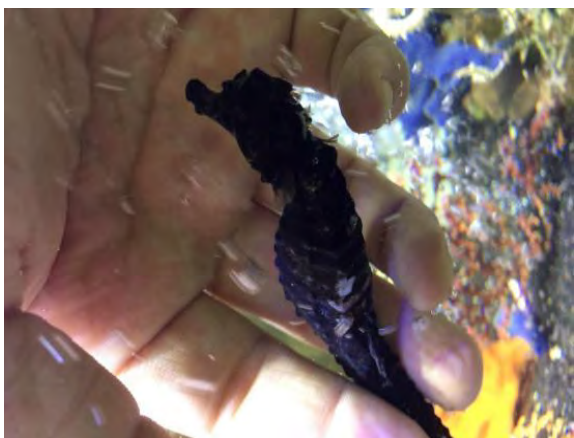
**Figure 9.iii.3.** *H. reidi* inferred to be for sale at a local aquarium shop “Henry’s” in Singapore. Source: Singapore Reef Club Sharan Guna, 2016.



**Figure 9.iii.4.** A live seahorse purchased in Singapore by a local hobbyist. Source: Singapore Reef Club Sharan Guna, 2015.



**Figure 9.iii.5.** A tank owned by a local hobbyist which contained two live seahorses. Source: Singapore Reef Club dreamscape, 2015.



**Figure 9.iii.6.** A live seahorse kept by a local hobbyist.  
Source: Singapore Reef Club mi\_edmund, 2015.



**Figure 9.iii.7.** A local hobbyist claimed that he used to keep *H. kuda* in his aquarium tank but has since replaced it with pipefish. Source: Singapore Reef Club Saturnz17, 2015.