Fisheries Centre Research Reports

2022 Volume 30 Number 3

Implementing CITES Appendix II listings for marine fishes: a novel framework and a constructive analysis

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

Implementing CITES Appendix II listings for marine fishes: a novel framework and a constructive analysis

Amanda Vincent, Sarah Foster, Sarah Fowler,
Susan Lieberman, and Yvonne Sadovy de Mitcheson

Amanda C.J. Vincent (contact author)
Director, Project Seahorse
Professor, Institute for the Oceans and Fisheries, The University of British Columbia, Vancouver, Canada
Chair, IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group
a.vincent@oceans.ubc.ca

Sarah J. Foster
Program Leader, Project Seahorse
Research Associate, Institute for the Oceans and Fisheries
Focal Point for Global Trade, IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group
s.foster@oceans.ubc.ca

Sarah L. Fowler
Scientific Advisor, Save our Seas Foundation
Member, IUCN SSC Shark Specialist Group
fowler.sarah.123@gmail.com

Susan Lieberman, Ph.D.
Vice President, International Policy, Wildlife Conservation Society
slieberman@wcs.org

Yvonne Sadovy de Mitcheson
Director, Science and Conservation of Fish Aggregations
Professor (ret.), The University of Hong Kong
Co-chair, IUCN SCC Groupers & Wrasses Specialist Group
yjsadovy@hku.hk

Geographic disclaimer:

The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the authors or their institutions concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries.

How to cite this manuscript:
Vincent, A.C.J., Foster, S.J., Fowler, S.L., Lieberman, S., and Sadovy de Mitcheson, Y. (2022) Implementing CITES Appendix II listings for marine fishes: a novel framework and a constructive analysis. *Fisheries Centre Research Report*. Vol. 30. No. 3. 189 pp.

ISSN 2816-4083

Institute for the Oceans and Fisheries
The University of British Columbia
2202 Main Mall
Vancouver, BC, Canada V6T 1Z4

This research report is indexed in Google Scholar, ResearchGate, and the UBC library archive (cIRcle).

Preface

When we set out to investigate the implementation of CITES Appendix II listings for marine fishes, we thought it would be relatively straightforward. Just document what had been done, identify the gaps, and summarize it all in a primary paper like the one we had written on the early listings of marine fishes on Appendix II.

We knew the story, or so we thought. Our team is hugely experienced, all of us having led on marine fish issues in CITES for 20-30 years. We were key agents in the Appendix II listing of seahorses, sharks and humphead wrasse. We had helped drive subsequent actions that pioneered many CITES processes for marine fishes, actively engaging in marine fish issues at all 12 of the last CITES CoPs. One of us was the head of the US CITES Scientific Authority for many years. The others of us are Chairs, an ex-Chair and the Focal Point for Global Trade of IUCN SSC Specialist Groups that are trusted by CITES to offer expert technical advice on these various taxa.

The story we now tell is substantially different from the one we thought we would share. For one thing, that primary paper has grown into a massive tome. More to the point, the anticipated simple task of summarizing implementation has evolved into a truly immense challenge of trying to untangle what has been done and what needs to be done. We have all pondered, debated, argued, and struggled with the ideas and information we document in the report. We have tried really hard to tell comprehensive stories, but we know we have also missed a lot. So, our goal has become extraction of key messages.

Our main challenge has been to determine **what is meaningful in all that has been done** and how such efforts might be affecting the marine fishes at the centre of the story, marine fishes that we all value enormously. Meeting that challenge necessitated us parsing out the different forms of implementation, creating a framework that allows us to sort through the many activities that engage us, all while seeking evidence that these are making a difference to the fish themselves. We were determined to distinguish the critical from the helpful, the vital from the optional, the exciting from the interesting, the promised from the promising.

We now offer you our thinking on how CITES has moved to implement Appendix II listings for marine fishes in a framework that we hope will have broader value for colleagues engaged in CITES… and other forms of conservation action and resource management, too. We know from personal experience that this framework will provoke animated discussion and prove controversial at times. We also know that this framework, in all its imperfections, provides a useful lens on a complex world, forcing us to consider how much (or how little) of what we do is really relieving pressures on marine fishes and other species.

We invite you to browse this report and share your ideas. We hope our framework will highlight and even challenge underlying assumptions in the theory of change used by governments, NGOs, and other stakeholders in CITES implementation. The good news is that we were able to find encouraging progress and identify options for improvement. The bad news? This report is very, very long, but we will be turning it into more concise outputs. We welcome your thoughts, comments, and recommendations.

Amanda Vincent, Sarah Foster, Sarah Fowler, Susan Lieberman, and Yvonne Sadovy de Mitcheson

Director's Foreword

Investigating the implementation of CITES Appendix II listings for marine fishes is a Herculean task.

The team of authors is uniquely qualified to do the job, having led on CITES marine fish issues for decades. They have used their expertise to tackle a complicated story that spans the world, engaging most countries. Along the way, they have had to untangle a great many claims about the effectiveness of policy decisions to regulate exports of marine fishes.

Through their work, the authors have developed a novel framework for assessing implementation of regulations, one that will be of tremendous value well beyond CITES. It is clearly valuable to follow their lead and distinguish among technical outputs, policy outcomes, and practical outcomes if you want to generate measurable change in populations.

Deploying their new framework to investigate the first marine fish species listed on CITES Appendix II (seahorses, sharks, and humphead wrasse), the authors use a blend of scholarship and practical conservation understanding to reveal that CITES Parties have made good progress on the relatively easier elements of implementation but have not really enhanced wild populations. Much more needs to be done.

I salute the authors of this Fisheries Centre Research Report for their determination to tell the full story, exploring a complex framework and highlighting key messages about the work done by governments, NGOs, and other stakeholders in the CITES implementation process to protect valuable marine fishes. Their work contributes to the growing awareness that marine fishes are wildlife, too.

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

Executive Summary

- The global Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has significant potential to help improve the population status of wild animals and plants subject to international trade, and thus to help reconcile conservation of these species with sustainable use.
- The challenge for the 184 Parties to CITES (183-member countries plus the European Union) is to implement their obligations for species that have been added to the CITES Appendices. No international commercial trade is allowed for species listed on Appendix I and trade in species listed on Appendix II must be regulated for sustainability and legality; all shipments must be accompanied by a CITES document issued by the Party's CITES Management Authority.
- Early proposals to add fully marine fishes to Appendix II aroused opposition from some quarters because of their economic importance, and a lack of awareness of threats facing these species. It was, therefore, a notable change when the first three taxa (seahorses, some sharks and humphead wrasse) were only added in 2002 and 2004.
- Twenty years later, we explore how Parties are meeting their Appendix II obligations for marine fishes, which are to limit export trade to (i) levels that are not harmful to wild populations (called making non-detriment findings or NDFs) and (ii) to animals that have been legally acquired (called making legal acquisition findings or LAFs), as well as (iii) ensuring that live specimens are humanely transported, and (iv) monitoring trade.
- We have developed a novel framework to explore how CITES Parties are implementing Appendix II listings, assessing progress on four levels:
    (1) Technical outputs (tools and capacity building): non-government stakeholders and governments develop products, tools, and activities to support implementation of CITES obligations by governments;
    (2) Policy outcomes (governance changes): governments use technical outputs (Level 1 implementation) to adopt changes – in policies, rules, regulations, legislation, data deployment, and management protocols – with consequences that are measurable but not at the field or population levels;
    (3) Field outcomes (practical changes): governments act on Level 2 policy outcomes, often using Level 1 technical outputs, to make changes in practical activities on vessels and at docks, traders' facilities, Customs sheds, courts, etc.;
    (4) Population impacts (biological changes): wild populations respond to field outcomes (Level 3 implementation) with lower mortalities, increasing numbers, better demographic balance or other biological improvements in their status.
- While Level 1 and Level 2 progress is important, they also have limitations. Progress on Level 3 is vital if we are to improve the viability of wild populations. The goal is to measure and assess Level 4 responses, to the greatest extent possible. Nonetheless, Level 3 field outcomes will sometimes serve as proxy indicators for Level 4 population changes.
- Using this new framework, we analysed progress on implementing Appendix II listings for seahorses, sharks and humphead wrasse, drawing on our 20-30 years on the front lines of CITES action as well as on papers and reports.
- Our analysis reveals that CITES listings have resulted in many technical outputs (Level 1), a number of positive policy outcomes (Level 2), and a few Level 3 outcomes. Yet it is the field outcomes (Level 3) that will promote population impacts (Level 4).
- In our assessments, we find that seahorses have benefited least from the Appendix II listing while the story has been more encouraging – although still very incomplete – for sharks and humphead wrasse.

- Twenty years after listing seahorses, only two Parties have shared NDFs – both for live seahorses – even though tens of millions of dried seahorses are traded each year. The irony is that seahorses were the first marine fishes for which CITES asked Parties to justify their exports and generate positive NDFs. Most countries exporting large volumes of seahorses now have trade suspensions that, partly because of huge seahorse catches in nonselective fishing gear, have resulted in vast illegal trade. The CITES listing does seem to have prompted a significant transition to captive breeding for the small live trade. We are not aware of any Parties' LAFs.
- After a slow start, the listed sharks have enjoyed notable public, media, industry and political interest, with substantial amounts of money supporting widespread engagement with CITES across many Parties. This has led to development of numerous useful tools, an encouraging array of published NDFs, quite a few LAFs, and a plethora of management policies. It is unclear from available information how well these many endeavours have translated into field outcomes and practical change, but there are glimmers of hope.
- As soon as they were listed, humphead wrasse benefited from a rapid narrowing of the trade to just one exporting Party, which made an NDF based on quotas, size limits, and transport restrictions (but apparently did not make an LAF). The sole importing Party has played an active role in seeking sustainability, enforcing trade restrictions to reduce the trade in wild humphead wrasse substantially. However, a recent change to allow exports of large numbers of ranched humphead wrasse has undermined the encouraging progress and raised many concerns.
- At present, for all three taxa, the implementation level with the most activity (Level 1) was also most removed from the fish populations (Level 4). Yet, the Levels need not be addressed sequentially: for example, greater enforcement of existing laws (Level 3) would alone often make a considerable difference to wild populations (Level 4), even were nothing more added at Levels 1 or 2.
- CITES Parties and conservation organizations/donors need to take a clear-eyed view of implementation, appreciating that Level 1 and 2 activities are necessary but certainly not sufficient for governments to meet their obligations under CITES. It is easy to talk about quotas and to plan marine protected areas (Level 2) but, in general, catches must actually decline such that fishing mortality becomes sustainable (Level 3). Only then can unsustainable and/or illegal trade in marine fishes be controlled or stopped, allowing species to recover (Level 4). Being certain of such changes in and around the ocean is central to Parties' obligations for Appendix II listed species.
- We make recommendations on changes to CITES implementation that would promote better implementation of Appendix II listings for marine fishes and for other taxa. At Level 1, we encourage capacity building for marine species by Parties and by the Secretariat and the CITES Animals (scientific) and Standing (management) Committees.
- At Level 2, we urge exporting Parties to meet their formal obligations in making NDFs and LAFs, humane transport and monitoring. NDFs are essentially good fisheries management plans and establish a context for adaptive management.
- Also at Level 2, we also urge importing Parties to meet their CITES requirements, scrutinizing export permits and helping to combat illegal trade. A key CITES compliance process, called the Review of Significant Trade, needs to be enhanced if it is to effect improvements in implementation of listings, and thereby the conservation of listed species.
- At Level 3, Parties need to evaluate and document what they are doing to make practical changes, so that lessons can be learned. In particular, much needs to be done to address the challenges of capturing Appendix II listed species in non-selective gear and to tackle the threats from illegal wildlife trade (IWT), not least because all too many organizations (NGO and IGO) active in IWT ignore marine species.

- We conclude that many reports on progress with CITES implementation are actually counting technical outputs (Level 1: meetings, documents, processes) or policy outcomes (Level 2) and that CITES Parties need to focus on generating and documenting field outcomes (Level 3) that will lead to measurable positive impacts for populations of listed species (Level4).
- Our framework for evaluating implementation is a theory of change that facilitates a layered analysis of CITES effectiveness that cuts through the noise. With so much happening, it would be easy to confuse activity with achievement, and outputs with outcomes, to the detriment of wild populations.
- CITES implementation for marine fishes is largely about reconciling fisheries and conservation. Effective implementation of Appendix II listings for marine fishes will depend on national fisheries and ocean agencies working in a CITES context to develop and use adaptive management that fully implements CITES for these species.
- For Parties to implement CITES in meaningful ways, they need to ensure that their field staff are actually reaching fish populations – and the fishers, traders and exporters who handle them – through practical front-line changes. This means that stakeholder, funder, and government attention need to be greatly enhanced at Levels 2, 3, and 4.

Acknowledgments

We very gratefully recognize the vital and much valued funding from the Paul G. Allen Family Foundation that allowed us to embark on this intriguing and challenging project. We also applaud the Foundation for its many contributions to ocean conservation around the world, both financial and intellectual.

We deeply appreciate the expert guidance and collegiate support provided by Rebecca Ng. This project took a long time coming to fruition and Rebecca remained steadfastly supportive and remarkably tolerant. Thank you so very much, Rebecca, and enjoy the read.

Amanda Vincent and Sarah Foster heartily thank all our wonderful colleagues in Project Seahorse and the IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group for many years of research, management and policy excellence. In 28 years of work on the international seahorse trade, we have benefited greatly from collaboration with remarkable allies in small-scale fishing communities, traditional Chinese medicine industry, public aquariums, aquarium industry, CITES Secretariat, CITES Parties, IUCN, TRAFFIC and many conservation organizations. We sincerely appreciate generous financial support from Guylian Belgian Chocolates, the John G Shedd Aquarium, and an anonymous donor, along with valued grants from other important supporters. Amanda is particularly touched by her four special co-authors' willingness to stick with this massive project through thick and thin. [Thank you, friends.]

Sarah Fowler is grateful for decades of advice and support from dozens of individuals and organisations involved with shark research, conservation and management, CITES and FAO. These include co-authors, former IUCN SSC Shark Specialist Group chair Jack Musick and many other SSG colleagues, Glenn Sant, and Paul Goriup at Naturebureau who set me on this path.

Susan deeply appreciates the advice and support of multiple individuals and organisations over the last 30+ years, which are too numerous to list, and the leadership and conservation commitment of dedicated staff in government agencies across the globe. She is grateful for the decades of friendship and collaboration on marine fish conservation from the co-authors of this paper, and the support of her life partner of 40+ years in making her endless hours of work possible.

Yvonne is grateful to a great many for making the work on humphead wrasse possible, and particularly to Loby Hau, Tony Ngan, Santi Suharti, Patrick Colin, Rachel Wong, Kim Friedman, Firdaus Agung, Rob Parry-Jones, Heru Purnomo and Boris Kwan for their support, help, trust and advice over the years.

The authors earnestly thank Regina Bestbier for her extraordinary and wonderful work in pulling this mammoth report together. We also thank Syd Ascione for astute support in final revisions and edits and Carissa Chua for assembling the figure on implementation levels.

This report is a contribution from Project Seahorse, in collaboration with three other leaders in marine conservation.

Table of Contents

Abbreviations/Terms

AC	CITES Animals Committee
AFCD	Agriculture, Fisheries and Conservation Department (government of HKSAR)
APFIC	Asia-Pacific Fishery Commission
BFAR	Bureau of Fisheries and Aquatic Resources (Philippines)
BOBP-IGO	Bay of Bengal Programme – Intergovernmental Organization
BRUV	Baited Remote Underwater Video
CBD	Convention on Biological Diversity
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CCPs	Contracting and Cooperating Parties
CECAF	Fishery Committee for the Eastern Central Atlantic
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMM	Conservation and Management Measure
CMS	Convention on the Conservation of Migratory Species of Wild Animals
COMHAFAT-ATLAFCO	Ministerial Conference on Fisheries Cooperation Among African States Bordering the Atlantic
CoP	Conference of the Parties
CPCs	Contracting Parties and Cooperating non-Contracting Parties
CPPS	Comisión Permanente del Pacifico Sur
CPUE	catch per unit effort (fishing)
CTI	Coral Triangle Initiative
EEZ	exclusive economic zone
EU	European Union
EUR	Euro
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environment Facility
GFCM	General Fisheries Commission for the Mediterranean
GWSG	IUCN SSC Groupers and Wrasses Specialist Group
HKCMMA	Hong Kong Chinese Medicine Merchants Association
HKD	Hong Kong Dollar
HKSAR	Hong Kong Special Administrative Region, China
IATA	International Air Transport Association
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICES	International Council for the Exploration of the Sea
IFS	Introduction from the Sea
IGO	Intergovernmental Organization
IOTC	Indian Ocean Tuna Commission
IPOA	International Plan of Action
ISSF	International Seafood Sustainability Foundation
IUCN	International Union for the Conservation of Nature
IUU	Illegal, Unreported, and Unregulated [fishing]
IWT	Illegal wildlife trade
KKP	Ministry of Marine Affairs and Fisheries, Indonesia
LAF	CITES legal acquisition finding

LIPI	Indonesian Institute of Sciences
MA	CITES Management Authority
MCS	Monitoring, control and surveillance
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MSC	Marine Stewardship Council
NAFO	Northwest Atlantic Fisheries Organization
NDF	CITES non-detriment finding
NEAFC	North East Atlantic Fisheries Commission
NGO	Non-governmental organization
NOAA	US National Oceanic and Atmospheric Administration
NPOA	National Plan of Action
PCR	Polymerase chain reaction
PERSGA	Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden
PSMA	Port State Measures Agreement
RFAB	Regional Fishery Advisory Body
RFB	Regional Fisheries Body
RFMO	Regional Fisheries Management Organization
RST	CITES Review of Significant Trade
SA	CITES Scientific Authority
SC	CITES Standing Committee
SCUBA	Self-contained underwater breathing apparatus
SEAFDEC	Southeast Asian Fisheries Development Center
SDG	Sustainable Development Goal
SG	IUCN SSC Specialist Group
SPS SG	IUCN SSC Seahorse, Pipefish and Seadragon Specialist Group
SPREP	Pacific Regional Environment Programme
SSC	IUCN Species Survival Commission
SSG	IUCN SSC Shark Specialist Group
TAC	Total Allowable Catch
TL	Total Length
TRAFFIC	Non-governmental organisation working on wildlife trade in the context of both biodiversity conservation and sustainable development
tRFMO	Tuna RFMO
UK	United Kingdom of Great Britain and Northern Ireland
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Seas
UNCTOC	United Nations Convention on Transnational Organized Crime
UNEP	United Nations Environment Programme
UNGA	United Nations General Assembly
UNODC	United Nations Office on Drugs and Crime
US	United States of America
USD	United States Dollar
UVC	Underwater visual census
WCMC	UNEP World Conservation Monitoring Centre
WCO	World Customs Organization

WCPFC	Western and Central Pacific Fisheries Commission
WCS	Wildlife Conservation Society
WECAFC	Western Central Atlantic Fishery Commission
WWF	Worldwide Fund for Nature; World Wildlife Fund

1. Introduction and context

1.0 Background

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) offers tremendous scope for preventing the endangerment of species subject to exploitation for international trade. Its roles also include ensuring that any international trade is legal, sustainable and traceable, and enhancing reconciliation of biodiversity conservation and human need. Since 1975, this multilateral environmental agreement has taken action, through its (now) 184-member governments (183 States plus the European Union), to control and regulate international trade in wild animals and plants and their parts and products where such trade is or may become threatening to the species. These regulations cover import, export, re-export and introduction from ocean areas beyond national jurisdiction. Exports and imports are prohibited for commercial purposes in species listed on CITES Appendix I. In contrast, CITES restricts international trade to levels that do not threaten wild populations for species listed on Appendix II. More than 680 animal species are listed in Appendix I while about 5,000 species are included in Appendix II, of which 96 species are marine fishes (CITES, 2020a).

Listing a taxon on Appendix II is only the first step towards reconciling conservation of a species with its use. Each and every CITES Party is obligated to meet three conditions of the Convention in granting export permits for that species (in addition to other obligations under the treaty): (1) the export is not detrimental to the persistence of wild populations of the species (called making a non-detriment finding or NDF); (2) the specimens in trade have been legally acquired (called making a legal acquisition finding or LAF) and (3) live specimens are being prepared and traded humanely ("without injury, damage to health, or cruel treatment"). For CITES, the metric of success should come when allowed international trade is sustainable and legal (and conducted humanely), thus no longer posing a threat to wild populations, throughout the species range (Res. Conf. 18.3). In contrast, failure occurs when a species continues to decline due to such trade, legal or illegal, or the species qualifies to be transferred from Appendix II to I. Perceived challenges with implementation generated key arguments against listing some species on Appendix II, including all marine fishes (Vincent et al., 2014). However, the ease or difficulty of implementation must be seen separately from the science-based consideration of whether a species meets the CITES criteria for listing.

Although CITES entered into force in 1975, Parties were very slow to add marine fishes to Appendix II. Indeed, it took a long time in general for marine fishes to be accorded the same conservation attention as other vertebrates. Even the International Union for the Conservation of Nature (IUCN) only held the first workshop to evaluate the conservation status of marine fishes for the Red List of Threatened Species in 1996 (Hudson & Mace, 1996). Until then, conservation assessments had seldom included marine fishes, partly because they were largely regarded as economic commodities rather than wildlife (Vincent & Hall, 1996), and partly because such assessments were seen as too politically fraught and challenging. It is, thus, perhaps not surprising that, despite CITES' long history of trade regulation with myriad animal and plant species, and its engagement with shark trade issues since 1994 (CITES, 1995), it was only in 2002 that CITES Parties finally agreed to list the first fully marine fish species on Appendix II (Vincent et al., 2014). It then took until 2013 before CITES decided to regulate exports of marine fishes that were still of substantial commercial fisheries importance, beginning with some shark and ray listings on Appendix II. By that point, even the Food and Agriculture Organization of the United Nations (FAO) Expert Panel largely agreed that the shark proposals met the CITES listing criteria (FAO, 2013).

Initial efforts by several governments to urge CITES to engage with marine fishes were blocked by arguments that have now largely been resolved. In response to early proposals to list marine fishes, some Parties argued that trade issues for marine fishes would be more appropriately addressed by the FAO and Regional Fishery Bodies (RFBs, particularly regional fisheries management organizations - RFMOs; Vincent et al., 2014). Other objections included claims of insufficient data, doubt over the relevance of CITES criteria to marine fishes, the respective roles of national agencies, enforcement challenges, and identification or bycatch problems (as reviewed in Cochrane, 2015 and Vincent et al., 2014). By 2016, however, the understanding and commitment of the Parties had clearly swung and all shark and ray proposals were more easily adopted then and in 2019, even when FAO did not support the listings (FAO, 2007; 2009; 2013; 2016; 2019). Nonetheless, marine fishes again became controversial at the 18th Conference of the Parties (CoP18) in 2019 when Antigua and Barbuda proposed that CITES evaluate implementation of existing marine fish listings before adding any more marine fishes to the Appendices (CITES, 2019g). This proposed decision to constrain proposals was rejected by the Parties, based on the argument that Convention gives any Party the sovereign right to submit a proposal to the CoP. Nevertheless, Antigua and Barbuda's proposal and its support by a few other Parties adds impetus to the need for our analysis in this paper.

Twenty years after the first marine fish listings on Appendix II, we seek to support CITES in taking stock of how such listings have been implemented. We centre our paper on the three taxa of widely distributed marine fishes that have been listed on CITES Appendix II for the longest time and thus allow us to evaluate their implementation: 42 species of seahorses (*Hippocampus* spp.), 41 species of elasmobranchs (sharks and rays) listed by 2016, and the humphead wrasse (*Cheilinus undulatus*). Together, the authors of this paper have been leaders in facilitating CITES engagement with marine fishes – and with these taxa in particular – for more than 30 years, bringing both scholarly and practical expertise to our analysis. We are eager for the Convention to fulfil its potential for reconciling over-exploitation and international trade with conservation while also being mindful of very real limitations in its functions.

1.1 CITES Appendix II listings explained

The key to implementing Appendix II listings is for Parties to execute three tasks effectively: make non-detriment findings (NDFs), make legal acquisition findings (LAFs), and generate introduction from the sea (IFS) certificates (these are for high seas catches by a Party's own flag vessels and only a few examples have been identified). Doing this work well means having access to necessary tools and trainings, and setting in place good policies and regulations, but it also means directly applying plans and protocols in the field with Customs officers, traders, fishers in ways that affect wild populations directly.

When it comes to implementing CITES Appendix II listings, most attention has focused on the need for Parties to make the required NDFs, declaring that the proposed exports (either on a case-by-case basis for individual permits, or through annual quotas) will not damage the viability of wild populations. NDFs are also required when species caught beyond national jurisdictions (e.g., on the High Seas) are brought into a country – this is known as an Introduction from the Sea (IFS) in CITES.[1] Any NDF is the purview of each country's Scientific Authority (SA) and there is no CITES requirement to declare a Party's approach or criteria to the CITES Secretariat or in any other forum (though some

[1] Details can be found at https://cites.org/eng/prog/ifs.php

countries have their own such internal requirements, as is the case with the Member States of the European Union). The exception occurs when NDF implementation of the Convention for a species or country comes under special scrutiny (termed Review of Significant Trade, see below). Historically, across CITES species, there have been very few species-specific guidelines for making NDFs for the vast majority of taxa, although generic guidelines have been of some value (CITES, 2013b; Rosser & Haywood, 2002). Parties are generally left to adapt general guidance to specific species and situations, with varying levels of expert advice and experience.

An effective means of making NDFs, and modifying them as needed, is basically the same as an effective science-based management system. In making NDFs, a Party is supposed to be engaging in adaptive management, using best available knowledge in a way that explicitly involves stakeholders, and adapting its NDFs over time as more information becomes available (Smith et al., 2011; Vasconcellos et al., 2018). NDFs can range from simple to complex according to the taxon or the situation and certainly need not be perfect. Some Parties apply a risk-based approach, and give greater scrutiny to some taxa or shipments than others. For NDFs to meet CITES obligations, however, each Party must put in place measures for monitoring, control and surveillance (MCS) that allow it to evaluate population status and improve the effectiveness of the management regime as needed. Management of highly mobile or migratory species comprising shared, straddling, and high seas stocks is challenging, as is management of species obtained all or in part through bycatch, but national and regional fishery bodies can advise in these cases. Developing NDFs motivates Parties to develop action plans for listed species at subnational, national and regional levels, and to evaluate the value of such action in a spirit of adaptive management. A Party that makes reliable positive NDFs for a species will also be meeting its obligations under other international commitments such as the Convention on Biological Diversity (CBD), the Convention on the Conservation of Migratory Species of Wild Animals (CMS), the United Nations Sustainable Development Goals (SDGs) and United Nations Convention on the Law of the Sea (UNCLOS).

CITES can decide to assess how certain Parties make NDFs for Appendix II species by including a species in the Review of Significant Trade (RST), based on trade volumes and patterns (See Foster & Vincent, 2021 for full explanations). CITES developed the RST process in response to concerns and evidence that some Parties were not reliably and/or effectively meeting their CITES obligations; evidence included increasing proposals to transfer Appendix II species to Appendix I, for example. Such queries arise when CITES (through its Standing and Animals Committees) notes patterns of concern in the trade data Parties report to CITES (e.g., a high trade volume or a marked change in the level of trade; CITES, 2019b). The RST is a compliance process, meant to help Parties fulfill their obligations under the treaty, and to prevent species over-exploitation; it does not replace the opportunity and often obligation of importing States also to raise any concerns when faced with shipments. During an RST, particular Parties are asked to explain why they permit exports of the species and to share the basis of their NDFs. After further scrutiny, and with advice, CITES decides whether a particular Party/species combination raises Least (no) Concern or Urgent Concern. In many cases, the Party provides a sound, science-based NDF and no further action is taken, or the Party decides to suspend exports pending further monitoring and assessment. If the Animals Committee (for fauna) decides, however, that the issue is of Urgent Concern, it issues recommendations for remedial actions that the Party should execute within two years or less. The CITES Standing Committee (SC: the CITES senior committee that steers the works of the Convention between meetings of the CoP) evaluates a Party's progress against these recommendations and decides next steps, whether to release the Party from review

or recommend a trade suspension (effectively a ban on exports of that species from the country concerned; CITES, 2019b; 2020e).

Beyond requiring positive science-based NDFs, CITES Parties have the responsibility of ensuring that specimens with permits were legally sourced (making LAFs) and that transport of live specimens is humane. Indeed, CITES Management Authorities are required to verify the legal acquisition of specimens of CITES-listed species before issuing CITES documents authorising their export; such LAFs depend heavily on being able to trace animals or plants along a trade route. It is unfortunate that LAFs are currently outside the RST mandate – based on the relevant CITES resolution (but see CoP17 Com. II.13; CITES, 2016a) – because LAFs are often a concern. Marine fishes taken in contravention of fisheries regulations (e.g., closed seasons, gear restrictions, area restrictions, all of which are widely used by fishing nations) are illegal in the CITES context. Products from species whose take is prohibited across most of their range should be assumed to have been illegally acquired (e.g., most tuna RFMOs have banned retention of the oceanic whitetip shark), unless they are accompanied by special permits (e.g., for scientific research). The same is true for exports from countries that protect most CITES Appendix II species (e.g., Philippines), or have prohibited all shark fishing (e.g., Maldives and many other Parties which have created shark sanctuaries), even if they have not also banned trade, which some Parties also do. Further, CITES Appendix II species that are also listed on CMS Appendix I – meaning that their take is prohibited (among other restrictions) – cannot be exported legally by the 123 CMS Parties (CMS, 2020). For transport of live specimens, CITES requires Parties to ensure that exporters follow the International Air Transport Association (IATA) Live Animal Regulations for transport by air (IATA, 2022) and provides its own guidelines for non-air transport (CITES, 2022c). However, as is generally the case for CITES requirements, there is no mechanism by which this CITES obligation for humane treatment is enforced, other than at the national level.

Parties must ensure that all specimens have permits and that permits are genuine; those without permits are being smuggled while those with falsified permits are fraudulent. For the most part, far too little attention is paid to trade that is proceeding without permits at all, in violation of the Convention. Along with illegal sourcing, illegal trade and fraudulent shipments are notable concerns that the Convention has yet to address comprehensively (UNODC, 2020), for the benefit of the species or for the integrity of the Convention. While an RST sometimes flags up concerns about such illegal trade, and suggests referring the case to the SC, little is usually actually done in response (Foster & Vincent, 2021). While smuggling and falsification are sometimes addressed for Appendix I listings on a taxon-specific basis (such as elephants, rhinos, pangolins, tigers, etc.), they are rarely considered for Appendix II species.

In addition to approving proposals to include taxa on the Appendices, CITES Parties have other mechanisms to influence international trade. First, Parties can agree on Decisions (CITES, 2019d) when they meet in a CoP (CITES, 2022d). These time-limited actions are used to address a wide range of taxon-specific or thematic concerns, and have an important role in implementing the Convention. Second, Parties can agree to adopt Resolutions (CITES, 2019f), which have no time limits and are enduring; they are generally broadly-relevant matters of policy and interpretation of the Convention. Only CITES Resolutions remain between CoPs; generally, Decisions are deleted when it is determined that the time-limited work therein has been completed (although many also expire without the work being completed). Third, Parties can take out Reservations (CITES, 2021a) which declare that they will not comply with the Convention's requirements for a particular listed species or taxon. A

Reservation sometimes has minimal consequences, since the Party must still comply with CITES regulations if trading with another Party that has not taken out a Reservation, but it clearly undermines the intent and effectiveness of the Convention when some Parties opt out for certain species. We will consider these three mechanisms – Decisions, Resolutions and Reservations – in probing the effectiveness of implementing Appendix II listings.

1.2 Framework for analysing implementation

To analyse CITES Parties' progress on implementing the Appendix II listings for fully marine fish species, we have developed a framework of broad relevance to all taxa on Appendix II. We identify four levels of response that serve as progress towards full implementation of CITES Appendix II listings (Table 1.1, Figure 1.1). They represent a range of ways that CITES Parties can respond to listings, ranging from tool creation (Level 1) to policy decisions (Level 2) to front line field action (Level 3). Levels differ in their actors, activities, products and tools. While Levels 1 and 2 are valuable and necessary, work occurs far from the fish. Work at Level 3 is critical to effect biological change in wild populations (Level 4).

For a clear understanding of CITES' effectiveness, we must distinguish among the four levels in analysing implementation, always seeking to discern biological change. This is the basic CITES theory of change, although three considerations must always be recalled: (1) we present these four levels to guide discussion, evaluation and appraisal of CITES implementation but they may blur into each other, and the essential obligation is to ensure direct connection between policy/field outcomes and wild populations; (2) policy interventions and management actions that demonstrably reduce mortality, exploitation, and trade (Level 3), are correctly assumed to benefit populations by limiting removals from the wild; (3) there are multiple additional and interacting threats to many species, such that CITES could hypothetically be perfectly implemented but a species might still decline due to non-exploitation and trade-related threats (e.g., climate change, invasive alien species, habitat loss or degradation, or disease). To demonstrate this framework with specifics, we share how five different initiatives evolve across the levels (Table 1.2).

Level 1: Technical outputs are the products, tools and activities developed by Intergovernmental Organizations (e.g., FAO or IUCN), non-governmental organizations, academic centres, government agencies (subnational, national, or regional), and other catalysts. These might include roles such as contributing funding, developing and disseminating identification tools, generating NDF and LAF frameworks, providing guidance and manuals, creating monitoring guidelines, synthesizing data, providing technical advice, and hosting capacity building meetings. Alone, they do not directly impact wild populations, but well-designed technical outputs serve as vital tools to facilitate effective implementation and management. Without such tools, implementation at Levels 2 and above would be far more difficult. The value of technical outputs lies in whether and how they are used by Parties or agencies to generate policy outcomes (Level 2) or field outcomes (Level 3); those that are demand-driven will often be of greatest utility.

Level 2: Policy outcomes are changes in policy, rules, regulations, legislation, or management protocols made to generate or drive compliance with and implementation of the CITES Convention. Such outcomes commonly emerge from technical outputs in Level 1 and are important but not sufficient to obtain population outcomes. These might include a national CITES Scientific Authority making NDFs, other elements of government developing a new policy

or law pertaining to the species, new framework legislation, new implementing rules and regulations addressing exploitation or trade of the species, formulation of new management protocols, enhancement of enforcement or judiciary regulatory instruments, or Customs officers' use of identification guides and other tools. The theory of change is that these actions provide impetus for field outcomes (Level 3) in support of the taxon.

Level 3: Field outcomes are practical changes, activating policy or management protocols in ways that directly and proximately affect pressures on the species. Such outcomes derive from Level 1 and 2 outputs and outcomes, moving decisions from meeting rooms and computers to action on vessels, at docks, traders' facilities and Customs sheds, where the fish are found. They represent translation of regulatory policies or processes (old or new) into front line action, where management of human activity reduces a pressure on a species, offers relief from a threat, or creates an opportunity for population recovery. Field outcomes might, for example, include enforcement of a new protected area, implementation of a quota, seizure of an illegal shipment, measurable improvement with compliance and adherence to a management protocol and/or clear enforcement of a rule or management measure (e.g., quotas, time and area closures, gear restrictions), convictions in court, and active informative monitoring. When field outcomes are well implemented, fish populations are directly affected, with consequences that are likely to be reflected in biological impacts (Level 4). There are certainly situations where even full efforts at Level 3 may not be enough to offset the range of stresses on wild populations but strong field outcomes can certainly help diminish the pressures.

Level 4: Population impacts are biological changes in wild populations and represent responses to field outcomes (Level 3). Such changes might be seen in the number of individuals, the size structure of the population or some other demographic index. This is the level of implementation that is the ultimate goal, though outcomes at Level 3 can also be seen as proxy measures of population impacts. It is critical, therefore, to monitor populations across space and time. Biological impacts are often detected through fisheries landings, with a greater abundance and/or biomass of catch per unit effort (CPUE) as one potential indicator. When population changes are positive, we can infer that the CITES listing is being implemented effectively. When they are negative, either CITES implementation (Levels 3, 2, and even 1) need improvements, or other threats are negating the benefits of CITES implementation and more needs to be done to mitigate those threats. Furthermore, for migratory species, or those found in multiple countries, effective CITES implementation by one country may be challenged by weak implementation in a neighboring state.

To meet their obligations to CITES, Parties need to implement an Appendix II listing on all four levels. In this theory of change framework, those Parties that implement listings at Levels 1, 2, and 3 should be able to detect biological changes (Level 4), as long as they are equipped to measure such change through monitoring. The corollary is that a Party that (i) produces or accesses Level 1 technical outputs, and (ii) makes governance changes in Level 2 outcomes but (iii) fails to mobilise practical field outcomes at Level 3 will be most unlikely to (iv) see the required biological change in Level 4. It is, of course, true that some Parties that implement listings at Levels 1, 2 and 3 may still struggle to see change at Level 4 because of pressures beyond those posed by over-exploitation and international trade. It is also true that levels need not follow sequentially. For example, strong enforcement of an existing law at Level 3 may be more valuable than yet another new tool (Level 1) or policy (Level 2). Throughout, the commonality is that Parties simply must act effectively at Level 3 to have a chance of seeing Level 4 changes. This is true for all CITES Appendix II species.

Table 1.1. Comparing and contrasting criteria, engagement and progress across four levels of implementation.

Nature of distinction among levels	**Level 1**	**Level 2**	**Level 3**	**Level 4**
Category of implementation	Technical outputs	Policy outcomes	Field outcomes	Population impacts
Nature of change	Tools, guidance, and approaches	Governance changes	Practical changes	Biological changes
Connection to the fish	Remote	Distant	Proximate	Intimate
Likely direct effect on the fish	None	None	High	
Role of external catalysts	High (action)	Medium (advisory)	Low (facilitation)	
Role of government	Variable – could be passive or active	High – must be active	High – must be active	
Location of activity	Desk and meetings	Desk, meetings, legislatures	Borders, ports, docks, processing centres, traders' facilities, markets, at sea, courts	Underwater
Seeking to promote	Policy change	Policy and practical changes	Population changes	
Main actors	Governments, IGOs (IUCN SSC, CITES Secretariat, FAO Secretariat, RFBs), NGOs, scientists, civil society	Government personnel and advisors, decision-makers, legislators, industry, CITES Authorities, FAO Secretariat, RFBs	Government/agency field personnel, Customs agents, border authorities, judiciary, police and law enforcement, fishers, traders	Fish
Main activities	Product development, workshops, trainings, research, meetings, capacity building, funding	Product application, policy and governance development and adoption	Inspection, enforcement, prosecution, monitoring, enhancing compliance, change in fishing gear or methods, change in trade preferences, allocation of budgets, market measures	Surviving, growing, reproducing, and moving
Main products	ID guides, NDF frameworks and guidance, LAF guidance, monitoring protocols and databases, briefing documents, analyses, CITES Decisions and Resolutions	National level protection, MPA designations, NDFs, LAFs, export restrictions, export suspensions, import restrictions, National Plans of Action, monitoring plans, action by RFBs or industry	Apprehensions, seizures, confiscations, enforced marine protected areas, changes to catch or trade volumes or composition, changes arising from NDFs or LAFs, better data and analyses	More fish, healthier fish populations, greater habitat occupancy
Main tools used	Computers/ smartphone, voice, presentation software, white boards, meeting technology, databases	Computers/smartphones (and Apps), voice, presentation software, white boards, meeting technology, data analyses	Applied technology, vehicles and boats, ID guides, genetic tools, logbooks, maps, measuring devices, weigh balances, stock assessments, citizen science, computers/ smartphones	Monitoring

Figure 1.1. A visual representation of our framework for assessing implementation.[2]

Implementation of CITES Appendix II listings for marine fishes must have benefits for their populations in the sea. We can present the levels of implementation like the stages of a metaphorical river that must flow to the sea, bringing nutrients. Our shading of blue represents proximity to the fish populations that need support.

At Level 1, the technical outputs (tools and capacity building) are like the many individual rivulets and streams that gather water to feed a river. The waters here can move quite rapidly with little hindrance. They are invaluable but are remote from the sea itself.

At Level 2, the policy outcomes (governance changes) are like a river that is flowing strongly to the sea, passing through urban centres where policy makers and technical experts are deciding how best to act, from meeting rooms and computers. The river gathers water from the rivulets and streams (technical outputs) and flows on downstream, filled with plans, laws, regulation and rules. The waters here are powerful but move more slowly than at the headwaters, in more constrained ways. By themselves, policy outcomes do not influence marine life.

At Level 3, the field outcomes (practical changes) are like the river delta, estuary or lagoon, where the river meets the sea. This is where the policy and management instruments carried by the river connect proximately to marine life, through the actions of fishers, market traders, and courts. The terrain has flattened and waters may move quite slowly, often changing course, diverging and merging around shifting sandbanks, for example. At Level 3, it is possible to measure change in physical ways: counting fish, sorting catch, or seizing illegal shipments

At Level 4, population impacts are felt through biological change in the ocean, affected by the flow of water arriving from the river but also subject to other influences.

[2] This image was designed by C. Chua using free resources from Flaticon.com.

The dam between Level 2 and Level 3 represents the considerable obstacles that seem to emerge when we try to ensure that governance decisions flow into practical action. Parties need to focus on invigorating that flow if we are to ensure that implementation actually affects the fish.

Table 1.2. Examples of how sample activities may be advanced at all levels.

Activity	Level 1	Level 2	Level 3	Level 4
1. Species Identification (ID)	Create and share ID materials	Adopt and disseminate ID materials	Use ID materials to improve identification of species (in trade, markets, shipments, etc.) and seize illegally obtained or traded specimens	Healthier populations
2. Monitoring	Develop monitoring guidelines, databases, and protocols	Require monitoring and use of guidelines and protocols, data sharing	Population and trade monitoring in effect, using the guidelines and protocols, analyses completed	Healthier populations
3. Non-Detriment Findings (NDFs)	Create NDF framework, guidelines (e.g., minimum sizes, export quotas, spatial restrictions etc.)	Apply NDF framework to make positive or negative NDFs for a species	Ensure positive NDFs are valid and justifiable, improve trade and fisheries management to enable positive NDFs, monitor populations and trade, regularly update and share NDFs (adaptive management)	Healthier populations
4. Legal Acquisition Findings (LAFs)	Create LAF framework, guidelines	Require use of LAF framework; assemble information on all applicable laws and regulations	Field activity to ensure legality, and that specimens are obtained in accordance with the LAF, rejecting exports of illegally sourced animals	Healthier populations
5. Marine protected areas (MPAs)	MPAs proposed as a management tool for regulating or prohibiting take and trade with guidance as to effective implementation; detailed spatial planning to ensure the right MPAs are in the right place	Policy documentation establishing MPAs and their management requirements	Evidence of effective MPA management (e.g., funding, staffing, capacity building) with evidence of compliance (e.g., community and stakeholder support) and enforcement (e.g., demarcation, patrols, monitoring, apprehensions)	Healthier populations

1.3 Taxon-specific evaluation

Each of the three taxa we feature in this paper has its own distinct history with CITES, together covering a good array of the issues associated with implementing the Convention: seahorses are the first and only fully marine fishes on Appendix II to have been through an RST process; sharks and rays are the first and only marine fishes on Appendix II to have involved RFBs and IFS; humphead wrasse are the first marine fish on Appendix II for which CITES at the global level explicitly responded to illegal trade. Here we analyse CITES implementation of these marine fish listings by taxon, using our framework of four levels of CITES implementation: technical outputs (tools and capacity building), policy outcomes (governance changes), field outcomes (practical changes) and population impacts (biological changes).

In this report, we take a necessarily broad overview of the work done to implement the focal marine fish listings on Appendix II. We survey a large set of implementation issues across the four levels, seeking patterns rather than providing a catalogue of specific tallies.

- For technical outputs (Level 1), we look at funding through CITES, capacity building meetings, development of identification materials, development of NDF guidance, development of LAF guidance, development of monitoring guidance, data generation and synthesis, technical advice and briefings to CITES, action by CITES as a whole.
- For policy outcomes (Level 2), we look at reservations, national protective measures, making NDFs, making LAFs, IFS, export restrictions, export suspensions, import restrictions, national plans of action, monitoring plans, RST, action by Regional Fisheries Bodies, and action by industry.
- For field outcomes (Level 3), we look at constraining target fisheries, constraining bycatch fisheries, changes in trade, changes in enforcement, breeding/farming/ranching, and monitoring.
- For population impacts (Level 4), we look at population change and fisheries change as a proxy for population change.

For a more detailed overview of progress with implementation: the CITES Secretariat regularly summarises progress in its reports to the Animals and Standing Committees (e.g., AC30 Doc.20; AC31 Doc.25; SC73 Doc.21; SC74 Doc. 67.1, 67.2, 67.3; see Tables in Annex 2 for details) which then report to the following CoP, including, if necessary, making proposals for new Decisions.

2. Seahorses

2.0 Implementation of seahorse listings

2.0.1 Background to listing

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Parties voted to add all seahorse species (genus *Hippocampus*) to CITES Appendix II at the 12th Conference of the Parties (CoP12, 2002) in Santiago, Chile – the first time that marine fishes had been added to Appendix II since the Convention launched in 1975 – because of concerns about the deleterious effects of their huge global trade as traditional medicines, ornamental display and curiosities (Vincent et al., 2011; Vincent et al., 2014). Information available at the time of listing showed that the international trade in seahorses was large, multi-species and global – involving 24 million animals across at least 75 countries from six continents (Vincent et al., 2011). The dried trade dominated exports – then estimated at 22 million animals per year (CITES, 2012b) – with most sourced from non-selective fishing gears such as bottom trawls and gillnets (Lawson et al., 2017). The smaller but significant trade in live seahorses for private and public aquaria was then estimated at about 570,000 animals per annum (Foster et al., 2022). Such high levels of exploitation and trade in seahorses, coupled with damage and destruction of their vulnerable inshore habitats, had already resulted in six species being added to the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species as threatened (primarily due to fisheries and international trade) while 26 more were considered Data Deficient. These latter species were added to CITES Appendix II for 'look-alike' reasons,[3] pursuant to CITES Article II.2.b (Vincent et al., 2014).

2.0.2 CITES actions at the time of listing

The seahorse listing was adopted with a then unusual 18-month delay in implementation (later echoed in the shark listings) to allow Parties time to develop means to make non-detriment findings (NDFs), and was accompanied by four Decisions (CITES, 2012a; Decisions 12.53–12.56, see Table A1.1). The pioneering nature of this listing was acknowledged in Decision 12.53 which requested that CITES Management Authorities (Mas) strengthen their collaboration and cooperation with appropriate fisheries agencies for management of *Hippocampus* species; at the time, CITES Mas had no experience with implementing Appendix II listings for marine fishes (Vincent et al., 2014).

2.0.3 Summary of current situation with trade

The CITES listing appears to have reduced the pressure from international trade on some seahorse populations, particularly the few that were primarily affected by the live trade (Foster et al., 2021; Foster & Vincent, 2022), but based on available data, has done little to reduce pressure on the many populations that supply the much larger dried trade (Foster et al., 2022; Foster & Vincent, 2021). Live trade volumes have declined considerably, and almost all live trade is now captive-bred (source code C). In contrast, the trade in dried seahorses remains very problematic after the CITES listing, involving large volumes of smuggled wild seahorses. Almost all historically important source Parties for dried seahorses are no longer exporting these fishes legally, because of either self- or CITES-imposed trade suspensions (as explained under ***Export suspensions***, below), but large volumes of illegal exports continue, supplied primarily by bottom trawls and other nonselective gears (further details under ***Changes in trade***, below).

2.1 Level 1: Technical outputs (tools and capacity building)

The CITES Decisions adopted at CoP12 clearly indicated the need for action to support the seahorse listing, ranging from minimum size limit recommendations to standardized nomenclature to a call for harmonized Customs codes (CITES, 2012a). Since the implementation of the seahorses listing in 2004, there has been

[3] Species that are very similar in appearance to other species listed in Appendix II may be added to ensure that all trade in the listed species is brought under control (CITES Article II, para. 2(b)).

significant progress made in filling information gaps and building Party capacity (CITES, 2018c). A number of critical tools have been created, often partly through focused meetings. The vast majority of outputs were led, and usually funded, by Project Seahorse (www.projectseahorse.org), with additional funding coming from CITES Parties of wealthier countries. Such work was always done in partnership with national fisheries agencies and/or CITES Authorities.

2.1.1 Funding through CITES

Two sets of funds have been made available through the CITES Secretariat to support implementation of the Appendix II listing for seahorses. Project Seahorse, acting as the IUCN Species Survival Commission Seahorse, Pipefish and Seadragon Specialist Group, has been the executing partner in both cases.

The first funding was in 2012, when USD 61,000 was provided through an EU-CITES capacity building project (No. S-411) entitled "Building in-country capacity to undertake Non-Detriment Findings with regard to *Hippocampus* species in Indonesia, Thailand and Viet Nam" (CITES, 2014a). The overall aim of this project was to strengthen capacities of Indonesia, Thailand and Viet Nam to implement the Convention for seahorses and satisfy the CITES-related requirements of importing countries and other trading partners (such as the European Union). For this initiative, Project Seahorse collaborated with national CITES Authorities and experts to create (i) a framework for making NDFs, that underwent practical testing with national authorities and experts, and (ii) trade-appropriate identification materials, *inter alia*.

The second funding came in 2022, when USD 142,000 was granted through a small-scale funding agreement (S-619) made possible by the US-National Oceanic and Atmospheric Administration (NOAA) project "Strengthening CITES Implementation for Selected Marine Species" with co-funding provided by the Principality of Monaco. The funding was provided in direct response to Decision 18.229 paragraph c) i) (details in ***Action by CITES as a whole***, below), and supported Project Seahorse to (i) prepare and contribute studies of the live and dried trades in seahorses and (ii) organize a technical workshop or consultation process to validate the results of the studies.

2.1.2 Capacity building meetings

Meetings on implementing the seahorse listings have been both international and with single Parties/range States. As a key part of the process of generating outputs for implementation, Mexico and the United States (US), with support from the International Fund for Animal Welfare, supported *The International Workshop on CITES Implementation for Seahorse Conservation and Trade* in Mazatlán, Mexico, in May 2004 (Bruckner, 2005). Recommendations from the workshop included initial guidance on making NDFs by setting a minimum size limit (Foster & Vincent, 2005), protecting seahorse habitats from damage and destruction (including by fishing gear), and enforcing existing national laws (including bans on fishing/trawling in closed areas). In addition, the Mazatlán workshop participants noted the need for the certification or registration of captive breeding facilities, along with new methods to mark captive bred seahorses.

Since 2004, Project Seahorse has led a number of consultative meetings and discussions with key exporting and importing Parties. These have included discussions with source Parties on the development of NDF guidelines for seahorses (with Viet Nam, Thailand and the Philippines), meetings to feed back the results of research activities (with the Philippines, Viet Nam and Senegal), and discussions to explore implementation challenges and solutions (China, including mainland, Hong Kong SAR and Taiwan, Province of China, as well as India, Indonesia, Malaysia, Mexico, Peru, the Philippines, Singapore, Thailand and Viet Nam).

2.1.3 Identification materials – development and training

Since NDFs must be made for each species in trade, the uncertain taxonomy and subtle morphological differences among 46 seahorse species are problematic. For this reason, Decision 12.55 was adopted at the time

of the listing, calling for a standard taxonomy for the genus *Hippocampus*. In response, Project Seahorse and TRAFFIC North America produced an identification guide comprising 33 species (Lourie et al., 2004). In light of species discoveries and taxonomic changes, Project Seahorse later published a complete revision to the taxonomy of seahorses based on the best available genetic, morphological and geographic information at that time (Lourie et al., 2016), which was adopted as the standard CITES nomenclature (CITES, 2019h). Though several species have been described since (Han et al., 2017; Short et al., 2020; Short et al., 2018), they are all very small species and not in trade. Project Seahorse has also created and distributed regional identification guides, each available in multiple languages.[4] Training focused on seahorse identification has been included in training around the NDF framework (next section), monitoring guidelines (see ***Monitoring guidelines***, below) and in support of Party outreach with respect to the community science initiative iSeahorse.org.

2.1.4 Non-detriment findings framework – development and training

The CITES Review of Significant Trade (RST, see below) process for seahorses triggered development of an NDF framework for the genus. With support from the CITES Secretariat and funds from the European Union (EU) (see ***Funding through CITES***, above), Project Seahorse worked with the Management Authorities (MAs) and Scientific Authorities (SAs) in Thailand and Viet Nam to create the first NDF framework for marine fishes, mostly during 2013. It was later refined in consultation with Authorities in the Philippines (Foster & Vincent, 2016). The NDF framework guides Authorities to identify the pressures facing the seahorse species under consideration, evaluate the ability of existing management to mitigate identified or unknown risks, and consider options for making NDFs. Despite its methodical and measured approach, this NDF framework has been little used. Subsequently, Project Seahorse realized that Parties can simplify their NDF frameworks yet further by answering four direct questions in a spatial evaluation: where are the seahorses, what threats do they face where they are, what management/protective measures are in place to mitigate those threats, and are the measures working (Aylesworth et al., 2020; Vaidyanathan, 2021)? Monitoring is required to answer the last of these questions, and is thus an essential component of any NDF. Project Seahorse is working on a simplified approach to making NDFs, based on these questions, which should be available in time for CoP19.

2.1.5 Legal acquisition findings frameworks – development and training

There were no seahorse specific legal acquisition finding (LAF) frameworks at the time of writing, although their development will be part of a seahorse CITES implementation workshop to be held in early 2023.

There are real concerns about how best to support Parties to make LAFs for seahorses. Before issuing export permits, Parties must ensure that the animals were obtained using legal gears and legal methods, at legal times and in legal places. For example, they should not be extracted using banned gears, in closed season or from no-take marine protected areas (MPAs). Of particular relevance to seahorses is that most dried seahorses are sourced from bottom trawling and yet many source countries have inshore trawl exclusions zones in their coastal waters (Foster & Vincent, 2022; Lawson et al., 2017), covering the same habitats and depths where seahorses live.

2.1.6 Monitoring guidelines – development and training

The CITES/EU funding for the NDF framework led to development in 2014 of monitoring protocols for seahorse populations and fisheries.[5] The population monitoring toolkit guides data collection on seahorses underwater while SCUBA diving or snorkeling (Loh et al., 2014). The 'catch landings' toolkit guides data collection from fishers, wholesalers, retailers, and others at ports, docks, and markets — any place where fish are landed (Foster et al., 2014). Both surveys can be done as a standalone initiative or as part of ongoing work for other species. The toolkits provide guidance on choosing survey sites, collecting seahorse data, identifying individual species,

[4] Available at https://www.iucn-seahorse.org/cites-toolkit/

[5] See www.projectseahorse.org/NDF and www.iseahorse.org/trends

measuring survey "effort," and recording data. These simple protocols allow Parties to deduce seahorse population trends in support of making NDFs in an adaptive management framework. The most effective approach is to survey gear specific seahorse landings (catch and effort) at a sample of fishing ports on a regular basis, at least three times a year. Such sentinel programs can be integrated into existing fishery monitoring programs. Project Seahorse has also developed a protocol for tracking use of wild broodstock by seahorse farms (Project Seahorse, 2015). Project Seahorse has conducted training on the monitoring guidelines with CITES Authorities from the Philippines (in 2016), Thailand and Viet Nam (both in 2013).

2.1.7 Data generation and synthesis

Project Seahorse has published field surveys of fisheries and trade for the post-CITES period for a number of countries: India (Vaidyanathan & Vincent, 2021; Vaidyanathan et al., 2020); Guinea and Senegal (Cisneros-Montemayor et al., 2016), Hong Kong SAR (Foster et al., 2019a; Lam et al., 2014); Malaysia (Lawson et al., 2015); the Philippines (Foster et al., 2019b); Thailand (Aylesworth et al., 2017a; Kuo et al., 2018); and Viet Nam (Foster et al., 2017; Stocks et al., 2019; Stocks et al., 2017). There have also been surveys focused on live trade hubs, in Los Angeles right after the listing (Magera et al., 2005) and more recently in the US and EU (Foster et al., 2021;2022). Such surveys of seahorse biology, fisheries and trade, have long served as the backbone of global seahorse conservation work, providing reliable data on seahorse biology, ecology, and threats on which to develop national plans of action (see ***National plans of action agreed by Parties***, below).

As with all CITES listings, the seahorse listing also led to formal tracking of reported trade data, which is key to effective CITES implementation (and unfortunately usually not available for non-CITES species). Official CITES data provide a global insight into legal and reported trade – documenting dominant species, whether they are traded live or dried, and the historical geography of trade (Foster et al., 2016; Foster et al., 2021). However, analyses of CITES data also reveal many challenges in relying on such records to track the trade in seahorses (Foster et al., 2016; Foster & Vincent, 2021; Pavitt et al., 2021). It is imperative that CITES data for seahorses be interpreted with extreme caution and supplemented with well-resourced field surveys and in-country monitoring to understand what is really happening on the ground (Foster et al., 2016; Pavitt et al., 2021). Many Parties do not report trade in CITES-listed species, make errors in their reporting, and/or do not report in a timely manner. If Parties have included seahorses in their reports to CITES about illegal trade, such information has not been made publicly available (and reliance on legal trade data only gives a false impression of the extent of exploitation and trade).

2.1.8 Technical advice and briefings to CITES

Decision 12.54 at the time of listing called for a single minimum size limit for all seahorses in trade as a precautionary means of making initial NDFs. Based on technical work by Project Seahorse (Foster & Vincent, 2005), the CITES Animals Committee (AC) proposed a single minimum size limit of 10 cm for seahorses in export, for all species, using Notification 2004/033. This pragmatic tool was intended to allow Parties to begin making their first NDFs immediately even while they improved their information and certainty as to trade management (Foster & Vincent, 2005).

Project Seahorse, acting as the IUCN Species Survival Commission Specialist Group (SSC SG), has contributed multiple information documents to CITES CoPs, AC, and Standing Committee (SC) meetings, in support of implementation of the CITES listing for seahorses at the national level (See Table A1.1). These have reported on capacity building (CITES, 2014a), research studies (IUCN, 2017;2018a) and evaluations of CITES processes (IUCN, 2016) – eventually published as Foster and Vincent (2021). Seahorses were further featured as a case study in a CoP17 (2016) side-event on implementing CITES for marine fishes.

In 2019, Project Seahorse supported the Maldives, Monaco, Sri Lanka and the US to submit a formal document to CITES CoP18, summarizing challenges and opportunities with CITES implementation for seahorses and proposing the CITES agenda for the years 2019-2021 in the form of Decisions; these were adopted (CITES, 2018c; Table A1.1).

One Decision adopted at CoP18, Decision 18.229 c) i), led to the production of two briefings, authored by Project Seahorse and contributed by the Secretariat to SC74, on the shift in international trade patterns since the inclusion of seahorses in Appendix II and the RST, as well as implementation challenges and possible solutions (CITES, 2022j; Table A1.1). The first was an analysis of changes in live trade patterns since the CITES listing, based on more than two decades of field surveys and official data (Foster et al., 2021). The second focused on the dried trade and documented implementation of the CITES listing by historically important seahorse exporters (India, Indonesia, Malaysia, Philippines, Thailand, Viet Nam) and importers (China, with distinct sections for the mainland, Hong Kong SAR and Taiwan, Province of China, and Singapore (Foster & Vincent, 2022). The key findings of these studies are brought into the appropriate sections, below.

2.1.9 Action by CITES as a whole

The most recent action taken by CITES on behalf of seahorses was the adoption of Decisions at CoP18 intended to reduce the scale and impact of the substantial illegal trade and move legal trade of seahorses toward sustainability (CITES, 2018c). CITES made the case that Parties need to address three challenges: (i) zero quotas and/or export suspensions may not make a notable difference to seahorse conservation in most areas, particularly if enforcement is weak; (ii) with good oversight and adaptive management, many Parties could lift their zero quotas and/or export suspensions for many seahorse species and implement Appendix II for a sustainable, legal and regulated trade; and (iii) where zero quotas and/or export suspensions remain, both exporting and importing Parties need to strengthen enforcement – through monitoring, control and surveillance, as well as interdiction and prosecution – to meet their obligations. In response, CITES adopted Decisions 18.228 – 18.233 in 2019. They invited Parties to provide information on implementation, share NDFs, and inform traders about restrictions while also contributing to a study on shifts in international trade patterns (and implementation challenges) since the Appendix II listing and the RST of *Hippocampus* species (see above).

Concerning paragraph a) of Decision 18.229, the Secretariat published a Notification to the Parties, Notification No. 2020/015 (CITES, 2020d), requesting information on any national management measures for seahorses, and on how Parties are implementing and enforcing such measures. The Notification also invited Parties to share information on their NDFs with the Secretariat for posting on the CITES website to assist other Parties. Responses were received from 14 Parties: Australia, Cambodia, Colombia, Croatia, Indonesia, Italy, Japan, Malta, Mexico, Monaco, Peru, Thailand, the United Kingdom (UK) and the US. These responses were shared at AC31 (CITES, 2021b; relevant content on policy outcomes and practical changes is integrated into the Level 2 and 3 sections below). Seven of these Parties have a significant role in international seahorse trade: Cambodia, Indonesia, Mexico, Peru and Thailand for the dried trade; Australia, Indonesia, the UK and the US for the live trade.

In support of the implementation of Decision 18.229, Project Seahorse independently secured funding from the US' NOAA to undertake studies on the live and dried seahorse trades. In fulfillment of Decision 18.229, paragraph c) i), the Secretariat used funding provided by NOAA and Monaco to commission Project Seahorse to produce summaries of the studies for submission to SC74, focusing on the CITES' mandate (CITES, 2022j; also mentioned above under ***Technical advice and briefings to CITES***). The results of these studies are integrated into the relevant sections, below.

2.2 Level 2: Policy outcomes (governance change)

Very few Parties acted or are acting to effectively implement the Appendix II listing for seahorses (Foster & Vincent, 2022). Policy outcomes directed at ensuring sustainable and legal trade were remarkably rare. Most key exporting Parties had access to enough data, tools and protocols to allow progress toward CITES implementation for seahorses. Yet governance changes have consisted mostly of ending export but without sufficient enforcement. Parties have shown few attempts to make NDFs, the central requirement of Appendix II listings.

2.2.1 Reservations

Five Parties entered reservations for seahorses – Indonesia, Japan, Norway, Palau (for two species) and South Korea – thereby exempting themselves from implementation of the Convention for this genus when trading with each other or non-Parties (and thus potentially undermining the effectiveness of the Convention). Only Indonesia had a significant role in the international trade of seahorses at that time. Indonesia's decision was reportedly based on the concern 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 (Herdiana, 2022).

2.2.2 National level protection

A number of Parties enacted national level protection for seahorses with timings that indicated they were influenced by the CITES listings (Stanton et al., 2021), including the following examples.

- India added all species of seahorses to India's Wild Life Protection Act (WLPA) 1972 in 2001, in response to early discussions of a CITES listing for seahorses. Seahorses are listed on WLPA Schedule I, Part II(a) (marine fishes), which prohibits both fishing and trade.
- Philippines' domestic legislation (Republic Act 8550) meant that any catch and trade of seahorses became illegal as soon as the CITES Appendix II listing took effect (Foster et al., 2019b). The Act 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 a legal framework is put in place.
- Viet Nam decided in 2019 to protect five of its six seahorse species under Government Decree no. 26/2019/NĐ-CP (Ha, 2022). According to the regulation, catch of *H. mohnikei* is prohibited at all times. Catches of *H. histrix*, *H. kelloggi*, *H. kuda* and *H. trimaculatus* are regulated with minimum size limits and fishing seasons.
- Party responses to Notification No. 2020/015 (CITES, 2021b), revealed that Cambodia enacted national level protection of seahorses, prohibiting both fisheries and trade in 2009, as did a number of Parties with small volumes of seahorse exports or imports.

2.2.3 Making non-detriment findings (NDFs)

In the first two rounds of RST (see ***Review of Significant Trade***, below), it became evident that none of the significant exporting Parties for seahorses were making scientifically defensible NDFs. Indeed, the only Parties that have shared NDFs are Australia and the US, both for their small quantities of live exports.

- For Australia, exports of both captive bred and wild seahorses are only allowed from pre-approved operations with very detailed criteria for their approval (CITES, 2021b). At the time of writing, one captive breeding program and two fisheries are approved for export of seahorses, managed by quotas on wild individuals.
- In the US, NDFs for the export of live seahorses from the state of Florida are based on three management measures: (i) recreational and commercial bag limits; (ii) large areas of quality habitat closed to commercial and recreational harvest; and (iii) a limited-entry fishery for the commercial take of these species (CITES, 2021b). Export of one species, *H. zosterae*, is also regulated by a minimum size limit, appropriate to the species.

2.2.4 Making legal acquisition findings (LAFs)

We are not aware of the content of LAFs for seahorses. Any export permit for seahorses is required to be based on the issuance of a LAF by the CITES MA, but Parties have not shared their LAFs, and some may not have even issued them.

2.2.5 Introduction from the sea (IFS)

Not relevant to seahorses which are not found in areas beyond national jurisdiction.

2.2.6 Export restrictions

When a country sets its own national export quotas for CITES species, it should inform the Secretariat (see Res. Conf. 12.3 [Rev. CoP18]), which in turn informs the Parties. Only two Parties have informed the Secretariat of non-zero quotas for seahorses since the listing was implemented in 2004 (CITES, 2022b).

- Indonesia declared quotas for live *H. barbouri, H. comes, H. histrix, H. kelloggi* and *H. kuda* in each of 2006 and 2007, ranging from ~2,000-9,000 individuals depending on the species.
- Viet Nam declared quotas in 2011 and 2012 for live *H. comes* (12,000 and 11,000 individuals, respectively), *H. kelloggi* (7,000 and 5,000, respectively) and *H. kuda* (77,000 in each year) and in 2013 for *H. comes* only (13,000).

In addition, Thailand reported using an export quota to regulate its seahorse trade in its response to the RST (Manopawitr, 2022). In 2015, Thai CITES Authorities reportedly implemented a total export quota of 1500 kg (~550,000 individuals) which they considered to be the maximum sustainable yield of seahorses in Thailand. The quota was supposedly in place for just one year before Thailand declared its export suspension (see next section ***Export suspensions***).

We are aware of just two Parties having reported the use of a minimum size limit to regulate their seahorse exports. In its response to the RST, Thailand reported in 2016 that trade in seahorses measuring less than 10 cm was not allowed (CITES, 2016c), in apparent adherence to the recommendations from the AC. Thailand's CITES Authorities further reported educating first level traders about the 10 cm size limit (Manopawitr, 2022). As reported above, the US also reported using a species appropriate size limit to regulate its take and trade of *H. zosterae* (CITES, 2021b).

We are aware of two Parties that have restricted their exports to captive bred live seahorses only. Indonesia has restricted its exports to live cultured seahorses with export of wild live and all dried seahorses currently suspended (see next section). However, it is not clear if this includes CITES source codes F and C (F1 and F2+ generation, respectively), or just source code C (Vaidyanathan, 2022). Likewise, the UK reported only allowing exports of captive bred seahorses (CITES, 2021b).

2.2.7 Export suspensions

Trade suspensions offer a way to implement the Convention but do not promote sustainable trade and need serious enforcement. When a Party is unable to make a science-based NDF, or to effectively monitor the trade, then trade suspensions are appropriate policy actions. However, such suspensions create compliance concerns when not enforced such that illegal trade flourishes. This is now the challenge for seahorses (see ***Changes in trade***, below).

Many historically important source Parties have ended seahorse exports since the listing through a variety of means and for a variety of reasons, with unclear conservation consequences. Some did so as a holding pattern. For example, in 2004, Peru announced suspensions of seahorse catch and trade until studies determine that they can be exploited without putting populations at risk (CITES, 2021b). Likewise, in 2018, Brazil suspended wild seahorse exports until legislation can be updated to ensure sustainability and legality (Oliveira, 2020).

Another set of Parties chose to temporarily suspend trade in direct response to their country's inclusion in the CITES RST. The eight most traded seahorse species by volume have each been through RST (Foster & Vincent, 2021; further details under ***Review of Significant Trade***, below). Scrutinized Parties can avoid the need to make defensible NDFs by declaring an end to exports, which leads to their subsequent removal from the RST process. In the case of seahorses, five historically important exporting Parties responded to RST by declaring zero export quotas or total trade suspensions for seahorses at different stages in the process (Foster & Vincent, 2021): China – wild dried and wild live; Indonesia – all dried and wild live; Malaysia – all sources and forms; Thailand – all sources and forms (live exports were already banned by law, since 1998; Manopawitr, 2022); and Viet Nam – all sources and forms. Of these, only Sabah, Malaysia declared its zero quota for all seahorse exports (*Hippocampus* spp.) to the Secretariat, in each of 2014-2017 (CITES, 2022b).

The RST led CITES to impose trade suspensions for three Party-species combinations (Foster & Vincent, 2021). Parties were recommended to suspend trade in wild *H. kuda* from Viet Nam in 2013 and wild *H. algiricus* from both Guinea and Senegal in 2016. CITES lifted the suspension imposed on Viet Nam in 2018 after Viet Nam declared it would no longer allow exports. The suspensions involving Guinea and Senegal remain in effect at the time of writing.

2.2.8 Import restrictions

Some importing Parties adopted stricter domestic measures than their obligations under the Convention with respect to seahorse trade, which is their right under CITES Article XIV. In 2007, the EU implemented trade restrictions on imports of wild seahorses for six species from Indonesia, and one species from Viet Nam (under Article 4[6] of Regulation [EC] No 338/97; EU, 1996) because it was not satisfied with the NDFs issued. As of 2019, the EU had added one species from Brazil, one from China and one from Guinea and Senegal, while also lifting the restriction on Viet Nam (in line with the end of the RST-related suspension, see above).

2.2.9 National plans of action agreed by Parties

Project Seahorse has worked with the Philippines, Viet Nam and Thailand to create plans of action for better implementation of the seahorse listings. Actions relate to research and management, and have included diverse measures: filling gaps in our understanding of seahorse biology/ecology, fisheries and trade; carrying out national level conservation assessments using IUCN Red List criteria; restricting fishing through input and output controls; addressing illegal, unreported, and unregulated (IUU) fishing and trade; protection of seahorse habitats; and strengthening implementation of existing laws that benefit seahorses (*inter alia)*. All plans include sentinel monitoring of wild populations to allow adaptive management directed at sustainable exploitation and trade. Actual uptake of actions has been poor as reflected in Level 3, below.

Worryingly, many jurisdictions have highlighted *ex situ* culture coupled with "restocking" as conservation measures for seahorses, when such ventures are actually commonly deeply problematic for wild populations (IUCN/SSC, 2013).

2.2.10 Monitoring plans agreed by Parties

To date, only Thailand and the US (for the state of Florida) have cited targeted monitoring programs for seahorses. Thailand reports that it monitors seahorses through fisheries-independent (research trawl surveys) and dependent (catch landings) means (CITES, 2016b). The US has also reported on its fisheries-independent (research trawl surveys) and dependent (catch landings) monitoring, the former of which is designed to determine the distribution and abundance trends of lined and dwarf seahorses (*H. erectus* and *H. zosterae*, respectively) in Florida (CITES, 2021b). Although there are many ways to monitor seahorses, it is critical that the frequency and endurance is sufficient to develop the time series that are so badly needed for management. Other Parties' lack of monitoring makes it difficult to confirm whether any of the measures they have taken to implement CITES for seahorses are benefiting wild populations.

2.2.11 Review of Significant Trade

Seahorses were the focus of the first RST for fully marine fishes, with three rounds initiated in 2008, 2011 and 2014 (Foster & Vincent, 2021). A total of eight species were investigated, embracing the vast majority of seahorse exports reported to CITES. Parties fell into three groups: (1) those with no notable trade that were allowed to exit the RST; (2) those with larger trade that declared zero quotas or trade suspensions (prohibiting seahorse exports, often a new policy in that country) and were allowed to exit the RST; and (3) those with larger exports that were retained in the RST. Further scrutiny by the AC and the CITES Secretariat led to assessments of (i) Possible Concern for *H. kuda* in Viet Nam (in 2012); (ii) Urgent Concern for *H. kelloggi, H, kuda, H. spinosissimus* (in 2012) and *H. trimaculatus* (in 2014) in Thailand; and (iii) Urgent Concern for *H. algiricus* in Guinea and Senegal (in 2014).

In response to AC assessments that Parties retained in RST needed to take action, CITES (through its AC) issued those Parties a set of recommendations. As is usually the case across taxa, recommendations were directed at administrative housekeeping, research on species and threats, and actions to address threats on a six month to two-year timeline (Foster & Vincent, 2021). The actions were critical, given that ongoing exports in the absence of a science-based NDF were in violation of the treaty, but the timelines proved largely unrealistic, especially given the Parties' previous lack of engagement with implementation of marine fish listings, their dearth of seahorse-specific resources and expertise, and the lack of funding to support such remedial action (Foster & Vincent, 2021). The recommendations were also largely ineffectual given the absence of embedded metrics against which to evaluate progress or successful completion. Subsequent attempts at AC27 (2014) to offer more precise recommendations were not successful, apparently being perceived by Parties as too prescriptive (Foster & Vincent, 2021). As with all species, the RST did not address the significant concerns of illegal trade or exports of captive bred (C or F) seahorses.

The RST process has not met its objectives of ensuring sustainable trade in seahorses (Foster & Vincent, 2021), even though it has resulted in many export suspensions. During and since the RST, none of the four Parties given RST recommendations (Guinea, Senegal, Thailand, Viet Nam) have made positive NDFs. Instead, legal exports from these and several other historically important exporting Parties were suspended at different stages in the process (Foster & Vincent, 2021; details under ***Export suspensions***, above). These suspensions appear to have reduced volumes in the live trade of seahorses, primarily by ending the export of source code F seahorses from Viet Nam (Foster et al., 2021). On the other hand, evidence suggests that illegal trade in large volumes of dried seahorses continues from most countries with trade suspensions, including Viet Nam (e.g., Foster et al., 2017; Foster et al., 2019a; Louw & Bürgener, 2020).

As of November 2018, the RST process had led to the end of legal exports from range State-species combinations that together comprised 98% of wild seahorse exports reported in the UNEP World Conservation Monitoring Center (UNEP-WCMC) database – which serves as the official CITES database – from 2004 to 2011 (Foster & Vincent, 2021). None of the Parties that now have a trade suspension due to RST have addressed the bottom trawling that captured the vast majority of the seahorses (Lawson et al., 2017), or the illegal trade that continues (Foster & Vincent, 2022). Because of such continued indiscriminate take, illegal export trade of seahorses from all Parties will continue regardless of zero quotas/trade suspensions unless laws are enforced stringently. The ongoing illegal trade in seahorses globally falls outside the purview of the RST process, and requires SC attention, along with increased vigilance, attention, and due diligence by importing Parties.

2.2.12 Action by Regional Fishery Bodies (RFBs)

In spite of the fact that seahorse populations straddle countries and transboundary issues abound, no Regional Fishery Bodies (RFBs) have engaged in trying to move the fisheries taking seahorses and subsequent trade towards sustainability in the context of CITES. Some RFBs may be particularly relevant:

- Asia Pacific Fisheries Commission (APFIC)
- Bay of Bengal Programme (BOBP-IGO)
- Fishery Committee for the Eastern Central Atlantic (CECAF)
- Ministerial Conference on Fisheries Cooperation Among African States Bordering the Atlantic (COMHAFAT-ATLAFCO)
- Comisión Permanente del Pacifico Sur (CPPS)
- Southeast Asian Fisheries Development Center (SEAFDEC)
- Western Central Atlantic Fishery Commission (WECAFC)

2.2.13 Action by industry

Some user communities have played an active role in syngnathid conservation. For example, throughout the listing and implementation processes, the Hong Kong Chinese Medicine Merchants Association (HKCMMA) has proven very supportive of collaborative moves towards syngnathid conservation. With engagement from Project Seahorse, TRAFFIC East Asia and WWF Hong Kong, this association called on six related traditional medicine organisations to develop and follow purchase guidelines for syngnathids (including the CITES recommended minimum size limit). The HKCMMA has also been instrumental in facilitating post-CITES research on the seahorse trade in Hong Kong SAR (Foster et al., 2019a; Yasué et al., 2015).

Major e-commerce companies have decided to stop selling dried seahorses on their platforms as a result of the CITES listing, and due to illegal trade concerns. In 2020, dried seahorses were included in the Wildlife-Friendly Online Trade Policy developed by the Coalition to End Wildlife Trafficking Online (WWF, n.d.). The coalition includes the world's biggest e-commerce, technology, and social media companies which have joined efforts with WWF, TRAFFIC, and IFAW to shut down online marketplaces for wildlife traffickers. The Coalition currently advises online companies to prohibit the trade of dried seahorses from their platforms. This recommendation is intended to support the many export suspensions that Parties have declared under CITES. Should the Parties decide instead to make science-based NDFs in pursuit of sustainable exports, as Appendix II intends, the Coalition would reconsider its advice.

The aquarium industry has also been instrumental in facilitating research related to CITES implementation for live seahorses. Industry members in the US, UK, and EU particularly, have participated in research projects after the CITES listing (Foster et al., 2021; Koldewey & Martin-Smith, 2010; Koning & Hoeksema, 2021; Magera et al., 2005).

2.3 Level 3: Field outcomes (practical change)

Few things have changed in terms of seahorse management in ports or Customs facilities or protection in the seas as a consequence of the Appendix II listing. Only Australia and the US have reported their NDFs, and there is scant evidence of new restrictions actually being applied to seahorse fisheries or trade, whether it be size limits, catch quotas, protected areas, or increased enforcement.

2.3.1 Changes in target fisheries

We are not aware of any practical management changes to the fisheries that target seahorses; such fisheries would primarily be directed at extracting live seahorses for the aquarium trade.

2.3.2 Changes in non-selective fisheries

The fact that most seahorses for the medicinal and curio trades are caught in non-selective fisheries poses particular challenges for making NDFs (and in the CITES context, is largely unique to marine species). Until bottom trawlers and other indiscriminate gears are constrained or prohibited, pressures on seahorse populations will continue, even if exports are tightly regulated or even prohibited. Two key recommendations out of the

Mazatlán workshop were meant to address the fact that making NDFs is particularly challenging for the large proportion of seahorses that is collected incidentally, primarily in trawls: (1) protect seahorse habitats from destructive or all fishing practices to protect seahorse populations; and (2) enforce existing laws to ensure that seahorses are not sourced from closed/protected areas.

We are not aware of recommendations from Mazatlán being advanced for seahorses specifically in the 18 years since implementation. During the RST process, the existence of inshore trawl exclusion zones and/or MPAs were often presented as evidence of sustainable trade – but neither their relevance to seahorses nor their level of enforcement was ever presented. MPAs are certainly proliferating but those changes do not seem tied to the CITES listing for seahorses. They may provide benefits to the species, but evidence is lacking.

Although not established in consideration of seahorses, many seahorse source Parties have established trawl free zones – areas out from the coast (typically 3-5 km) that are off limits to the devastating impacts of bottom trawling (e.g., Cambodia, Malaysia, Philippines, Thailand, Viet Nam). If enforced, these would relieve a great deal of fishing pressure on most seahorse populations, which in turn would support Parties in making positive NDFs and LAFs. In addition to relieving fishing pressure, trawl exclusion zones – and fully protected MPAs – also help seahorse habitats, which leads to healthier populations that can better tolerate take and trade. Enhanced MPA management and enforcement, and trawl-free zones, may be particularly beneficial for seahorse populations.

2.3.3 Changes in trade

While the intent of CITES was to regulate the seahorse trade at sustainable levels, the dried trade appears to be occurring at similar levels – though most is now IUU. On the other hand, data indicate a possibly hopeful shift in the live trade (for aquariums) toward captive bred sources. Given that 95% of the seahorses are traded dried for traditional medicines, where the markets have yet to transition towards more sustainable use, much more needs to be done. The shifts in the live trade, from wild-caught to captive bred might be encouraging if we knew more about how such changes are affecting wild populations.

Despite the absence of NDFs and the general prevalence of trade suspensions (both Level 2 concerns), dried exports persist at high levels, primarily dependent on illegal trade (Level 3). Both before and after the CITES listing, the trade in seahorses has consisted of tens of millions of animals, involving countries on all continents except Antarctica. Before CITES listing, the main documented exporters were India, Mexico, the Philippines, Thailand and Viet Nam (CITES, 2012b). After the listing but before the RST, CITES data indicated that the vast majority of dried exports came from Southeast Asia (Thailand, Malaysia and Viet Nam) and West Africa (Guinea and Senegal; Foster et al., 2016), obtained in non-selective fisheries (Lawson et al., 2017).

The failures to enforce trade suspensions at Level 3 mean that CITES data have become unreliable for tracking the international trade in seahorses as most dried seahorses are now smuggled across borders. After the RST and associated trade suspensions, CITES data showed a steep decline in reported trade of dried seahorses (Foster & Vincent, 2021). In fact, field surveys of trade reveal that seahorse trafficking continues from most source countries: India (Vaidyanathan et al., 2020); Guinea and Senegal (Cisneros-Montemayor et al., 2016); Hong Kong SAR (Foster et al., 2019a; Lam et al., 2014); Malaysia (Lawson, 2014; Lawson et al., 2017); the Philippines (Foster et al., 2019b); Thailand (Aylesworth et al., 2017b; Kuo et al., 2018); and Viet Nam (Foster et al., 2017; Stocks et al., 2019; Stocks et al., 2017). Jurisdictions appear to have declared bans/suspensions (Level 2) and then turned their attention away from seahorses, with no active enforcement (Level 3). There is evidence, from media reports of seizures, that the illegal trade is seahorses is occurring from yet more historically important

source regions (e.g., Latin America),[6] as well as some newly emerging sources for the dried trade (e.g., Europe).[7] We also require further information on enforcement and interdictions in importing countries.

When it comes to seahorses, governments should do more to translate intentions (Level 2) and declarations into actions (Level 3). Authorities interviewed in most Asian jurisdictions included in the dried trade study, reported on at SC74, felt the illegal trade is so pervasive primarily because of a lack of government prioritization (Foster & Vincent, 2022). 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 (Level 1) to support implementation of the seahorse listing. All of this seems to suggest that exporting and importing countries need to increase their enforcement efforts, including in intelligence-led enforcement, and increase their diligence in the review of export permits.

The story of market transitions is more hopeful when it comes to the small trade in live seahorses, which has shifted away from wild sourcing since the CITES listing. Globally, reported exports of live seahorses from key trading Parties declined notably in the first years after the CITES listing, and yet more after RST, to just 7% of historic levels (Foster et al., 2021). These changes are explained first by a decline in wild sourcing after the listing and then by a decrease in the number of captive-born seahorses (from wild-sourced parents) after RST. Almost all live seahorses in international trade are now reportedly captive bred (F2 generation or more). Related to these changes, there are now fewer wild sourced species reported in trade, coming from fewer countries and more tank-raised species, coming from more countries. There is also an increase in domestic sourcing for key markets (i.e., within the EU and US). It seems that the very limited exports of live wild seahorses from at least two key source countries still reported in trade (Australia and the US) may be sustainable (see ***Making NDFs***, above).

It is unclear whether the changes in live seahorse trade arise from government policy (Level 2), from independent action by industry, from market responses, or from a combination thereof. The overall global decline in live seahorses from the wild after listing is deduced from CITES data and from stakeholder information for both major destination markets for the live trade, the EU and the US. In both cases, the decline could be the result of (i) greater scrutiny of wild trade by CITES Authorities and/or (ii) industry shying away from wild imports because of logistic challenges and costs associated with obtaining permits for wild specimens. It is probably easier for Parties to influence the live trade than the dried trade in seahorses, because of relatively small volumes in live trade, target capture of live seahorses, and difficulty in smuggling live seahorses. The relatively small live trade industry is, however, also motivated to make change because enough seahorses can be cultured to meet the market demand, consumers prefer captive bred fish, and live seahorses fetch high prices. One key element may be the good regulatory capacity in many countries that import live seahorses, along with the number of consumers informed about or interested in sustainability issues.

2.3.4 Changes in enforcement

We are not aware of focused enforcement activities to regulate seahorse exports (Foster & Vincent, 2022). Seizures of dried seahorses reported in the media suggest that officials will confiscate them when they are

[6] https://mexiconewsdaily.com/news/seized-sea-horses-believed-going-asia/; https://www.nationalgeographic.com/animals/article/seahorses--eight-million-peru-smuggling-crime-blotter
[7] https://algarvedailynews.com/news/10836-olhao-seahorse-thieves-arrested-in-spain; https://globalnews.ca/news/2892137/french-custom-officers-have-seized-2000-dead-seahorses-in-packages/

encountered (e.g., Latin America,[8] Europe,[9] Africa,[10] North America[11]), but such encounters appear to be opportunistic rather than the result of focused intelligence-based law enforcement for seahorses. It is well known that limited ad hoc inspections of shipments are ineffectual in combating illegal trade, and only intelligence-based enforcement has a chance to effectively combat trafficking (UNODC, 2020). In absence of focused, intelligence-based enforcement efforts, illegal trade is apparently rampant from and into most historically important source and destination countries, respectively, and some newly emerging sources as well (details under ***Changes in trade***, above).

2.3.5 Breeding/farming/ranching

The CITES listing for seahorses has led to an increase in captive breeding activity for seahorses. Globally, we found that the CITES Appendix II listing and RST led to a dramatic decline in wild sourcing and overall export volumes of seahorses for live trade (Foster et al., 2021). Instead, a declining volume of exports increasingly came from a much larger trade in captive born seahorses (source code F), and then eventually to a greater proportion of the live seahorses being captive bred (source code C). These changes are reflected in CITES data but also, importantly, in 2020/2021 interviews with importers and wholesalers in the main destination jurisdictions for the live trade (the EU and US).

The trade in captive-born seahorses (F1 generation) appeared in global CITES data in 2006, after which such sourcing made up almost three-quarters of the trade through to 2015 (Foster et al., 2021). Most of this trade was in captive born *H. kuda* reportedly sourced in Viet Nam. There, wild seahorses obtained from fishers gave birth in outdoor tanks, and the offspring were sold into trade. This trade was not initially impeded by Viet Nam's inclusion in the RST for this species, because the process does not – to this day – scrutinize trade in source code F, only specimens considered wild sourced (CITES, 2019b). This is a problematic gap in RST surveillance given that (i) NDFs must be made for the wild-caught parents before export permits can be issued for the captive born individuals (CITES, 2017c), and (ii) there is no evidence that Viet Nam ever made NDFs for such wild broodstock 2017 (Foster et al., 2017). That said, the RST process did eventually bring an end to Viet Nam's exports of captive born *H. kuda* when, in 2018, Viet Nam declared an export suspension on all seahorses (Foster & Vincent 2021).

Exports of live seahorses that were captive bred (source code C) became proportionally more important – although absolute numbers declined – while volumes of wild and, eventually, captive born seahorses declined after CITES listing and then effectively ended (Foster et al., 2021). Sri Lanka was the most notable reported source of captive bred seahorses over time, most of which was reported as *H. reidi* – a western Atlantic species. The breeder in Sri Lanka apparently chose a non-native species to facilitate CITES paperwork, as it would be easy to prove exports were indeed captive bred and so exempt from NDFs (Vincent et al., 2011). In addition to Sri Lanka, Australia was the other consistent source of captive bred seahorses over time. Australia's captive bred exports only consisted of species native to Australia's waters.

Other reported key source countries for captive bred seahorses varied, probably reflecting the challenges of breeding seahorses through closed life cycles. Successfully breeding seahorses in an aquarium environment depends upon a high investment in time and financial resources (Koldewey & Martin-Smith, 2010). Trader interviews also indicated that, for live seahorses, sourcing of captive bred animals from global markets may decline in time. Company data for the two RST periods documented their reliance on international imports to be

[8] https://mexiconewsdaily.com/news/seized-sea-horses-believed-going-asia/; https://www.nationalgeographic.com/animals/article/seahorses--eight-million-peru-smuggling-crime-blotter
[9] https://algarvedailynews.com/news/10836-olhao-seahorse-thieves-arrested-in-spain; https://globalnews.ca/news/2892137/french-custom-officers-have-seized-2000-dead-seahorses-in-packages/
[10] https://clubofmozambique.com/news/mozambique-smuggler-of-seahorses-arrested-pics-182861/
[11] https://www.cbp.gov/newsroom/local-media-release/cbp-finds-55-sea-horses-luggage

highly variable (EU) or to have declined (US) over time, with imports offset by intra-EU and/or domestic sourcing of captive bred individuals, thus avoiding the challenges posed by CITES regulations.

2.3.6 Monitoring

We know of only two countries that have implemented seahorse monitoring plans at a practical level. Results from Thailand's 2010 fisheries-independent (research trawl) surveys had been reported to CITES in the past (CITES, 2016b), but more recent results – as well as results from any fisheries-dependent monitoring they may have done – are not publicly available. On the other hand, the US reported the results of its long-term fisheries-independent and -dependent monitoring data to CITES in response to Notification No. 2020/015 (CITES, 2021b).

2.4 Level 4: Population impacts (biological change)

Much more must be done before the CITES Appendix II listing will be sufficiently implemented to benefit wild populations of seahorses. Very few seahorse management plans (Level 2) have been implemented in the field (Level 3), and a lack of monitoring means it is unclear to what extent any have had a positive impact on seahorse populations in the wild (Level 4). Systematic monitoring of landings, in particular, would present an opportunity to understand how management measures are serving seahorses and what other efforts might be needed to ensure conservation of wild populations across species.

2.4.1 Population change

The CITES listing for seahorses may have reduced pressure of international trade on some wild seahorse populations in some places – but probably for those that were historically targeted for the live trade, and were not under pressure from the non-selective and often IUU fishing practices that largely supply the dry trade.

The missing step in CITES implementation for the live trade is good monitoring to determine how wild seahorse populations are actually responding to the changes we document. The only evidence we have of a management plan working to good effect comes from Florida's fisheries-independent monitoring of *H. zosterae* in support of making NDFs for live exports of this species (CITES, 2021b). Florida reports long-term indices of abundance (from 1996-2018) that suggest overall stable populations, though with some localized declines that are attributed to threats other than fisheries and trade.

2.4.2 Fisheries change as a proxy (catch per unit effort)

More Parties need to monitor seahorse fisheries enough to generate reliable indices of CITES effectiveness at the level of biological change. The results of Thailand's reported fisheries-dependent monitoring program for seahorses have not been made available. The US fisheries-dependent monitoring, from 2010-2019, indicated that the annual reported catch per trip of seahorses varied year to year but with no discernable trend over time (CITES, 2021b). The US Authorities attributed the fluctuations to varying fisher participation in the monitoring program and consumer demand for live seahorses (CITES, 2021b).

In the absence of systematic monitoring data, fisheries related information on population trends comes from interviewing fishers during field surveys. Project Seahorse post-CITES field surveys in India (2015-2017), the Philippines (2019) and Viet Nam (2016-2017) found that 95-98% of fishers noted ongoing declines in seahorse catch per unit effort, while many also noted other worrying changes such as declines in seahorse size or female-biased sex ratios (Foster et al., 2017; Foster et al., 2019b; Stocks et al., 2019; Stocks et al., 2017; Vaidyanathan et al., 2020).

2.5 Conclusions

Evidence available to date suggests that CITES Appendix II provisions are largely being met for the small trade in live seahorses – although wild populations need to be monitored for change – but action is needed to ensure the large volume of ongoing dried trade is both sustainable and legal. For seahorses, the road map is there, the tools are in place and the available protocols should allow good progress. Indeed, much good work has been done to implement the inclusion of seahorses in Appendix II of CITES, but large-scale smuggling of dried seahorses is of great concern, as is the lack of monitoring of wild populations by Parties to allow robust science-based NDFs.

To meet their obligations under the Convention, Parties essentially have a choice; they can end rampant illegal international trade or they can make NDFs by ensuring that seahorses being traded are sourced sustainably and legally, or both. If Parties choose to retain export bans or suspensions, then they must implement them with determination and vigilance. Importing countries have a major role to play in ending illegal trade as well – the full responsibility of combating trafficking should not fall on exporting countries. Given the real challenges 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. One key challenge for seahorses is to rein in or prohibit bottom trawling to reduce pressure on wild populations, and to ensure that all seahorses in trade are legally sourced. This can be achieved by implementing existing laws against bottom trawling in coastal areas, expanding areas where bottom trawling is prohibited, and by establishing more protected areas in line with existing international commitments.

3. Sharks

3.0 Implementation of shark listings

The story of shark listings on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendix II is a long and tangled tale, covering 30 years of engagement with about 40 species of sharks and rays (less than 4% of >1,200 shark and ray species), spread across most of the world's oceans and seas. It has involved CITES Parties, the Food and Agriculture Organization of the United Nations (FAO), Regional Fishery Bodies (RFBs), the International Union for the Conservation of Nature Species Survival Commission Shark Specialist Group (IUCN SSC Shark SG), numerous non-governmental organizations (NGOs), academic institutions, and substantial financial resources. Our goal here is to summarise and to highlight examples of CITES implementation for sharks to date well enough to indicate the scale and nature of commitments and progress without attempting to present all activities. For specifics, we refer you to Bond et al. (2022), which provides much greater detail on the number of implementation activities by Parties, and Fowler et al. (2021), for more background.

3.0.1 Background to listing

Sharks[12] have been a focus of CITES interest for nearly three decades, since first discussed at the ninth Conference of the Parties (CoP9, 1994), which adopted Res. Conf. 9.17 in 1994 on the Status of International Trade in Shark Species (see ***CITES actions at the time of listing***, below). The 14 shark species and 27 rays listed in CITES Appendix II since 2002 (Table 3.1) had all experienced significant population declines prior to the listings; indeed, many stocks and species are Endangered or Critically Endangered on the IUCN Red List of Threatened Species, some depleted to a level that may meet the decline criterion threshold for listing in Appendix I (Table 3.1; Fowler et al., 2021). Threatened species are disproportionately affected by international trade: over 70% of shark species identified in the Hong Kong SAR fin trade are assessed as threatened on the IUCN Red List (Cardeñosa et al., in review) *versus* 32.6% of all chondrichthyan fishes (Dulvy et al., 2021). Continuing declines are the result of multiple factors, including unmanaged and unsustainable coastal and high seas target and bycatch fisheries – at least partly driven by demand in international trade – for fins, meat, jaws, teeth, skins, ray gill plates, and shark liver oil. These pressures and declines, described in the thirteen CITES Appendix II listing proposals adopted at five CoPs (Table 3.1), have also affected all the 'look-alike' species:[13] two large hammerheads, two thresher sharks, longfin mako, and several devil rays, giant guitarfishes and wedgefishes, many of which also occur in the dried seafood trade. The sawfishes, family Pristidae, listed in Appendix I, and the freshwater stingrays are not considered in this paper.

FAO and several regional fisheries management organizations (RFMOs) have been a major part of the story of CITES engagement with sharks since 1997. CITES CoP10 (1997) adopted Decision 10.73, instructing the Animals Committee (AC) and Secretariat to co-operate in an expert consultation organized by FAO to develop an International Plan of Action for the Conservation and Management of Sharks (IPOA–Sharks), in an effort to further the implementation of Res. Conf. 9.17. At that time, knowledge of the status of shark fisheries in the world was relatively limited and only a few countries had specific management plans in place for their shark fisheries (Fischer et al., 2012).

When the IPOA–Sharks was adopted in 1999, a substantial minority of Parties claimed – incorrectly as it turned out (Vincent et al., 2014) – that it would resolve CITES' concerns, and that there would be no need to involve

[12] For the purposes of this document, the term "shark" is taken to include all species of sharks, skates, rays and chimaeras (Class *Chondrichthyes*, ~1,200 species), as defined in the United Nations Food and Agriculture Organization (FAO) International Plan of Action for the Conservation and Management of Sharks.
[13] Species that are very similar in appearance to other species listed in Appendix II may be added to ensure that all trade in the listed species is brought under control (CITES Article II, para. 2(b)).

CITES in the shark trade. At CoP11 (2000), fewer than two-thirds of CITES Parties voted to list three shark species (whale, white and basking sharks; *Rhincodon typus*, *Carcharodon carcharias* and *Cetorhinus maximus*, respectively), following arguments by some governments that FAO and the RFMOs were the competent organisations for the management of sharks. Consequently, the proposals were narrowly rejected, as the adoption of proposals to amend the CITES Appendices requires a 2/3 majority vote of those Parties present and voting. The UK, which had proposed a 12-month delayed implementation for the basking shark, listed the species in Appendix III. CoP11 also adopted the AC recommendation to repeal Res. Conf. 9.17 and replace it by two Decisions.[14] However, at CoP12 (2002), CITES Parties recognised the significant lack of progress with achieving shark management through the FAO IPOA–Sharks and that unsustainable trade was continuing (Vincent et al., 2014). As a result, CITES Parties adopted the first shark listings, for basking shark and whale shark, almost a decade after concerns had first been raised over the biological, fisheries and trade status of sharks (Vincent et al., 2014). All subsequent listing proposals for commercially-exploited marine species to meetings of the CoP were referred for comment to FAO and the RFMOs, and were scrutinised by an expert panel appointed by FAO.

Twenty years after the first listing, by 2022, a total of 41 shark species had been listed on the CITES Appendices (Table 3.1), with many more Party co-sponsors emerging to support the proposals from CoP16 (2013) onwards (see listing proposals, Table 3.1). Despite representing less than 4% of this taxonomic group, the listed species are the source of approximately 25% of the reported global trade in shark fins (by volume), a substantial meat trade, some live trade, and trade in dried gill plates to China and elsewhere in Asia (Cardeñosa et al., 2020; Dent & Clarke, 2015; Fields et al., 2018; UNEP-WCMC, 2022b). Although the list includes some 'look-alike' species, all but one of the CITES-listed shark species are assessed as threatened in the IUCN Red List of Threatened Species (43% Critically Endangered, 34% Endangered, 20% Vulnerable, 2% Near Threatened; Table 3.1). Several are prohibited in RFMO fisheries. The large number of unlisted shark species whose fins look similar to those on Appendix II continues to pose some implementation and compliance challenges (e.g., Villate-Moreno et al., 2021), and one could argue that enforcement at border ports and the job of Customs officials would be far easier if a much higher percentage of species in the fin trade were covered by CITES.

Because of the depleted and protected status of the first wave of shark species on Appendix II, CITES Parties had little room to manoeuvre in meeting their obligations or making non-detriment findings (NDFs). The listing proposals for three sharks added to Appendix II at CoP12 and CoP13 (2004) – basking shark, whale shark and white shark – summarise the conservation and fisheries management measures already protecting these species in key range States (see listing proposals, Table 3.1). Furthermore, few remaining target fisheries were still of significant commercial importance or viability by the time the listings were agreed, suggesting they came too late. Even so, any help from CITES was badly needed for these species.

[14] Meeting records at https://cites.org/eng/meetings/cop

Table 3.1. Conservation status of sharks and rays listed in the Appendices to CITES and the Convention on Migratory Species (CMS).
Source: Fowler et al., 2021.

Common name	Species	Habitat	CITES Effective		CITES listing proposal	Red List	Year	CMS	Year
Pelagic thresher shark	*Alopias pelagicus*	pelagic	II	2017	CoP17 Prop. 43	EN	2019	II	2014
Bigeye thresher shark	*Alopias superciliosus*	pelagic	II	2017	CoP17 Prop. 43	VU	2019	II	2014
Common thresher	*Alopias vulpinus*	pelagic	II	2017	CoP17 Prop. 43	VU	2019	II	2014
Silky shark	*Carcharhinus falciformis*	pelagic	II	2017	CoP17 Prop. 43	VU	2017	II	2014
Oceanic whitetip shark	*Carcharhinus longimanus*	pelagic	II	2014	CoP16 Prop. 42	CR	2019	I	2020
Basking shark	*Cetorhinus maximus*	pelagic	II	2003	CoP12 Prop. 36	EN	2019	I, II	2005
White shark	*Carcharodon carcharias*	pelagic	II	2005	CoP11 Prop. 48	VU	2019	II	2002
Shortfin mako shark	*Isurus oxyrinchus*	pelagic	II	2019	CoP18 Prop. 42	EN	2019	II	2008
Longfin mako shark	*Isurus paucus*	pelagic	II	2019	CoP18 Prop. 42	EN	2019	II	2008
Porbeagle shark	*Lamna nasus*	pelagic	II	2014	CoP16 Prop. 44	VU	2019	II	2008
Whale shark	*Rhincodon typus*	pelagic	II	2003	CoP11 Prop. 47	EN	2016	I, II	1999-2018
Scalloped hammerhead	*Sphyrna lewini*	pelagic/coastal	II	2014	CoP16 Prop. 43	CR	2019	II	2014
Great hammerhead	*Sphyrna mokarran*	pelagic/coastal	II	2014	CoP16 Prop. 43	CR	2019	II	2014
Smooth hammerhead	*Sphyrna zygaena*	pelagic/coastal	II	2014	CoP16 Prop. 43	VU	2019	I	2020
Manta rays	*Mobula (Manta), 2 spp.*	pelagic/coastal	II	2014	CoP16 Prop. 46	VU, EN	2018 & 2020	I, II	2014
Mobulid/devil rays	*Mobula, 9 spp.*	pelagic/coastal	II	2017	CoP17 Prop. 44	2 VU, 7 EN	2019 & 2020	I, II	2014
Sawfishes	Pristidae, *5 Sp.*	coastal	I	2007	CoP14 Prop. 17	2 EN, 3 CR	2013	I, II	2014
Giant guitarfishes	Glaucostegidae, *6 spp.*	coastal	II	2019	CoP18 Prop. 43	All CR	2019		
Wedgefishes	Rhinidae, *10 spp.*	coastal	II	2019	CoP18 Prop. 44	9 CR, 1 NT	2019	II**	2017

Key to IUCN Red List assessments. CR: Critically Endangered; EN: Endangered; VU: Vulnerable; NT: Near Threatened.
Most species listed in the CMS Appendices are included in the Annex to the CMS Migratory Sharks Memorandum of Understanding.
**One Wedgefish species *(Rhynchobatus australiae)* is listed in Appendix II of CMS.

In contrast to the early years, CITES Parties have had to tackle implementation challenges since listing the second wave of elasmobranchs on Appendix II, commencing nearly a decade later. The majority of the next four elasmobranch taxa (seven species) to be listed, at CoP16, also already had widespread protection: (i) oceanic whitetip shark (*Carcharhinus longimanus*) had become a prohibited species during 2010-2013 in all industrial oceanic fisheries managed by the tuna RFMOs (tRFMOs), with an exception for small-scale Indian Ocean fisheries; (ii) the two manta ray species (*Manta birostris* and *M. alfredi*) were already protected in several important range States; (iii) one of the two northern hemisphere target fisheries for porbeagle shark (*Lamna nasus*, already listed in Appendix III, thus trade required certificates of origin) had closed, the other was under tight quota control, and the remaining oceanic bycatch of porbeagle was in the southern hemisphere. In contrast, implementing listings for the widely exploited and depleted large hammerheads (*Sphyrna lewini, S. mokarran,* and *S. zyaena*), which were taken in a wide range of mostly unmanaged industrial and artisanal fisheries, would inevitably be more challenging. Parties proceeded to add three thresher sharks (genus *Alopias*), the silky shark (*Carcharhinus falciformes*: abundant in the shark fin trade), and nine species of devil ray (genus *Mobula*) at CoP17 (2016) – followed at CoP18 (2019) by two species of mako shark (*Isurus oxyrinchus* and *I. paucus*) targeted by high seas fisheries, and from coastal waters: eight species of giant guitarfishes (family Glaucostegidae) and ten species of rhinorays (family Rhinidae).

The many Parties that co-sponsored the Appendix II proposals for this second wave of commercially-exploited species acknowledged that implementation challenges would arise because of their greater commercial importance and, for many, their exploitation in data-poor small-scale fisheries. Consequently, the European Union (EU) announced at CoP16 significant financial support to strengthen capacity in developing countries for sustainable wildlife management and enhanced implementation of CITES wildlife trade regulations, with particular focus on commercially-exploited aquatic species, and extended this after CoP17 (CITES, 2013c; see ***Funding through CITES***, below).

For those species with particularly poor status (the FAO Expert Panel largely agreed that the CITES listing criteria were met for all shark species considered by CoP16; FAO, 2013), and that are subject to legal protections and prohibitions, it is near impossible for most Parties to make legal acquisition findings (LAFs) for any notable level of trade, because exploitation is so widely banned. For example, Parties to the Convention on the Conservation of Migratory Species of Wild Animals (CMS) are required to protect the many CITES-listed sharks also listed in CMS Appendix I (Table 3.1) and are unlikely to be able to make CITES LAFs for these species. In such cases, CITES trade documentation provides the essential complementary means for ensuring compliance with legal protections and prohibitions in the absence of LAFs, and also includes obligations on importing countries that otherwise would not exist. For example, several large seizures of illegally-traded oceanic whitetip shark fins - shipped without CITES permits (see Level 3) – provide evidence of violation of CMS Appendix I provisions for this species.

3.0.2 CITES actions at the time of listing

Even before adding sharks to Appendix II, CITES Parties had adopted Res. Conf. 9.17 and Decisions intended to support the conservation and management of sharks, and to bring their trade to sustainable levels. Although still not species-specific, this practice continued alongside the first and subsequent listings. Some of the earlier sharks to be listed (basking, white and porbeagle sharks) were already in Appendix III, with trade being reported to CITES. At CoP16, CITES delayed shark listing implementations by 18 months – echoing the same decision for seahorses at CoP12 – to enable Parties to resolve technical and administrative issues. The implementation delay fell to 6–12 months at CoP17, in recognition that implementation for sharks in general was already underway (see below). No delay was considered necessary for the CoP18 listings. There are many other examples of CITES actions to promote effective implementation of shark Appendix II listings (see Table A1.2 for list of shark relevant Resolutions, Decisions and Notifications):

- At CoP12 (2002), as well as listing the first two shark species (whale shark and basking shark), Parties adopted Res. Conf. 12.6 (Rev. CoP18) on the Conservation and Management of Sharks (which has been in effect, with four updates, for 20 years), and four Decisions related to elasmobranchs: three regarding implementation of the FAO IPOA–Sharks, and one on promoting new Customs tariffs to distinguish between shark products in trade.
- At CoP13 (2004), Parties voted to add a third shark species, white shark, to Appendix II and adopted two Decisions on elasmobranchs, one on the FAO IPOA–Sharks, and one on CITES implementation for shark species.
- At CoP14 (2007), CITES added sawfishes, family Pristidae, to Appendix I (except for one species, *Pristis microdon*, added to Appendix II to allow live trade to continue). CITES also adopted Res. Conf. 14.6 (Rev. CoP16, updated at CoPs 15 and 16) on introduction from the sea (–FS - essential for implementing CITES for oceanic pelagic sharks taken beyond national jurisdiction), and 16 Decisions related directly or indirectly to ensuring effective implementation of shark listings. Some touched upon implementation and effectiveness (e.g., tools for shark NDFs, including for transboundary, migratory, straddling and high seas stocks, and identification of species and their products). Others addressed commodity codes and fisheries catch and discard data, capacity building for NDFs and fisheries management, implementing the FAO IPOA–Sharks, improving national coordination between fisheries and wildlife departments, and reviewing linkages between IUU fishing and trade in sharks.
- At CoP15 (2010), all four shark listing proposals, encompassing eight species, were withdrawn or rejected.
- At CoP16 (2013), Parties added five sharks: oceanic whitetip, porbeagle and the three largest hammerheads, and genus *Manta* (two manta rays), with an 18-month delayed implementation. CITES also transferred *Pristis microdon* to Appendix I, and adopted two Decisions on sharks and stingrays to support compilation of laws and regulations and engagement with CMS.
- At CoP17 (2016), Parties added four more widely distributed commercially-important pelagic sharks (silky shark and the thresher family, containing three named species) to Appendix II with 12 month delayed implementation, and the entire family of devil rays (nine species, including lookalikes) with 6 month delayed implementation. CITES also adopted a Decision seeking guidance on implementation issues for sharks, including legality and IFS, a Decision on collaboration regarding the CMS Shark Memorandum of Understanding (MoU), and a Decision on IFS.
- At CoP18 (2019), CITES continued to expand Appendix II listings, adding two more oceanic pelagic sharks (shortfin mako, with longfin mako as a lookalike) and two families (Glaucostegidae – giant guitarfish and Rhinidae – wedgefish) containing a total of 16 seriously threatened coastal rays with a more restricted distribution than the widely distributed pelagic sharks hitherto listed in Appendix II. Numerous Decisions were adopted, including on IFS; controlling and monitoring trade from stockpiles of shark parts and derivatives; improving shark trade monitoring and permit verification; capacity building and training for implementation of shark listings; guidance to support making shark NDFs, in particular in data-poor, multi-species, small-scale/artisanal, non-target (bycatch) situations; collaboration with FAO; compiling and sharing information from Parties on their implementation of shark listings; and conducting a study to investigate the apparent mismatch between the trade in products of CITES-listed sharks recorded in the CITES Trade Database and information on catches of listed species.

3.0.3 Summary of current situation with trade

Overview

Both industrial and artisanal fleets supply the Asian market for shark fins and meat, and markets in Europe and South America for meat (reviewed in Fowler et al., 2021). Indonesia, India, Spain, Mexico, the United States (US) and Taiwan, Province of China, were reported as the top six shark catchers in FAO data from 2007-2018. Shark catches are exported as either meat (usually fresh or frozen) or fins (dried or frozen).

Shark meat is mostly traded frozen, with 20 countries reported to import about 90% of total volumes from 2008-2019 (Fowler et al., 2021). Europe and South America are the largest retail markets for shark meat, although Asia consumes highly processed meat, such as fish balls or surimi. The main exporters of shark meat were reported to be Spain, Taiwan, Province of China, Uruguay, the US, Argentina, Portugal, Japan, Namibia and Indonesia. Several countries are reportedly major importers and exporters (e.g., Spain, Uruguay, Portugal and Peru).

The world's four largest importers of shark fin – Hong Kong SAR, Malaysia, mainland China and Singapore – accounted for almost 90% of average annual global imports of fins during 2000-2018 (Fowler et al., 2021). Data reported that Hong Kong SAR, by far the largest consumer of shark fins, mostly imported them from Singapore, Taiwan, Province of China, Spain, Peru, United Arab Emirates (UAE) and Indonesia. Some of the major shark fin importers are also processing centres for fins, such that they re-export fins all over the world.

Reported trade

The scale of reported commercial trade in shark products, recorded in the CITES Trade Database, was analysed in 2022 (see Figure 3 in CITES, 2022l). With respect to the first three widely protected listed species, there were a few early records for basking shark, but none since 2012, just one transaction for whale shark in 2015, and intermittent transactions for white shark products. There is a similar pattern for oceanic whitetip (for fins), porbeagle (fins and meat), intermittent trade in manta rays (dried gillplates and a few live animals), and (from 2017) mobulid rays.

Trade in the hammerhead sharks (5-15 records per species per annum since 2014) is predominantly of fins and a few live specimens of scalloped hammerhead for aquariums. Thresher shark transactions have numbered some 25 per annum since 2017 (all three species combined, predominantly of fins). Transactions have been similar for the silky shark, with some 20-25 records per annum since 2018, mostly of fins.

Patterns of trade in the most recently listed species, which came into effect in 2019, fall into two groups. There have been very few records of trade in products from the severely depleted giant guitarfishes and rhino rays, which are caught in coastal fisheries, often in developing regions. However, the number of trade records for mako sharks, particularly shortfin mako, are higher than any other listed species, with about 90 transactions in 2020, >20% of which are introductions from the sea. In contrast to records for most other shark species, many mako transactions are reported as whole carcasses and meat.

Recent analysis suggests that CITES data may not offer a complete reflection of the trade in CITES-listed sharks. For example, an expert analysis of the CITES trade data for sharks from 2007 to 2016 pointed out that trade in CITES-listed shark products recorded in the CITES Trade Database appeared to be lower than what may have been expected from available knowledge on catches of the species concerned, and did not adequately reflect the diversity of CITES Parties involved in trade (Pavitt et al., 2021). The lack of data for some species may be partly explained by the timing of the analysis – such that some listing had only been in effect for a short period of time. However, a more recent report on "Missing sharks" (Okes & Sant, 2022) provided a qualitative review of FAO landings data, and trade and management measures, to understand the disconnect between known catches of

CITES-listed shark species and trade reported to CITES through 2019. The report found that 51 of 74 CITES Parties that were identified as having either reported catches of one or more of the relevant CITES-listed species or having fisheries associated with catch of CITES-listed sharks, had no records of relevant CITES-listed sharks in the CITES Trade Database for commercial purposes from any source (excluding confiscations and pre-convention specimens). This mismatch in historic catch data and CITES trade records needs further investigation.

Illegal trade

Records of illegal trade also suggest that ongoing trade is much larger than what is recorded in the CITES trade data. Seizures of illegal shipments made by CITES Parties are mostly of dried fins;his gu largely identified as oceanic whitetip, hammerhead, silky and thresher sharks, whole carcasses, and some teeth, jaws and gillplates (Bond et al., 2022). Some of these seizures have been very large (See Level 3, ***Changes in Enforcement***, below).

3.1 Level 1: Technical outputs (tools and capacity building)

Implementation of the shark Appendix II listings has involved a tremendous number of activities and initiatives by a wide range of actors and agencies, such that this section only reflects a portion of the whole. All of the work has been directed at enhancing the capacity of Parties, to a very high level for a particular taxon, to advance management actions to implement CITES, and hopefully conserve the species in the wild. Other taxa that have also received significant attention in terms of NDFs, quota development and identification tools include queen conch (CITES, 2022i), sturgeon (CITES, 2022a;2022f), crocodilians (Environment-Canada, 1995), and timber species (CITES, 2022n). We believe that the capacity building effort for sharks well exceeds that for these other taxa, but as there are no measures by which to evaluate the others, we cannot assess how much more extensive it has been for sharks.

In this section, we describe an array of consultations and meetings along with production and dissemination of the many materials, methods, frameworks and guidelines that are needed to promote good implementation of the shark listings by the Parties. Alongside such activity came determined efforts to encourage broader shark fisheries management and data collection efforts by Parties, with outcomes that we will review in the section on Level 2.

Many Parties recognised the importance of engagement and co-ordination between CITES, FAO and Regional Fishery Bodies (RFBs), particularly at the Secretariat level, as well as cooperation between national environment and fishery agencies, and the implementation of the FAO IPOA-Sharks. It was understood that CITES does not manage shark populations (nor, indeed, does FAO), but the majority of Parties have recognised that CITES and its implementation activities have a vital role in stimulating more effective management of sharks and shark fisheries, and have a role in compliance monitoring and enforcement of fisheries measures. In 2006, a MoU was signed between FAO and CITES to foster collaboration and improve research and data collection on the commercially exploited aquatic species listed in the CITES Appendices. That MoU has facilitated several endeavours and activities for sharks, some examples of which are described below.

The IUCN Shark Specialist Group (IUCN Shark SG) has made significant contributions to the work of CITES, particularly through the AC and CoP, since the mid-1990s, through the preparation of briefing documents and analyses, often in collaboration with TRAFFIC. Many members of the environmental NGO community have also contributed significantly during this time, with important financial support from foundations, markedly during the past decade.

3.1.1 Funding through CITES

In response to the anticipated challenges in implementing new listings of widely-exploited sharks and mantas, the EU announced at CoP16 a contribution to CITES of EUR 1.2 million (USD 1.6 million) to assist developing countries during 2013-16 with their implementation of the new listings of sharks and manta rays (CITES, 2013c).

To ensure the effective allocation of these EU funds, the NGO trade specialist TRAFFIC was almost immediately commissioned by the EU to "compile and collate readily available information on: (i) the main Parties likely to be affected by the listings; (ii) international, regional and domestic regulations and measures that may be mutually supportive of, and complementary to, the listings; (iii) the main challenges expected in relation to implementation of the listings; and (iv) any existing or planned capacity building initiatives and tools available to support the listings, in addition to potential gaps and needs" (Mundy-Taylor & Crook, 2013). The priority needs identified were: training on basic CITES requirements (documentary requirements, domestic regulatory frameworks, and institutional structures); establishing fisheries monitoring programmes (data collection, research, and stock assessments); trade monitoring; identification tools and training in their use, for product and whole sharks; training in inspection protocols for product shipments; and general awareness raising and communication for fishing communities and the product industry (Mundy-Taylor & Crook, 2013).

FAO initially identified 35 developing countries in Africa, Asia, and Latin America and the Caribbean that should be prioritised for receiving assistance from FAO and CITES (Fischer & Barone, 2013), later updating the selection criteria and extending this list to 50 countries, primarily in Asia and Africa (Vasconcellos et al., 2018). Parties identified their priority capacity building needs at regional consultative workshops – e.g., improved data collection at landing sites, stock assessment methodology, traceability work – and these needs were delivered in consultation and partnership with fisheries sector stakeholders, FAO, RFMOs, Parties, academia and NGOs (CITES-FAO, 2016).

There were almost unprecedented levels of investment by Parties and NGOs (e.g., the Pew Charitable Trusts' Global Shark Conservation Program) to support Parties in their implementation of CITES provisions for sharks after the listings at CoP16. This likely helped facilitate the inclusion of additional shark and devil ray species in Appendix II at CoP17, by assuring developing countries that they would receive some assistance in implementation of CITES for these species. After CoP17, the EU project was extended with an additional EUR 900,000 (USD ~970,000) for the *CoP17 Decisions and Resolutions Project*. Foundations (including the Shark Conservation Fund, a philanthropic collective established in 2016)[15] and importing Parties in addition to the EU continued to contribute significant investments. This underwrote *inter alia* regional and national workshops hosted by exporting Parties, largely in developing countries. For example, Southeast Asian Fisheries Development Center (SEAFDEC) has continued to organise shark landings data collection activities and workshops in Southeast Asia.

3.1.2 Capacity building meetings

It is challenging to estimate how many meetings have been held over the past 20 years since the first shark listing – in more than 100 range States and the six major CITES geographical regions – to discuss implementation for sharks. Among them were major regional consultative and capacity building meetings convened, organised and/or facilitated by the CITES and/or FAO Secretariats, international NGOs, and some RFBs (e.g., SEAFDEC). Combined, Bond et al. (2022) report that 95 Parties have attended at least one workshop, 63 Parties more than one, and four Parties, including Indonesia, more than six.

[15] https://www.sharkconservationfund.org/

Where these meetings were organised under the CITES-FAO MoU, they are described in the reports of the AC Shark Working Group. For example, in 2015, the report includes an Annex on the Declarations and Action Plan recommendations from three regional CITES Shark Workshops held in Africa and Asia in 2014 (CITES, 2015b). The 35 Parties that attended agreed on issues and priorities for sustainable shark fisheries, conservation and management; identified challenges faced and actions required to address needs (e.g., data collection and capacity building); and suggested methodologies for delivering these.

3.1.3 Identification materials – development and training

Given that CITES Parties are obligated to regulate international trade in listed taxa – and hence need to monitor at the species level, improvement in species identification skills are essential. FAO and RFB Members are also required to monitor fisheries (generally landings) and many also require capacity building for species identification.

Because most international trade is in shark parts, especially fins (83% by volume in the CITES Trade Database –n 2018 - Abercrombie et al., 2013; Pavitt et al., 2021), identification guides and tools have been a significant focus of listing implementation. Development of these identification guides helps assure Parties that listed species can be identified from whole animals at the landing site, and from parts and derivatives in trade. Indeed, the creation of such materials, among other implementation tools, was much discussed in preparing proposals and newly released examples of guides played a role in the votes to list sharks on Appendix II. Some listed species have very distinctive fins (e.g., whale shark, oceanic whitetip), but in other cases (e.g., hammerhead sharks, wedgefishes) Parties agreed the necessity of including 'look-alike' species from the same genus or family to make implementation of the Convention possible (in accordance with Article II.2.b. of the CITES treaty).

As shark species have been added to the CITES Appendices, FAO, NGOs and importing Parties have directed a great deal of effort to improving and promoting the resources available for the identification of whole bodies, detached fresh and dried shark fin (e.g., Abercrombie et al., 2013), and manta and mobulid ray gill plates. The first identification guides were prepared by the proponents of the first three large shark species listed in Appendix II, in accordance with Res. Conf. 11.19, and made available online through the CITES Identification Manual in the three CITES languages, as well as Cantonese, Indonesian and Mandarin.[16] Since then, a wide range of guides, manuals and posters have been prepared and translated (including into Arabic), are widely used in national and regional training and capacity building workshops, and many can be accessed on the CITES shark web pages.[17] A new three volume set of visual identification guides has recently been prepared for whole carcasses, trunks (carcasses with head and fins removed), and detached fins of several taxa listed in the CITES Appendices (Abercrombie & Jabado, 2022; Jabado & Abercrombie, 2022). In addition, TRAFFIC has developed a technique for printing realistic 3D shark fins for use in CITES identification training workshops (Bürgener et al., 2021).

FAO has commissioned iSharkFin, a software package for smart phones, aimed at port inspectors, Customs agents, fish traders and other users without formal taxonomic training. iSharkFin 1.4 (Algorithm 2021/4/21)[18] can identify 39 shark species from wet dorsal fins and seven species from wet pectoral fins, including 13 shark species and one ray species currently listed in the CITES Appendices (Barone et al., 2022). The plan is to extend iSharkFin to cover the fins of all the main shark species in trade, although questions remain about how to make it maximally effective. FAO is also working on the FishFinder 2.0 Development Platform, which aims to use a

[16] https://cites.org/eng/resources/wiki_id.php
[17] https://cites.org/eng/prog/shark/resources.php
[18] http://www.fao.org/ipoa-sharks/tools/software/isharkfin/en/

similar digital system to identify whole specimens of sharks and rays, tuna, billfish, sea cucumbers and ornamental fish in the aquarium trade (Anon, 2018).

The considerable amount of work undertaken, particularly since 2013, to prepare shark product identification materials has been matched by the series of regional and national workshops held to train fishery and Customs staff in their use and give them confidence to enforce CITES. Bond et al. (2022) identified shark species identification training workshops (some national, some regional) that have been attended by at least 53 Parties. During training, Customs and fisheries staff have been trained in the identification of dried shark fins and gill plates. In Hong Kong SAR, which is the largest importer of dried seafoods, Customs officers have received training in visual and genetic identification techniques for CITES-listed sharks at three workshops since 2014.

Despite the progress on visual identification guides for whole fins (particularly large fins) and mobulid gill plates, identification of shark meat, small fins and other products and derivatives remains difficult unless genetic techniques are used. Such genetic tools, first proposed in 2000 for basking shark identification, have advanced rapidly in recent– years - at least partly due to funding linked to CITES implementation – needs - with increasing reaction speed and declining costs (Abercrombie et al., 2018; Cardeñosa et al., 2018a). One reliable, field-based, fast (<4 hours), and cost-effective (USD ~1 per sample) multiplex real-time polymerase chain reaction (PCR) protocol is capable of detecting nine of the twelve sharks listed under CITES in a single reaction (Cardeñosa et al., 2018b), with a similar test available for European eels (Cardeñosa et al., 2019). Training in the use of rapid genetic identification tools to confirm visual identifications has been undertaken in important trade hubs. These tools have been now deployed to identify CITES sharks in trade in Hong Kong SAR, Indonesia, Belize, Brazil, Colombia, Ecuador, Guatemala, Peru, and Spain.

3.1.4 Non-detriment findings – development and training

Parties identified the need to develop an NDF framework for commercially-exploited sharks as among the earliest and most important implementation challenges associated with the Appendix II listings. This concern was manifest in Res. Conf. 9.16 (no longer in force), Res. Conf. 12.6 (Rev. CoP18) and numerous Decisions (e.g., 14.101/102/103/111/113/114), two of which are still active (18.220/223; Decisions in Table A1.2).

The German government provided a major catalyst for improved implementation by commissioning the development of user-friendly taxon-specific guidance for shark NDFs in 2013, immediately after the listings of commercially-important sharks at CoP16. The authors (Mundy-Taylor et al., 2014) reviewed existing NDF guidance for fishes (Foster & Vincent, 2013; Sant & Vasconcellos, 2008) and other taxa (e.g., Leaman & Oldfield, 2014; Rosser & Haywood, 2002) and undertook a broad consultation, including through two workshops, to finalise and share detailed guidance notes and worksheets for exporting countries before the listing came into effect in 2014. This guidance utilises a flow chart that can lead to a positive, conditional or negative result: exports may be allowed, allowed provided that certain conditions are met or actions taken, or simply not permitted at the present time, with or without recommendations for future action.

The CITES NDF guidance for sharks recommends, as a final step in the NDF process, identifying those further actions necessary to implement or improve data collection, management, compliance monitoring, enforcement of regulations, or other measures for the shark species under consideration (Mundy-Taylor et al., 2014). This process can be particularly important if an NDF is negative. It can also specify actions required if an NDF with conditions is produced. If prepared, this is, in effect, an action plan that can be used *inter alia* to mitigate the impact of exploitation upon stocks, enable sustainable trade if appropriate and science-based, and improve management of fisheries, monitoring and data collection. Implementing these actions will help Parties plan adaptive management, achieve incremental improvements in the status of stocks, and increase confidence with the NDF process. These action plans may also provide monitoring plans (see ***Monitoring guidelines***, below).

This NDF tool has been through two major developments since its original form (worksheets in a document), to an interactive excel file, to online software developed specifically for shark NDFs that is scheduled for release in 2022. Technical written guidance for NDFs has also been provided by the Fisheries Agency of Japan for aquatic species, Spain's Scientific Authority for manta rays, and there are regional NDF templates for hammerhead sharks and manta rays in Oceania. These and other implementation tools, as well as examples of NDFs, are available through a CITES webpage for sharks and rays, also developed after CoP13,[19] and provide a valuable resource for Parties that would also be beneficial for other taxa.

Numerous regional and national shark NDF workshops have been held at the request of exporting countries and territories, with support from the EU project (delivered through FAO and CITES), Parties and NGOs. Examples include workshops that developed NDFs through application of the NDF guidance supported by Germany in Bangladesh, Belize, Costa Rica, Ecuador, India, Mozambique, Oman, Peru, Senegal, Sri Lanka and Taiwan, Province of China – this is not a complete list.

3.1.5 Legal acquisition findings – development and training

Efforts to make LAFs for sharks encounter similar constraints to those for other marine fishes (e.g., ensuring animals are not caught in violation of national fisheries regulations or other relevant national laws or regulations), but also include dealing with pre-convention stockpiles of dried products, and considerations associated with the taking of species in areas beyond national jurisdiction (introduction from the sea, IFS).

There are several circumstances in which LAFs are unlikely to be possible for CITES sharks. For example, products from species whose take is prohibited across most of their range should be assumed to have been illegally acquired, unless the specimen is traceable from a legal fishery or was obtained under a special permit (i.e., there must be evidence of a chain of custody). Thus, for example, because most tuna RFMOs have banned retention of the oceanic whitetip shark in all fisheries, an LAF for a specimen of this species would likely require confirmation that it had been taken legally by an artisanal catch in an Indian Ocean littoral State (the only exemption from tRFMO prohibitions), or to have been obtained under a special permit (e.g., for scientific research).

The same constraint applies to exports from countries that protect most CITES Appendix II species (e.g., Philippines), or which have prohibited all shark fishing (Maldives, and many other Parties have created shark sanctuaries – see ***National level protection***, below). Even if a shark sanctuary country has not also banned shark trade, any specimens landed from the exclusive economic zone (EEZ) could not have been legally obtained. Sharks taken in contravention of fisheries regulations (closed seasons, gear restrictions, area restrictions, all of which are widely used by fishing nations) are also illegal in the CITES context.

Furthermore, the 123 Parties to the Convention on the Conservation of Migratory Species (CMS) have agreed to protect species that are listed in CMS Appendix I. Since several CITES Appendix II species are also included in CMS Appendix I (Table 3.1), unless a CMS Party has taken out a reservation on the relevant CMS Appendix I listing, they will not be able to make CITES legal acquisition findings for that species.

Parties have reported their experiences to the CITES Secretariat, and the shark working groups of the AC and SC (see ***Making LAFs***, below), and these have informed documents for discussion at CoP19 (2022). CoP19 will be invited to adopt a revised Decision, requesting the SC to develop guidance on the making of LAFs and related assessments for sharks. This will focus on CITES-listed sharks taken in areas beyond national jurisdiction (IFS), and guidance on the control of monitoring of stockpiles of shark parts and derivatives, particularly for specimens

[19] https://cites.org/eng/prog/shark

caught before CITES listings came into effect. This is important, because IFS requirements for landings of sharks caught in the high seas (which came into effect in 2020) appear not to have been implemented by all fishing Parties, including those lacking implementing legislation for IFS (Okes & Sant, 2022). By mid-2022, there were only 22 records of specimens 'taken in the marine environment not under the jurisdiction of any State', all of these for shortfin mako.

3.1.6 Monitoring guidelines – development and training

With the development of the FAO IPOA–Sharks during the late 1990s, FAO prepared detailed guidance for implementing the voluntary IPOA–Sharks from subnational to global level, including protocols for fishery monitoring data collection and research requirements, and the use of common, shareable databases for transboundary species (FAO, 2000).

Subsequently, CITES and FAO initiated collaboration under a MoU, signed in 2006, *inter alia* to improve research and data collection on the commercially exploited aquatic species listed in the CITES Appendices. This work applies to both fisheries and trade and is focused on the species level. Following the first listing of commercially-exploited sharks in Appendix II, in 2013, these joint CITES-FAO activities expanded considerably with funding from the EU (see ***Funding through CITES***, above).

Most recently, as part of the CITES-FAO programme, FAO undertook 28 surveys of shark fishery data collectors and managers in 19 countries, distributed from the Mediterranean to Africa, Asia and Oceania, to review the data being collected (FAO, 2021). FAO then generated guidance on standardized information metrics to strengthen the opportunity for harmonized reporting and comparison across surveys. The report of this study highlighted the opportunities and constraints in collecting information on sharks in fisheries, based on practical experience, and proposed a list of the minimum standard measurements and common life-history parameters required to support the assessment of shark stocks in fisheries.

For pelagic shark species, the five tRFMOs have agreed mandatory data collection and reporting requirements for their Contracting and Cooperating Parties (CCPs = Members – all States that are Members of tRFMOs are also CITES Parties). The first joint tRFMO bycatch meeting in 2019 shared data recording, assessment tools and monitoring methods applied for pelagic bycatch (including CITES-listed sharks; ICCAT, 2019). Data-related recommendations from this meeting were referred to the International Commission for the Conservation of Atlantic Tunas (ICCAT) Technical Working Group. FAO (2021) has also reviewed how the tRFMOs collected data on management measures applied to sharks, including "no retention" measures.

Genetic analyses that identify species in trade can assist compliance, by confirming the visual identification by Customs of illegal imports lacking the required CITES documentation (Abercrombie et al., 2018; Cardeñosa et al., 2018a). They can also help assess whether volumes of products in international markets are consistent with the amount of trade declared to CITES; Customs records are taxon-specific for CITES species but other species are rarely identified in trade records for shark meat and never for shark fins (Dent & Clarke, 2015). The new genetic shark species identification techniques (see ***Identification materials***, above) are now being used in a long-term survey to allow species-specific trends to be monitored in the shark fin retail markets of China (mainland and Hong Kong SAR; Cardeñosa et al., 2018b; Fields et al., 2018). This survey has created a baseline by using molecular identification protocols to examine the species composition of randomised samples of fin trimmings discarded from the dried seafood processing industry as a proxy for the composition of the shark fin trade in Hong Kong SAR (2014–15) and closely-linked markets in mainland China (2015–17; findings under ***Changes in trade***, below).

3.1.7 Data generation and synthesis

The first assessment of needs for effective implementation of the listings of commercially-exploited marine species identified the lack of data on catches and population status as a major challenge, and emphasised the urgent need to address this by improving the identification of species in trade (Mundy-Taylor & Crook, 2013). To do so requires the identification of sharks in fisheries and landings, when it is easier to record at species level and the chain of custody for traded products needs to start.

The shark catch and trade data collected by fishing nations and entities varies greatly in quality, taxonomic resolution, and availability (e.g., FAO FishStatJ, 2021). Data reporting from artisanal fisheries is likely to be less detailed than that from industrial fisheries, due to the sheer numbers of vessels and landing sites used by the former, compared with the latter. Lack of capacity to record data results in the 'lumping' of data into higher taxonomic categories such as 'sharks and rays nei' (not elsewhere identified), or as 'marine fishes nei', or 'miscellaneous marine fishes' in some countries. Having said that, taxonomic resolution has improved in recent decades (Cashion et al., 2019; see Level 3, ***Monitoring***). The CITES listings and capacity building initiatives described above have also stimulated the collection and synthesis of new data from some of the largest shark fishing nations and in countries where capacity building is most needed. These initiatives have involved FAO, RFBs, national agencies, NGOs and researchers, and have covered *inter alia* fisheries, landings, public awareness of CITES measures, and trade; they are too numerous to list here.

The statistical fisheries data that are collected nationally may not always be published or readily available in unpublished form/grey literature. National logsheet recording practices may vary considerably. Members of RFBs are generally required to provide at least some catch data on relevant fisheries to their RFBs, but reference to compliance reports of these bodies indicates that not all comply fully (Ewell et al., 2020; Koehler, 2021). National statistics may sometimes be more detailed than those in RFB databases, which in turn can be more detailed than the data presented in FAO FishStat (Vasconcellos et al., 2018). It is unclear at which point in the reporting process the amalgamation and loss of taxonomic detail takes place.

Global trade monitoring for sharks has often focused upon Hong Kong SAR, not only because this is the world's largest importer and exporter of shark fins, handling 6,000 t annually, representing about 50% of the global shark fin trade, but also because its trade database has historically distinguished between frozen, dried, processed and unprocessed shark fin (Cardeñosa et al., 2020; Clarke et al., 2006a; Clarke et al., 2006b; Fields et al., 2018; Shea & To, 2017). Trends in trade through such hubs are considered highly representative of the global picture, although some species known to enter trade (e.g., wedgefishes) have not yet been identified during surveys of retail markets.

Friedman et al. (2018) noted the small number of records in the CITES Trade Database by 2017 (36 export transactions from 13 countries). Also, in 2018, the CITES AC (CITES, 2018b) raised concerns about the apparent mismatch between trade records and knowledge of catches of listed species. This was, however, relatively early during the implementation of commercial shark listings (there were over 1,100 records in the CITES Trade Database by May 2022, including 170 in 2019, and 242 for 2020). TRAFFIC's review of these 'missing sharks' examined historical and current fishery and trade data, by species and country, to identify possible cases of undetected trade in shark catches (Okes & Sant, 2022). This study considered possible under-reporting of IFS, and the possible involvement of flags of convenience.

3.1.8 Technical advice and briefings to CITES

Many briefing documents on CITES implementation for sharks have been presented to meetings of the CoP, the AC and SC and their Shark Working Groups during the past three decades (Table A2.2). These have been prepared by Parties, the Secretariat, the IUCN SSC Shark SG, FAO, and NGOs — most notably TRAFFIC, also

Pew Charitable Trusts, Wildlife Conservation Society (WCS) and World Wide Fund for Nature (WWF). They have been considered at ten CoPs, 20 AC meetings (the AC has had a Shark Working Group continuously since 2002), and several SC meetings.

The vast majority of input has been to AC meetings (Table A2.2). A first pass tallied 106 total documents that focus on, or mention, sharks across 20 AC meetings since AC12 (1995). Topics of agenda and Information Documents (Inf Docs) covered (in no particular order) a wide array of concerns: information on species of concern; information on fishing and trade; Party activities regarding sharks and rays; identification manuals; NDF guidance (including the use of risk assessments); progress on implementation, including with the FAO IPOA–sharks; harmonized Customs codes; coordination between CITES and RFBs; workshop reports; and intersessional CITES Working Group reports, *inter alia*.

Fewer documents have been submitted to SC meetings – a total of 20 documents across eight SC meetings (since SC35, 1995; Table A2.2). Topics of agenda and Inf Docs ranged across many issues (in no particular order): capacity building; intersessional Working Group reports; LAFs; the possible undetected, unreported trade in CITES-listed sharks implied by the mismatch between fisheries and trade data; and traceability.

A total of 48 briefing documents have been contributed across ten CoPs (since CoP9; Table A2.2). The agenda and Inf Docs included (in no particular order): conservation, management and trade summaries; identification guidance; NDFs; risk assessments; FAO reports related to listing proposals; and Party documents related to listing proposals (mostly).

3.1.9 Action by CITES as a whole

Along with action for shark conservation and management at ten consecutive CoPs from 1994 to 2019, CITES has also addressed shark conservation and management concerns at 20 AC meetings since 1995 (all with input from the IUCN SSC Shark SG, and over a dozen NGOs), and about ten SC meetings. Two Resolutions (the first repealed, the second regularly updated and still active after 20 years in force) and almost 40 Decisions referring to sharks have been adopted, and numerous associated Notifications issued (Table A1.2). Many of these Decisions referred to implementation of the CITES listings. A dozen Decisions have addressed other topics that are important for the successful implementation of shark listings, including NDFs, IFS, capacity building, LAFs, and stockpiles.

Among all this action, the most notable support for sharks came in the form of the agreement by Parties to list some species (requiring a 2/3 majority of Parties voting); the EU implementation grants that enabled so much capacity building work to be undertaken, coordinated by the CITES Secretariat, FAO, and RFBs; support from many other Parties for capacity building and implementation; and the active engagement and financial support of several foundations and NGOs concerned both with support for implementation of the listings in addition to advocacy for listing sharks on the Appendices.

3.2 Level 2: Policy outcomes (governance change)

The first three sharks added to Appendix II at CoP 12 and CoP13 – basking shark, whale shark and white shark – were already widely protected through wildlife or fisheries measures and no longer of significant commercial importance by the time the listings were agreed. Three of the next elasmobranch taxa to be listed, at CoP16, also already had widespread protection: (i) oceanic whitetip shark had become a prohibited species in all industrial oceanic fisheries managed by the tRFMOs; (ii) several important range States had protected the two manta ray species; (iii) one of the two target fisheries for porbeagle shark had closed, the other was under rigorous control, and there was only one bycatch fishery in the southern hemisphere. This made implementation of these listings relatively straightforward and few governance changes were required. However, a much larger number of Parties (many with large artisanal fleets in developing regions) catch, land, consume, and trade products of the shark species that were listed next – hammerhead, thresher, silky and mako sharks, and the mobulids, giant guitarfish and rhino rays – in a far wider range of fisheries. As a result, there has been a greater need for Parties to adopt or amend policies and regulations to implement the shark listings agreed during the past decade.

CITES, through its Committees and the meetings of the CoP, continues to monitor progress with implementation of the shark listings; this work has provided an important source of information for this review. For example, CITES Decision 18.220, adopted in 2019, directed the Secretariat to issue a Notification to Parties requesting new information on their shark and ray conservation activities (Notification 2020/016; Table A1.2), in particular the following: making NDFs and LAFs; identification of products in trade; recording stockpiles of commercial and/or pre-Convention parts and derivatives for Appendix II species; and controlling the entry of these stocks into trade. The Secretariat's analyses of the result of this Notification were provided to the AC and SC (AC31, 2021, and SC74, 2022; see Table A2.2). Nineteen responses were received from 18 Parties and one region, the latter collating responses from three additional Parties and an intergovernmental organization (IGO). These documents, their recommendations, and the summary reports of Committee and Working Group discussions are important sources for this section (CITES AC31 Doc. 25; AC31 Doc. 25 Annex 2; SC74 Doc. 67.1; SC74 Doc. 67.2; SC74 Doc 67.3; and SC74 Sum. 8 Rev. 1; see Table A2.2). These reviews are ongoing and will not be concluded in 2022. CoP19 will therefore be requested to adopt new Decisions to allow work to be continued across a spectrum of CITES activities: NDFs, LAFs (including for trade in sharks caught on the high seas/in areas beyond national jurisdiction – IFS); guidance on the control and monitoring of stockpiles, particularly for pre-convention specimens; support for engagement with and capacity building of RFBs; reviewing FAO Catch Document Schemes; and continued collaboration between the CITES and FAO Secretariats.

Implementation by Parties of the CITES shark listings builds to some extent upon UN-level shark management activity that pre-dates the listings. The FAO IPOA–Sharks, adopted in 1999, has the objective of ensuring the conservation and management of sharks and their long-term sustainable use. It urged shark fishing States to carry out regular assessments of the status of shark stocks and to develop a Shark Plan by 2001. Technical Guidelines were developed to assist them to do so (FAO, 2000). Successful implementation of the IPOA–Sharks might have made CITES engagement unnecessary, or at least have given shark fishing countries and entities an important head-start with the implementation of the first CITES listings in 2002, particularly since the IPOA–Sharks noted that Shark Plans should aim to "Facilitate the identification and reporting of species-specific biological and trade data" (FAO, 2000). However, the IPOA–Sharks is voluntary and its uptake was initially slow (as recognised by CITES in 2002).

One year before CoP13 listed the first commercially-exploited sharks and rays, an FAO review of IPOA–Sharks implementation over the previous decade focused on the 26 countries that reported at least 1% of global elasmobranch catches, and combined were responsible for 84% of catches (Fischer et al., 2012). Eighteen of these had developed national Shark Plans (based on FAO's IPOA-Sharks guidance). Management measures

adopted included shark finning prohibitions, closed areas and seasons, by-catch/discard regulations, protected species, total allowable catches (TAC) and quotas, and special reporting requirements (these measures could potentially be applied to CITES-listed species and utilized in the making of NDFs). Despite improved reporting to FAO, both of fisheries catches in general and the taxonomic resolution of shark data, the annual reported shark catches had declined almost 20% from 2000 to 2009. Since there were insufficient management constraints in place to account for this change and only a positive change in the form of more detailed patterns of catch reporting, declining stocks were, in most ocean basins, the most likely reason for falling catches. Data collection and research on sharks was found to be lacking in several regions. Most of these countries reviewed were members of at least one RFMO with internationally binding shark management measures in place for high seas fisheries, and 46% of them had either signed the 2009 FAO Port State Measures Agreement (PSMA) or adopted a National Plan of Action on IUU fishing or equivalent, all of which can also support the implementation of CITES for sharks.

A subsequent FAO review examined the impact of CITES shark listings in the Southeast Asia region, based on a structured survey of expert opinion (Friedman et al., 2018). The study was conducted in 2016, some 18 months after the 2013 shark listings had come into effect (implementation of the listings was delayed by 18 months). The authors applied a framework to assess changes across 56 management and conservation measures between 2013 and 2016; before and after the listings. The framework partitioned the complexity of fisheries management within five sectors, including governance, fisher(y), stocks, markets and sociocultural. The review noted that some management changes were already underway before the CITES listings, presumably due to the fisheries measures adopted under IPOA-Sharks. Still, the CITES listings were considered to have had had a measurable and mostly positive, albeit small, overall effect on shark fisheries management change across the region. The management response was considered to have been limited by difficulties in NDF development. Governance (policy and regulation) in the region recorded a relatively large positive change from 2013 to 2016, despite starting from a high base. Reporting of the resource (stock) and its trade showed less implementation progress at that stage.

The review by Freidman et al. (2018) further noted that management changes and their impacts varied among the eight countries reviewed. Most countries had put in place stricter fishing and trade controls since the listings. Five countries reported positive or mostly positive impacts from the CITES listings, including Malaysia – particularly for governance, and Indonesia – for governance and the market sector (structures and prices). One country (Japan) reported no influence, and the other two (Cambodia and Viet Nam) a negative or mostly negative influence – although Cambodia and Viet Nam, together with Indonesia and the Philippines, had experienced among the largest changes in management. The smallest management changes were reported in Japan and Myanmar. The level of external support for the implementation of CITES provisions (and related management) was largely positive, as was CITES influence on management change. All countries noted ongoing challenges in maintaining legal trade in CITES-listed sharks (participants reported few NDFs, and those were still in preparation). When broken down by sector, 57% reported a positive influence and only 10% negative. Participants identified the following pressing needs: more effective data collection and data support for fishery, stock and market sectors; more enforcement agents; traceability mechanisms for markets; stock assessment capability; species-specific catch records; and training to improve capacity in all of the above. The findings of this study are summarised in the appropriate sections below.

3.2.1 Reservations

Several countries have taken out reservations for shark species (Table 3.2). These are a policy statement that the country entering the reservation will not comply with the CITES listing and wishes to be seen as a non-Party for that species. Some Parties and experts consider reservations to undermine the effectiveness of CITES (CITES, 2019a). Parties that take out reservations do not need to explain the reasons for their decision. Sometimes this is

a political statement, announced because the Party does not consider that CITES' engagement is appropriate for marine fishes (e.g., Iceland, Japan, Norway, Republic of Korea), although the Party may still fully implement the listing. Others are temporary, having been registered to provide a Party time to develop or improve its capacity for implementation (e.g., Palau, Indonesia's reservation for mako shark, and Guyana).

Table 3.2. Reservations for shark species taken by CITES Parties.

Species	Year*	Countries taking out Reservations
Cetorhinus maximus	2002	Iceland, Indonesia, Japan, Norway, Republic of Korea
Rhincodon typus	2002	Iceland, Indonesia, Japan, Norway, Republic of Korea, (Palau withdrew reservation in 2016)
Carcharodon carcharias	2004	Iceland, Japan, Norway, (Palau withdrew reservation in 2016)
Carcharhinus longimanus	2014*	Guyana, Japan, (Canada withdrew reservation in 2015)
Sphyrna lewini, S. mokarran, & S. zygaena	2014*	Guyana, Japan, (Canada withdrew reservation in 2015)
Lamna nasus	2014*	Denmark (re. Greenland), Guyana, Iceland, Japan, (China withdrew reservation in 2014, Canada in 2015)
Manta spp.	2014*	Guyana, (Canada withdrew reservation in 2015)
Mobula spp.	2017*	NONE
Carcharhinus falciformis	2017*	Japan
Alopias spp.	2017*	Japan
Isurus oxyrinchus & *I. paucus*	2019	Botswana, Democratic Republic of the Congo, Eswatini, Japan, Namibia, Norway, South Africa, United Republic of Tanzania, Zambia, Zimbabwe, (Indonesia, until May 2021)

** Indicates years in which listing came into effect after implementation had been delayed (by 6, 12 or 18 months).*
Source: UNEP-WCMC (2022a).

3.2.2 National level protection

National measures to protect sharks in some way, which may pre- or post-date the CITES listings, are not uncommon for CITES-listed sharks, particularly for those species classified by the IUCN Red List of Threatened Species as Endangered or Critically Endangered, or that are of high non-consumptive value (e.g., for ecotourism, in the case of the largest species). Such safeguards may be applied through wildlife conservation or fisheries legislation, and will often (but not always) prohibit domestic and/or international trade in shark products. This might be achieved through setting a catch quota at zero, or by making landing, retention, or possession illegal.

Bond et al. (2022) identify 85 Parties (including the EU and many of its Member States) that have protected, to some extent, between one and 32 of the CITES-listed shark species occurring in their waters. We do not list all 85 Parties here, nor do we determine for all examples when protection was declared and whether (i) the species was already protected in the Party's waters and the Party sought to extend that protection through a CITES listing (this is true for the earliest proposals for basking, whale and white sharks), or (ii) a species was protected nationally after a CITES listing because of heightened awareness of the threats it faces, or because the Party was required to do so because of its stricter domestic legislation (see below). This assessment would be particularly difficult for shark listing proposals that were co-sponsored a decade ago by large numbers of Parties with varying levels of domestic conservation and management measures. We do, however, provide some examples.

Shark sanctuaries:
Bond et al. (2022) identified ten shark sanctuaries that protect all species within their EEZs. Six of these were designated before the CITES listings in 2013, four afterwards (not including Israel – see below). National legislation for shark sanctuaries (particularly the first six designated) generally prohibits the landing, retention, possession, trade and sale of all sharks and shark products to facilitate enforcement. Additional species-specific trade regulations for CITES species are generally unnecessary when all shark species are strictly protected and commercial fishing prohibited within the Party's EEZ (unless flag vessels are engaged in a high seas fishery that retains sharks).

Ward-Paige (2017) lists 11 and Ward-Paige and Worm (2017) list 15 small island and coastal States and overseas territories/dependencies that, combined, have prohibited commercial shark fishing across about 3% of the world's oceans (the different totals are due to the sanctuary legislation adopted by four more countries in 2016). The great majority of the 15 have valuable international tourism industries, including dive tourism. They have enacted sanctuary legislation to protect the sharks on which this industry depends. These sharks are a mixture of CITES-listed species (e.g., whale shark, mantas, hammerheads) and five reef sharks in genus *Carcharhinus* and *Triaenodon obesus* (unlisted). Many of the shark sanctuary Parties have co-sponsored CITES shark listing proposals, but they did not adopt their marine protected area to implement CITES listings for sharks.

Stricter domestic legislation:
A few Parties (e.g., Philippines) have stricter domestic legislation for CITES species and are required by law to protect any marine species listed in the CITES Appendices. Therefore, no imports or exports of shark products are permitted. Other Parties have made the decision to add all or most CITES Appendix II shark species to their national protected wildlife lists (see below).

Species-specific measures:
Several Parties (including Australia, Croatia, Ecuador, India, Malta, Philippines, UK, and the US in its Atlantic waters) had protected one or more threatened shark species before they were listed in CITES. In some cases, this was stimulated by the species' inclusion in the strictly protected lists of another Agreement (e.g., the Bern and Barcelona regional conventions for Europe and the Mediterranean, respectively). Israel protected all shark species in its waters in 1998.

Bond et al. (2022) identified 35 Parties that have prohibited trade in products from some shark species listed in CITES; a few of these Parties also protect and prohibit trade in additional shark species. Examples (this is not a complete list) include:

- Bangladesh – all CITES species with the exception of silky shark, are protected under the Wildlife Act 2012
- Malaysia – prohibited fishing for whale shark and sawfishes following their CITES listings, then added manta rays, great hammerhead and oceanic whitetip, listed by later CoPs, to the Fisheries Act 1985 and Fisheries (Control of Endangered Species) Regulations 1999; Malaysia has also adopted a zero quota for export and import of CITES-listed species.
- Viet Nam – has prohibited fishing of CITES-listed sharks, though has no regulations prohibiting international trade (Friedman et al., 2018).
- Indonesia – fully protected whale shark and manta rays, prohibiting fishing, retention, utilisation and trade throughout the country and its EEZ under Ministerial Decree in 2014; this decision was primarily in recognition of their high economic value for ecotourism and the challenges associated with ensuring the sustainable use of such biologically-vulnerable large-bodied species, although the CITES listings apparently played a key role as a high-level catalyst for change; Indonesia continues to regulate exports of commercially important CITES sharks (see below).

- Colombia, Gabon, and Monaco – have prohibited trade in all shark products, regardless of species; in Gabon, this measure complements measures that fully protect some shark species and prohibit the targeting of others.

CMS measures:
The most widely protected CITES-listed sharks (Bond et al., 2022) are those that were among the earliest species to be listed, and which are also listed in CMS Appendices: whale shark (CMS I&II), oceanic whitetip (CMS I), white shark (CMS II) and basking shark (CMS I&II) (Table 3.1). CITES Parties that are also Party to CMS are required to fully protect species that are listed in CMS Appendix I (and prohibit all take). Under these circumstances, it's unlikely that a Party that is fulfilling its CMS obligations would be able to issue a valid legal acquisition finding for sharks caught in their waters, and in such a case export of products derived from these species could not be authorised. In the case of Australia, their stricter domestic measures also require CMS Appendix II species to be protected under national law (unless a reservation to the CMS listing is taken out – which Australia has done for the three species of thresher shark and three large hammerheads that are listed in the Appendices of CMS and CITES).

3.2.3 Making non-detriment findings (NDFs)

Challenges of developing NDFs for sharks were, as for other commercially exploited marine fishes, initially a source of concern to some Parties (e.g., Friedman et al., 2018; and see ***NDFs frameworks – development & training*** above). NDFs are challenging for many CITES-listed taxa, but they are fundamental to the effectiveness of CITES, and its goal of ensuring that the species in question do not become threatened or eligible for inclusion in Appendix I. They are also in line with general management practices for sustainability in fisheries and, hence, Parties should generally be familiar with the basic principles for management planning. Parties that are more experienced in developing NDFs for terrestrial species may not initially realise that in many cases there is more information for sharks than for data-poor terrestrial species, for which the equivalent of fishery 'stock assessments' do not exist, and that user-friendly shark NDF guidance is increasingly available.

Following a relatively slow start (likely due to the small amount of trade in the first few species listed) there has now been substantial progress with making NDFs for CITES sharks in recent years, particularly since the publication of shark and ray NDF guidance and capacity building through NDF workshops (see Level 1, ***NDFs frameworks – development and training***). Although Parties are not obliged to share their NDFs (unless an importing Party requests a copy from the exporting Party), doing so through the CITES website is becoming increasingly common. Such proactive sharing is helpful to guide other Parties, both those seeking guidance in authorising exports and those regulating imports. Australia, Japan, and the US were the first Parties to demonstrate an unprecedented level of transparency by voluntarily sharing their NDFs for shark species through the CITES website, thus encouraging other Parties to follow suit.

At the time of writing, nine Parties have made 45 NDFs, 35 positive and ten negative, across 17 shark and ray species, publicly available on the CITES website (CITES, 2020b; 2021d; Table 3.3). Some have aggregated taxa by family (e.g., all hammerheads, all threshers). Some of these 45 NDFs were for the same Party-species combinations but for different years. Most NDFs were for one-year periods, but some spanned two - three years (for example, when reasons for a negative NDF seemed unlikely to change soon) and others were for periods as short as six months. CITES has no requirements for the extent of an NDF – it can be on a permit-by-permit basis, annual, or multi-annual. Fishery TACs and quotas are usually set by year, or by fishing season, and it would be logical for NDFs to be adopted for the same period when the two are linked.

Table 3.3. Non-detriment findings case studies for sharks.

Case study / Title	Country	Year	Reports (links to pdfs)
NDF for 5 CITES Appendix II shark species: Scientific information for NDF development, advice on fisheries management information (*Sphyrna lewini, Sphyrna mokarran, Sphyrna zygaena, Lamna nasus, Carcharhinus longimanus)*	Australia	2014	Non-detriment findings: five shark species
Shark and Ray Species in Indian waters (*Sphyrna lewinI, Sphyrna zygaena, Sphyrna mokarran, Carcharhinus longimanus, Manta birostris, Manta alfredi)*	India	2017	Non-detriment findings India
Alopias spp.	Costa Rica	2020	Reponse-Notif-NDF-Alopias-CostaRica
Alopias spp.	Guatemala	2021	NDF-Guatemala-Alopias-2021
Alopias vulpinus (common thresher)	United States (US)	2017	AOSA174 Export of common thresher harvested in the commercial fishery by U.S. fisherman in Atlantic Ocean, Gulf of Mexico, Caribbean Sea, 2017 - 2018 harvest season
Carcharhinus falciformis (silky shark)	Costa Rica	2020	Reponse-Notif-NDF-C.falciformis-CostaRica
Carcharhinus falciformis (silky shark)	Guatemala	2021	NDF-Guatemala-C.falciformis-2021
Carcharhinus falciformis (silky shark)	Indonesia	2018	Document of NDF for Silky Shark in Indonesia
Carcharhinus falciformis (silky shark)	New Zealand	2017	NDF for silky shark 2017
Carcharhinus falciformis (silky shark)	Sri Lanka	2017-2019	Sri Lanka NDF for silky shark 2017-2019
Lamna nasus	New Zealand	2014	NDF for porbeagle 2014
Manual de procedimientos para emitir consideraciones técnicas por especie para la formulación de Dictámenes de Extracción No Perjudicial (NDF): Tiburones	México	2021	CONABIO_NDF tiburones
Manual general de procedimientos para la formulación de Dictámenes de Extracción No Perjudicial (NDF)	México	2021	CONABIO_Versión Internacional General
Sphyrna spp.	Costa Rica	2020	Reponse-Notif-NDF-Sphyrna-CostaRica
Sphyrna spp. (Hammerhead species, *Sphyrna lewini*, *S. mokkaran*, *S. zygaena*)	US	2015	NDF on 3 hammerhead species
Sphyrna lewini (Pacific NDF Template for the Scalloped Hammerhead)	Pacific region (JCU-CSTFA)	2016	Pacific NDF template Scalloped Hammerhead S.lewini
Sphyrna spp. (scalloped hammerhead, smooth hammerhead and great hammerhead sharks)	US	2017	AOSA167 Export of 3 hammerhead sharks harvested in the commercial fishery by US fisherman in the Atlantic Ocean and Gulf of Mexico in the 2017 harvest season
Sphyrna zygaena (smooth hammerhead shark)	New Zealand	2014	NDF for smooth hammerhead 2014
Mobula japonica (spinetail devil ray)	New Zealand	2017	NDF for spinetail devil ray 2017
Lamna nasus (wild porbeagle shark)	US	2015	NDF on porbeagle shark
Lamna nasus (wild porbeagle shark)	US	2017	Export and introduction from the sea of wild porbeagle shark harvested in the commercial fishery by US fisherman in 2017
CITES Non-detriment Findings Guidance for Shark Species - A Framework to assist Authorities in making Non-detriment Findings (NDFs) for species listed in CITES Appendix II	Germany	2014	Shark NDF guidance incl Annexes
NDF Guideline for Aquatic Species	Japan	undated	NDF_Guideline_for_Aquatic_Species
Trade of CITES-listed sharks: Japan's experience on NDFs [contains examples of 3 negative NDFs]	Japan	undated	Trade of CITES listed sharks Japan Practice on NDF Updated.PPTX
NDF Guideline for Manta Rays	Spain	2014	Spain CITES Authority-NDF Guideline Mantas_ES
Isurus oxyrinchus (shortfin mako) in Pacific Oceans	US	2020	Response-Notif-NDF-advice-shorfinmako-USA
Mobula thurstoni (bentfin devil ray)	US	2020	Response-Notif-NDF-bentfin-devilray-USA
Mobula hypostoma (lesser devil ray)	US	2020	Response-Notif-NDF-lesser-devilray-USA
Manta birostris (oceanic manta ray)	US	2020	Response-Notif-NDF-oceanic-mantaray-USA

Of the positive NDFs that have been shared, only one Party reported using an export quota, for meat and fins, as a component of their NDFs across four species. Instead, 22 reported using a catch quota to ensure sustainability of the species in question. It is, of course, necessary that NDFs and national catch quotas take into account all offtake of the species, whether for domestic use or international trade, including catch of shared stocks by other Parties, as the key issue is the impact on the species in the wild.

Eighteen positive NDFs reported that trade could be deemed sustainable as long as catches complied with existing national fisheries regulations for the species. Six positive NDFs explicitly incorporated monitoring, and three called for new data generation and/or synthesis in support of sustainable exploitation. While most of the positive NDFs were for export of shark meat and/or fins, three were for export of a very small number of live caught rays for aquarium display.

The negative NDF findings for two Party-species combinations were on the basis that the products could not be legally acquired due to existing RFB or national legislation. In such cases, the finding really amounted to negative LAFs, with an NDF therefore not applicable. However, completing the NDF process is still useful to identify measures that could be adopted to enhance knowledge, awareness, management or other actions that would contribute to improved stock status. Three other negative NDFs were reportedly due to lack of information on which to base the assessment, and three more were considered temporary findings while the Party collected further information on which to base an assessment. It is possible that Parties are less likely to share negative NDFs, although these are also very important documents. In light of some of the internal pressures put on CITES SAs in some countries to not issue negative NDFs, the sharing of negative NDFs would also be very helpful.

Several other Parties have produced NDFs (positive, negative, with or without conditions), including during NDF workshops, but have not shared them publicly. While the existence of positive NDFs can be inferred when export records appear in the trade database, since they are required under the treaty, if they are not published there is no way to know the scientific basis of a positive NDF, or to discern when negative NDFs have been made. As more NDFs are shared, this might encourage CITES Parties to consider some form of mandatory posting of NDFs, to enable importing countries, industry, and consumers to be assured of the sustainability and compliance with CITES of the product in trade.

We anticipate that remaining implementation challenges associated with preparing NDFs will be resolved as Parties and RFBs continue to provide guidance on stock status, sustainability, and appropriate mitigation measures for shared stocks, and/or adopt additional species-specific Conservation and Management Measures (CMMs – see Table 3.4; CITES, 2022e).

It is a very positive development that participants in national workshops that address the NDF framework for sharks (Mundy-Taylor et al., 2014) are using these opportunities to develop NDFs that can be immediately put into use. Moreover, it is encouragingly clear from the authors' personal engagement in shark NDF workshops that Parties are not only selecting from traditional management options that will improve stock sustainability but also identifying an ever-wider range of actions.

Table 3.4. RFMO management status of sharks and rays listed in the CITES Appendices (CM/CMM: Conservation [and Management] Measure. Prohib: prohibited. *: exemptions apply. ERS: ecologically-related species). Source: Fowler et al., 2021.

Species	CCAMLR	CCBST	GFCM	IATTC	ICCAT	IOTC	NEAFC	WCPFC
Alopias pelagicus Pelagic Thresher Shark		Prohib.				Prohib.		
Alopias superciliosus Bigeye Thresher		Prohib.			Prohib.	Prohib.		
Alopias vulpinus Common Thresher		Prohib.				Prohib.		
Carcharhinus falciformis Silky Shark		Prohib.		*Prohib.	Prohib.			Prohib.
Carcharhinus longimanus Oceanic whitetip		Prohib.		Prohib.	Prohib.	Prohib.		Prohib.
Carcharodon carcharias White Shark			Prohib.					
Cetorhinus maximus Basking Shark			Prohib.				Prohib.	
Isurus oxyrinchus Shortfin Mako Shark			Prohib.		*Live release			
Isurus paucus Longfin Mako								
Lamna nasus Porbeagle		Prohib.	Prohib.		Prohib.		Prohib.	
Rhincodon typus Whale Shark		Prohib.		Prohib.		Prohib.		Prohib.
Sphyrna lewini Scalloped hammerhead		Prohib.	Prohib.	Live release	Prohib.			
Sphyrna mokarran Great hammerhead		Prohib.	Prohib.	Live release	Prohib.			
Sphyrna zygaena Smooth hammerhead		Prohib.	Prohib.	Live release	Prohib.			
Genus *Mobula* Devil Rays (incl Mantas)		Prohib.	Prohib. (*M.mobular*)	*Prohib.		Prohib.		Prohib.
Family Pristidae Sawfishes			Prohib.					
Family Glaucostegidae Giant guitarfishes, six spp								
Family Rhinidae Wedgefishes, ten spp			Prohib. (2 spp)					
Generic: Finning prohibited		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Generic: Live release	CM 32-18			Yes	Yes			
Generic: Bycatch mitigation/limits		ERS mitigation		Yes	Yes			Yes
Generic: Target fishing prohibited	CM 32-18				Some spp.			
Generic: Nursery grounds					Yes			
Generic: Apply other tRFMO measures		CMM Alignment[20]						

3.2.4 Making legal acquisition findings (LAFs)

Parties have recognised that making LAFs for sharks can be complex, particularly for sharks caught in areas beyond national jurisdictions (on the high seas – this is closely linked to IFS, see next section). The complexity arises *inter alia* because of the need for MAs to "take into account whether or not the specimen was or will be acquired and landed" consistent with international law and through any illegal, unreported or unregulated (IUU) fishing activity (CITES, 2013a).

[20] The CCSBT has an agreed binding Resolution to Align CCSBT's Ecologically Related Species measures with those of other tuna RFMOs. It is annually updated according to relevant adopted 'ERS Measures' which refers to measures relating to ecologically related species in force in the IOTC, WCPFC and ICCAT. It applies to all registered vessels of the Members and Cooperating Non- Members authorised to fish for Southern Bluefin Tuna.

Thirteen Parties had, by SC74 in 2022, reported their experiences with LAFs for sharks to the Secretariat under Decision 18.122, as a contribution to the development of the rapid guide for making LAFs which is under development in 2022 for submission to CoP19 (to supplement the guidance in Annex 1 to Res. Conf. 18.7 on LAFs; CITES, 2022e). These Party responses have not been made publicly available, but the SC agreed that more work was needed and should continue beyond CoP19. A Decision will be proposed to CoP19 directing the SC to develop guidance on the making of LAFs, and related assessments for trade in sharks caught on the high seas (including IFS and implementation of the IFS CITES Res. Conf. 14.6 (Rev. CoP16) for CITES-listed shark species). This guidance should include detailed descriptions and related graphics on specific scenarios regarding trade in CITES-listed shark species. Parties have further requested that the rapid guide for making LAFs includes a case study for sharks.

3.2.5 Introduction from the sea (IFS)

Implementation of IFS has been slow to gain traction among CITES Parties, despite it being an obligation under the treaty (CITES treaty Article I, Article III.5, Article IV.6). One problem has been that CITES entered into force before the UN Convention on the Law of the Sea entered into force, such that clarification of issues around areas beyond national jurisdiction, the high seas, territorial seas, and exclusive economic zones happened after CITES was underway. After many years of intersessional working groups, discussions, and negotiations prior to and during CoP14 (2007), the CITES Parties adopted Res. Conf. 14.6 on IFS (subsequently amended at CoP15 and CoP16 and now Rev. CoP16). That landmark Resolution finally clarified the obligations of Parties for IFS (when the State taking a specimen in areas beyond national jurisdiction and the State of introduction/landing are the same, and when they differ).

The first trade records for sharks identified as “specimens taken in the marine environment not under the jurisdiction of any State" only appeared in the CITES Trade Database in 2020 (Okes & Sant, 2022; Pavitt et al., 2021); all 21 in that year were of commercially-valuable mako shark species, which were listed in 2019, and all were caught on the high seas by Spain or Portugal. Decision 18.211 requested an investigation into the mismatch between shark catches, expert expectations of the quantities of catch in CITES species that might occur on the high seas, and CITES trade records. Pavitt et al. (2021) and Okes and Sant (2022) examined these issues and made recommendations to fill data gaps and strengthen IFS reporting. It appears that many flag States, which are CITES Parties, are not fully aware of their obligations under the treaty to issue IFS certificates or export permits for specimens taken on the high seas, which is particularly relevant for pelagic shark species, or have not fully codified those obligations in national regulations. That being said, the absence of IFS trade records in the CITES trade database for pelagic shark species with retention bans in RFMO areas is unsurprising; even where there are exceptions for artisanal fleets, such fleets may not catch large sharks outside their EEZs.

3.2.6 Export restrictions

Export quotas may be time-limited, species-specific, apply to all sharks, or apply only to the export of particular forms of shark product. Export quotas will not necessarily constrain fisheries or landings of listed species. However, 22 of the shark NDFs that have been shared require exports to be compliant with fishery TACs and quotas.

Only one of the shark NDFs reviewed for this study specifies an export quota and there are few shark species export quotas listed online in the CITES Export Quota tool (CITES, 2022b). Indonesia initially suspended exports of CITES-listed hammerheads and oceanic whitetip sharks temporarily in 2014, pending the completion of NDFs (see next section), but has subsequently published fin export quotas for many wild-sourced CITES-listed sharks and rays. In 2020, Indonesia reported export quotas of 34,000 fins from silky shark (*Carcharhinus falciformis*), 725 fins from the scalloped hammerhead (*Sphyrna lewini*) and 130 fins from the great hammerhead (*S. mokarran;* CITES, 2022b). In 2021, Indonesia reported quotas for products from silky shark

(29,756 fins, including meat and other body organs), two makos (700 and 176 fins, including meat and other body organs, from *Isurus oxyrinchus* and *I. paucus*, respectively), three hammerheads (1194, 269 and 31 fins, including meat and other body organs, from *S. lewini*, *S. mokarran* and *S. zygaena*, respectively) and four wedgefishes (3789, 13,643, 4357 and 15,129 fins, including meat and other body organs, from *Rhina ancylostoma, Rhynchobatus australiae, Rhynchobatus laevis* and *Rhynchobatus springeri*).

3.2.7 Export suspensions

Some countries have banned the trade of some or all shark species or products, perhaps because it was not possible to make NDFs or LAFs, or in the longer-term interest of the conservation of the species. For example, six Parties (Canada, Fiji, India, UAE, UK and US) have prohibited the import and or export of shark fins. India permits shark fishing and the export of shark meat, including for CITES species, but does not permit export of shark fins. The UK has prohibited the import and export of all detached fins and processed fin products, regardless of species, in recognition of the role of the international fin trade as a significant driver of unsustainable fisheries and stock depletion. Various measures within 14 US states and three territories also limit the sale and trade of all shark fins – which is more restrictive than federal regulations prohibiting shark finning. In some of these jurisdictions it is illegal to sell, trade or possess shark fin.

Several Parties took decisions to suspend shark product exports (often as a temporary measure) following CITES listings, often to develop capacity (e.g., new legislation, improved institutional structures, NDFs) to enable the listings to be implemented. For some of these, it is unclear if the suspensions remain in force.

- Indonesia suspended exports of CITES-listed hammerheads and oceanic whitetip sharks temporarily in 2014, pending the completion of NDFs. Quotas have now been published for these and other species (see ***Export restrictions***, above). The CITES Trade Database records the first exports of hammerhead fins from Indonesia in 2020.
- Malaysia published national voluntary zero quotas for *Manta alfredi, M. birostris, Sphyrna lewini* and *S. mokarran* from fisheries in the state of Sabah for 2015–2017 (Friedman et al., 2018). We did not identify the background to this decision, it might be connected to Sabah's important dive ecotourism industry, or simply as a temporary measure pending development of NDFs.
- Thailand adopted initial zero export quotas for some sharks listed in 2013 (Friedman et al., 2018).

Finally, negative NDFs are also an export suspension, in that if the SA of a Party cannot make an NDF, then no exports can or should be authorized by the MA (see ***Making NDFs***, above).

3.2.8 Import restrictions

A large number of Parties have stricter domestic import measures for sharks than required by CITES, which is fully within their sovereign rights under the treaty (Article XIV.1). For example, EU Regulations require an import permit for all species listed in CITES Appendix II; the EU makes its own NDFs as well, and frequently queries the exporting country regarding the basis of its NDF. The US also has several stricter domestic measures for several terrestrial and marine CITES-listed taxa. Several CITES Parties also restrict imports of shark products. In Bangladesh, among several other Parties, the import, export and re-export of species listed in the Wildlife Act, 2012, can only be made only through designated Customs port of entry; imports to Bangladesh must have a CITES certificate and a license is also required. Several Parties have restricted imports of certain forms of shark product for all species, not only those listed in the CITES Appendices. As noted above, six Parties (Canada, Fiji, India, UAE, UK and US) have prohibited the import of shark fins.

3.2.9 National plans of action agreed by Parties

We have not identified any national plans of action for sharks that have been developed in a CITES context. However, Parties developing NDFs (see ***Making NDFs***, above) may decide to draw up a form of action plan to improve CITES implementation for the species under consideration, ranging across data collection,

management, compliance monitoring, enforcement of regulations, or other measures (Mundy-Taylor et al., 2014). These set out a strategy for a form of adaptive management, and may also provide monitoring plans (see ***Monitoring plans agreed by Parties***, below).

Many CITES Parties that are among the largest shark fishing and trading States have developed a National Shark Plan to implement the FAO IPOA–Sharks (FAO Database of Measures).[21] However as previously stated, the FAO IPOA–Sharks was adopted (along with the guidance it presents for the content of Shark Plans) several years before any sharks were listed in CITES. Thus, few of these FAO-related Shark Plans are likely to be relevant to the implementation of CITES (Table 3.5).

[21] http://figisapps.fao.org/fishery/ipoa-sharks/measures

Table 3.5. Responses to the FAO IPOA-Sharks by top 40 shark catching entities (countries, areas or territories), ranked by reported (FAO FishStat) or inferred shark catches. Source: Fowler et al., 2021.

Country / area / territory	Rank 2000-09	Rank 2008-17	NPOA date	RPOA date
Angola	37	38		
Argentina	5	6	2015 (rev. 2009)	CFTM2018
Australia	24	23	2014 (V.2)	
Brazil	13	9	Proposed 2011	
Canada	21	36	2007	
Chile	32	39	2006	CPPS CTCPAR 2015
Costa Rica	26	32	2010	PARTCA 2011
Ecuador	40	20	2006	CPPS CTCPAR 2015
France	11	13		EU CPOA2009
Ghana	39	27		
India	2	3	SAR 2015	
Indonesia	1		2015 (V.2)	
Iran (Islamic Rep.)	18	16		
Japan	10	14	2011 (V.3)	
Korea, Republic of	20	18	2011	
Madagascar	28	29		
Malaysia	9	8	2014 (V.2)	
Mexico	6	4	2004	
Morocco	31	34		
Namibia	36	37	2003	
New Zealand	14	11	2013 (V.2)	
Nigeria	17	10		
Oman	29	21	2017 Draft	
Pakistan	8	15	Draft under review	
Peru	22	17	2014	CPPS CTCPAR 2015
Philippines	30	31	2017 (V.2)	
Portugal	15	12		EU CPOA 2009
Russian Federation	35	33		
Senegal	25	25	2005	CSRP 2001
South Africa	38	35	2013	
Spain	3	2		EU CPOA2009
Sri Lanka	16	24	2013	
Taiwan Prov. of China	4	7	2004	
Tanzania, United Rep.	34	22		
Thailand	12	26	2005, 2017 (V.2)	
UK	19	30	2011 (V.2)	EU CPOA2009
US	7	5	2001	
Uruguay	33	40	2015 (V.2)	CFTM 2018
Venezuela, Boliv Rep.	27	28	2013 (V.2)	
Yemen	23	19		
China	?	?		
Myanmar	?	?		
Viet Nam	?	?		

Table 3.1 lists species that are found in both the CITES and the CMS Appendices. CMS Parties are encouraged to adopt Concerted Actions for CMS species (CMS, 2022a). Furthermore, Signatories to the voluntary CMS Sharks MOU (which include CITES Parties that are not Party to CMS; CMS, 2022b) endeavour to cooperate through RFMOs, FAO, Regional Seas Conventions (RSCs) and biodiversity-related Multilateral Environmental Agreements (MEAs) – including CITES.

3.2.10 Monitoring plans agreed by Parties

As noted in the previous sections, monitoring trade in CITES-listed sharks is an obligation for CITES Parties (Article IV.3), and monitoring fisheries is equally a priority (and an obligation) for FAO, the RFMOs and their Members. The two sectors meet in the context of compliance monitoring for both trade and fishery regulations. Monitoring is identified by Parties as one of the priority needs for the implementation of CITES listings for sharks (Mundy-Taylor & Crook, 2013), and is usually specified in NDFs that identify future actions to be taken by the Party (see *Making NDFs*, above).

Numerous monitoring protocols are available for sharks and rays, in fisheries and in trade, equally applicable to CITES-listed and unlisted species. Some are advisory, others mandatory. The Code of Conduct for Responsible Fisheries emphasises obligations for States to collect and provide data on catch and fishing effort, and this is mandatory under certain circumstances. For example, CCPs to RFMOs are required to provide certain categories of fisheries data in their reports, which are analysed by the Compliance Committee and reported back to the Commission. These data are then collated and shared with all RFB CCPs. Shark species may automatically be included in these reporting requirements (regardless of their CITES status). Parties also provide these data to FAO for compilation in FAO's statistical database (which also holds product trade data).

Bond et al. (2022) report that the CoP16 listings have motivated nine Parties (Bangladesh, Costa Rica, Colombia, Peru, Mexico, Kenya, Gabon, Indonesia, and Mozambique) to prioritize data collection on shark and ray catch and/or trade since 2014. Their review of the CITES trade data revealed that 33 Parties reported trade in Appendix II listed shark species between 2002-2021, further evidence that appropriate data is being collected/reported among certain Parties.

3.2.11 Review of Significant Trade

No Review of Significant Trade (RST) has yet taken place for sharks. The relatively recent addition of commercially-fished and widely traded species into Appendix II (and the existence of national measures that restrict trade, as articulated above and in Level 1) means that reported trade volumes – which are a key to triggering the RST process – have been relatively low until recent years.

3.2.12 Action by Regional Fisheries Bodies (RFBs)

RFBs (RFMOs and the Regional Fishery Advisory Bodies – RFABs), are generally perceived to be responsible, through their Members (Contracting Parties and Cooperating non-Contracting Parties – CPCs), for the management of sharks and other ecologically-related species, when taken in the fisheries managed by the respective RFMO, and/or for developing scientific advice on which to base such management measures (both RFMOs and RFABs). However, sharks have only recently been a priority for RFBs compared with the management needs of high value high volume fisheries, such as the tunas and billfishes that the tRFMOs were established to manage, and those that support food security (particularly the coastal RFBs in developing regions).

Since adoption of the FAO IPOA-Sharks in 1999, however, several RFBs have taken action to advance the conservation and management of sharks (Table 3.4). Eight RFMOs have adopted one or more CMMs for severely-depleted CITES-listed sharks and rays (including some CMMs adopted before the CITES listings for nine species, in at least one RFMO Area), while ten have adopted CMMs for sharks in general. The listing of sharks in Appendix II has further increased the importance of sharks to RFBs, although many RFMOs still arguably lack legal competence for shark conservation and management unless or until their Members have ratified extending their remit to cover these species. This change can be seen as a significant positive outcome of CITES' listings on commercially valuable shark species. By 2020, seven RFMOs (GFCM, IATTC, ICCAT, IOTC,

NAFO, NEAFC, WCPFC)[22] had adopted non-retention measures for, between them, a total of 41 shark and ray species, 26 of which are listed by CITES (see Table 3.4; FAO, 2021).

RFBs are now also more likely to incorporate CITES requirements into their work programmes (e.g., WCPFC),[23] as are the Regional Seas Programmes (RSP, e.g., SPREP).[24] In recent years, some RFBs have actively supported CITES implementation for these species through the joint CITES–FAO project funded by the EU. The FAO Database of Measures[25] provides links to actions undertaken by eleven RFMOs, but not to the RFABs, which also have a potentially important role in providing advice and capacity building for their members through their scientific committees and experts. SEAFDEC, for example, has made a huge contribution in the form of a decade of training and capacity building for the conservation and management of sharks and implementation of CITES among its eleven Southeast Asian member countries, largely supported by Japan and the EU capacity building programme. More RFABs could become involved in the development of NDFs for shared regional stocks (as envisaged in CITES Article IV paragraph 7 on international scientific bodies), and in helping assess legality of sourcing.

In 2019, ICCAT, the Atlantic tRFMO, convened the first joint tRFMO Bycatch Working Group meeting, attended by delegates from 24 Contracting Parties, to renew cooperation and coordination between the tRFMOs on bycatch issues (IOTC, 2020). The meeting *inter alia* discussed the potential for synergies between CITES and the tRMFOs to implement sustainability measures in addition to or instead of fishery prohibitions, and the use of CITES trade data for fishery stock assessment. Meeting recommendations included improving communication and cooperation between CITES and tRMFOs to provide guidance and advice for the CITES-listed species caught within the jurisdiction of each tRFMO.

A few regional bodies (e.g., PERSGA, CCAMLR)[26] fulfil both RFB and RSP roles, with CITES potentially truly a cross-cutting issue. Thus, for example, the Regional Organization for the Conservation of the Environment of the Red Sea & Gulf of Aden (PERSGA), a United Nations Environment Programme (UNEP) RSP, which is also listed in the FAO RFB database, set out the basis for a strategic plan for shark conservation and supported capacity building for field identification, sampling and stock assessment, including through two training courses for 75 staff from the seven member countries (Bonfil, 2002).

3.2.13 Action by industry

Details of industry cooperation and action regarding implementation of the CITES shark listings are difficult to find or assess. Industry Observers from several sectors attend many CITES meetings. When representing consumptive uses, they are often perceived to be intent on preventing new CITES listings or otherwise minimising the impact of CITES on their commercial interests. Non-consumptive industry observers, particularly from diving and other ecotourism sectors, generally advocate for and strongly support shark conservation, including CITES listings. It is impossible to determine the extent to which CITES listings have raised public awareness and resulted in consumer pressure upon on industry, which responded by taking the actions described below, or whether the industry has responded directly to CITES actions.

[22] GFCM: General Fisheries Commission for the Mediterranean; IATTC: Inter-American Tropical Tuna Commission; ICCAT: International Commission for the Conservation of Atlantic Tunas; IOTC: Indian Ocean Tuna Commission; NAFO: Northwest Atlantic Fisheries Organization; NEAFC: North-East Atlantic Fisheries Commission; WCPFC: Western and Central Pacific Fisheries Commission

[23] www.wcpfc.int/node/18991

[24] www.sprep.org/biodiversity-ecosystems-management/protecting-the-sharks-and-rays-of-the-pacific

[25] www.fao.org/ipoa-sharks/database-of-measures/en/

[26] PERSGA: Regional Organization for the Conservation of the Environment of the Red Sea & Gulf of Aden; CCAMLR: Convention on the Conservation of Antarctic Marine Living Resources

Transport:
Public pressure and media attention have influenced the internal cargo policies of some airlines (e.g., China Air) and shipping lines (e.g., COSCO, Evergreen), to stop transporting shark fins. These self-imposed and self-regulated actions reportedly began to reduce imports of unprocessed shark fin to Hong Kong SAR as early as 2013, the year when the second wave of CITES shark listings began, (e.g., South China Morning Post, 8 September 2013).[27] Cathay Pacific, however, hopes to identify a source of shark fins derived from sustainable shark stocks, and carry only these; meanwhile no shark fin is served or carried (Cathay Pacific, 2016).[28]

Trading and processing:
Since 2017, the International Seafood Sustainability Foundation (ISSF) has required its participating processing and trading companies (there are nearly 30) to purchase tuna products primarily from suppliers that are ISSF participants, which are expected to apply best practice, as defined by ISSF,[29] including mitigating bycatch of oceanic sharks (see ***Changes in non-selective fisheries***, below).

Consumption:
Public campaigns against shark finning, fin trade and consumption have resulted in several large companies deciding no longer to offer shark fin to diners. These include international hotel chains (including Peninsula in 2011, Shangri La in 2012, Hilton, Marriott International and Starwood in 2014), several cruise lines and 11 airlines.[30] Examples in Hong Kong SAR include the WWF seafood guide (no shark fins) and commitments by many restaurants not to serve shark fin, etc.

3.3 Level 3: Field outcomes (practical change)

The sharks listed in CITES are or were exploited in large-scale commercial fisheries (as targets or utilised bycatch), and/or in small-scale single-species target fisheries for commercial and subsistence use (including by longlines, nets and harpoons), and in some cases by sport fishers. Where catches by these fisheries were deemed unsustainable and species have entered more careful management (which might be before or after the CITES listings), such management can be led by national fisheries or wildlife conservation agencies within EEZs or territorial waters. Where a fishery that encounters the listed species, as target or bycatch, falls under the remit of an RFMO, then the RFMO's Members/CPCs may decide to adopt a CMM for the species, and this will be implemented by CPCs, just as CITES is implemented by its Parties, with similar reporting and compliance measures.

Two studies have examined the practical, observed or documented management changes and outcomes of CITES listings for shark fisheries, one led by FAO, across eight countries in Southeast Asia (Friedman et al., 2018, described in Level 2 overview), and one conducted by researchers and focused on a target manta ray fishery in Indonesia (Booth et al., 2021; 2020).

The FAO review of CITES implementation for sharks in the Southeast Asian region covered the eighteen-month period after the CITES listings adopted in 2013 came into effect (Friedman et al., 2018). While many policy actions had already been taken, it was still early-days in terms of being able to measure compliance with the policies and the resulting practical outcomes. Therefore, the report focused on measuring the scale and nature of

[27] https://www.scmp.com/news/hong-kong/article/1305878/shark-fin-imports-hong-kong-tumble-after-airlines-refuse-carry-them
[28] https://news.cathaypacific.com/cathay-pacific-statement-on-shark-s-fin-carriage-141196
[29] https://www.iss-foundation.org/about-issf/what-we-publish/news/press-releases/issf-requires-tuna-processors-worldwide-to-purchase-only-from-companies-that-meet-sustainability-criteria
[30] https://flywithoutfins.org

management changes that resulted from the CITES listings, their general impact, and the need for support and further change in conservation and management. Intangible, qualitative improvements were reported in factors such as a better overall understanding of fishers and fishing pressures, and an increased awareness of the need for sustainable shark management measures by fishers, traders, processers, consumers, and the public (particularly in Cambodia and Indonesia), but these are not practical outcomes as defined here. As noted by the participants, measuring the desired conservation outcomes from CITES requires more effort and investment for long-term collection of fundamental stock, fisher and market-related data, and periodic repeat surveys following a longer period of implementation so that performance can be measured against implementation targets.

One key challenge in achieving field outcomes may be the lack of awareness of CITES rules for sharks among key stakeholders. Friedman et al. (2018) describe how awareness was assessed during an expert study of the impact of CITES in Southeast Asian fisheries. The authors identified only a small improvement in changes in consumption, livelihoods and community awareness in eight Southeast Asian countries by 2016, although more in ''community awareness" than the other socio-cultural subsectors, with the greatest change being recorded in Cambodia and Indonesia. Haque et al. (2022) carried out a socio-ecological study of artisanal fisheries in Bangladesh, which capture coastal species listed in CITES. They found that although 90 elasmobranchs are regulated under Bangladesh law, including CITES species, none of the fishers interviewed were familiar with CITES, 90% had not heard of Bangladesh's Wildlife Act, and the remaining 10% were not familiar with the law. Several fishers thought that sharks might be protected, but could not provide details. The situation is likely similar across many artisanal fleets.

3.3.1 Changes in target fisheries

It can often be difficult to determine whether CITES listings have caused or influenced constraints on target fisheries. It can also be hard to distinguish, for many CITES species, between those that are a primary fishery target, and those that are an important secondary target (the latter particularly in artisanal multi-species fisheries). Primary target species would previously have included whale and basking sharks, both taken in harpoon fisheries, porbeagle sharks targeted by hook and line in the north Atlantic and some large guitarfishes (Fowler et al., 2005 and relevant CITES listing proposals), but most of these fisheries had collapsed or been closed before these species were listed in CITES. Today, these and other species (e.g., threshers, hammerheads, silky sharks) are a bycatch, which may or may not be retained, depending upon compliance with quotas (in the case of porbeagle) and other fishery regulations. In developing regions, they are likely to be a component of 'catch all' fisheries for which the distinction between target and bycatch is blurred.

We consider the shortfin mako shark, taken on longlines in association with swordfish, to be an important secondary target species. There are some national management measures (e.g., quotas), but it is unmanaged in most RFMOs. The exception is currently ICCAT, which adopted a total allowable catch for the south Atlantic stock and a prohibition (with exemptions) in the north Atlantic in 2019, after many years of discussion (ICCAT, 2021b). In 2021, this was replaced by a rebuilding plan with a stronger prohibition for the north Atlantic stock. These are science-based RFMO management measures and their texts do not refer to CITES. This progression towards the adoption of shark management within ICCAT has been seen for other species, including the unlisted blue shark (for example, ICCAT, 2016; 2021a), and may not have been greatly influenced by CITES in the case of the shortfin mako, although the listing likely supported the already strong arguments for more precautionary management (CITES, 2019c). Where CITES has potential to constrain mako fisheries, is by linking mako NDFs and IFS to agreed ICCAT TACs and national quotas, thus ensuring that they are not exceeded. This may prove to be an important, enforceable compliance measure that is not available to RFMOs in precisely this form in the absence of CITES. Note, however, that CITES controls are similar in several respects to the trade-related Catch Documentation Schemes (CDS) that have been set up for some of the world's most valuable fish species, including toothfish (*Dissotichus* spp.) by CCAMLR, bluefin tuna by ICCAT, and southern bluefin tuna by CCBST

(FAO, 2017;2022b). CDS are used to track these fishes from point of harvest through to final import for consumption (FAO, 2017). An important difference between the CDS schemes established by RFMOs and CITES trade controls is that virtually all countries are CITES Parties, but only a selection of fishing countries are Members/CPCs of each RFMO. CDS therefore have gaps in coverage that do not occur in CITES.

A case study by Booth et al. (2021; 2020) focused on understanding whether change had occurred in two well-studied coastal communities where data on target manta ray fishing and trade had been collected before the CITES listing and the introduction of manta protection in Indonesia. The introduction of national manta protection is not directly linked to the CITES listing, but the authors suggest that CITES had a catalytic effect. They examined whether the regulation and associated implementation actions had a subsequent positive impact on manta conservation status. Similar trends were observed in all metrics and datasets examined. Interviews and landing data after protection indicated a decline in both fishing effort and catch, to zero in one of the study sites, less marked in the other. Mobulid rays are also on CITES Appendix II, but they are not protected in Indonesia; Booth et al. (2020) noted that there was reportedly an increase in mobulid fishing in some areas following protection of the larger manta ray species.

3.3.2 Changes in non-selective fisheries

The CITES Trade Database contains many records of commercial trade in several shark species, including porbeagle, threshers, hammerheads, silky, and oceanic whitetip sharks, which may be taken as bycatch. CITES regulations can contribute to regulating these bycatch fisheries to sustainable levels, and supporting compliance with any fishery measures in place. For example, NDFs can be linked to quotas, and CITES Authorities can ensure that LAFs, NDFs and IFS certificates are not issued for species that are the subject of fishery prohibitions.

Fishers' awareness of and compliance with the CITES shark listings varies considerably by country and sector, and can be challenging to measure, though there are encouraging findings. There is a high level of awareness and compliance in some of the high seas industrial fleets, where many CITES-listed oceanic pelagic sharks are a target and incidental catch and the subject of generic and species-specific tRFMO CMMs (Table 3.4). For example, silky shark is the second most abundant species in Hong Kong SAR and Guangzhou shark fin retail markets, and ICCAT has prohibited the retention of silky sharks in ICCAT managed fisheries (Rec. 11.08). ICCAT contributes about 7% of global silky shark landings, but Cardiñosa and Fields (2021) did not detect any specimens of the Atlantic clade of silky shark during their study of the composition of these fin markets, although other endemic Atlantic species are detected. This is consistent with the possibility that there is high compliance with the ban on the international exportation of silky shark fins.

Members of the International Seafood Sustainability Association (ISSA)[31] are required to be compliant with conservation measures and standards of practice established by the ISSF. Although compliance with these measures and standards is voluntary, audit reports are published for each participating company.[32] ISSF includes sharks in their bycatch avoidance programme and trains ISSA skippers in best practice for mitigating bycatch of sharks encountered by ISSF fisheries. For example, some RFMOs have adopted requirements for the use of certain gear modifications to reduce shark bycatch in some longline tuna fisheries, while others have not. These include the use of whole finfish bait, circle hooks and monofilament lines, and/or handling techniques, and/or prohibited use of "shark lines". ISSF processors, traders, importers, marketers and others involved in the

[31] https://iss-association.org/
[32] https://www.iss-foundation.org/vessel-and-company-commitments/compliance-results/participating-company-audit-reports/

seafood industry are required to conduct transactions only with those longline vessels whose owners have adopted such measures.[33]

Similarly, awareness and compliance are high within fleets that have attained or hope to gain Marine Stewardship Council (MSC) certification, and/or companies engaged in Fishery Improvement Programmes (FIPs). Vessels in these fleets may avoid retaining any large sharks, regardless of their CITES status. For example, purse seiners fishing in international waters may avoid retaining any sharks on board that are taken in association with tuna fisheries to avoid the necessity for obtaining IFS, export or import certificates or permits, and the associated bureaucracy, in return for a relatively low value bycatch. In contrast, mako sharks are a high value target catch, and IFS certificates are being issued in the EU for these species caught by the Spanish and Portuguese fleets (UNEP-WCMC, 2022).

Some fishers may adopt 'shark-friendly' policies as a matter of personal choice, due to their awareness of depleted populations. Other fishers may avoid retaining CITES sharks because they are concerned that this may be illegal and their catch cannot be sold, or because they do not wish to incur inspection and administrative costs.

3.3.3 Changes in trade

Clarke et al. (2006) undertook the first detailed study of the shark fin trade in the global trade hub of Hong Kong SAR, examining the species composition of fins in auctions before the first shark listings had been adopted in CITES. This study methodology cannot be repeated due to loss of access to auction rooms. However, a molecular identification protocol has been used since 2014 to examine the species composition of randomised samples of fin trimmings discarded from the dried seafood processing industry in China, including the mainland and Hong Kong SAR (Cardeñosa et al., 2018b; Fields et al., 2018; see also ***Identification materials*** and ***Monitoring guidelines***, above). While the species-specific proportions identified in these two studies are not directly comparable, the rank order of abundance of species are likely valid. In both studies, four of the five most commonly occurring species in these markets are now listed in CITES Appendix II. The species rank abundance of the most common species is similar, except for a marked decline in one species (not listed in CITES) formerly targeted in two major fisheries that have now been closed. Repeating the recent analyses in the future will help identify other shifts in use among species, for example, if less-resilient species are fished down or management restrictions are imposed, and they become less abundant in global markets than other species.

The overall size of China's retail trade in shark fins has fallen since 2011 (Cardeñosa et al., 2020). This is attributed to falling public demand and new policies reducing extravagant spending in the government sector rather than declining abundance in the wild and/or availability of product. On the other hand, imports have increased in other hubs in the region (e.g., Viet Nam, Thailand, Malaysia; Cardeñosa et al., 2020). Demand for shark meat in Europe and North America[34] has also fallen due to reduced public demand as a result of heightened awareness of the threat that overfishing poses to sharks and potential health risks to humans associated with consumption of shark meat (Cardeñosa et al., 2020). As already noted, it's possible that awareness of CITES shark listings may have contributed to reduced public demand for conservation reasons. We cannot, however, assume that declining international trade demand will necessarily result in declining catches or healthier populations of wild sharks, particularly if domestic consumption rises, or if factors other than over-exploitation are contributing to population declines.

[33] https://www.iss-foundation.org/vessel-and-company-commitments/conservation-measures-and-auditing/our-conservation-measures/3-bycatch-mitigation/3-6-transactions-with-vessels-implementing-best-practices-for-sharks-sea-turtles-and-seabirds/

[34] https://www.thespruceeats.com/eating-shark-in-the-u-s-everything-you-need-to-know-4693635

Because most of the low volume trade in porbeagle shark products takes place among developed countries with sophisticated trade and fisheries management procedures, and some fisheries are under quota management, NDFs for this species are few and straightforward. There are seven commercial trade records for porbeagle during 2013-2014, including five while the species was listed in Appendix III, and only eight more since then. Permits for scientific and educational purposes are more common (>30), but likely dominated by a small number of fins circulating between identification workshops). For the other tightly regulated species listed before 2013: there have been <40 commercial transactions for basking shark since 2004, one for whale shark (plus three live exports for public aquaria), 17 for white shark (and >100 non-commercial transactions), <20 commercial and 55 non-commercial trade records for oceanic whitetip from the Indian Ocean, and nine commercial (including one live specimen) and almost 50 non-commercial records for manta rays since these listings came into effect in September 2014 (CITES Trade Database - UNEP-WCMC, 2022b – downloaded 27 May 2022).

In contrast, there are >330 trade records for the three large hammerhead sharks combined, also listed in 2013, over half of which are commercial. Trade records for other commercially-important sharks, listed from 2016 onwards, are also numerous in the database, with >100 records mostly of fins for silky shark since 2017, and almost 100 records for mako meat and fins since 2019.

Another example of trade changes due (indirectly) to CITES listings is at a local rather than global scale. Following protection of manta rays in Indonesia, fisheries and trade for the closely related Mobulid rays, which are also on CITES Appendix II but not protected in Indonesia, reportedly increased in some areas (Booth et al., 2021; 2020).

The smallest changes recorded by Friedman et al. (2018) were in “markets” (e.g., structures and prices) and “sociocultural” sectors (e.g., consumption, livelihoods and community awareness).

3.3.4 Changes in enforcement

Following the CITES listings, capacity building efforts have provided Customs officials in many countries with new shark identification tools (manuals and equipment for genetic testing) and training in their use. Following training workshops, protocols are now being deployed successfully to use these tests to identify CITES sharks in trade in China, including Hong Kong SAR, Belize, Brazil, Colombia, Ecuador, Guatemala, Indonesia, Peru, and Spain (Bond et al., 2022). As a result, rising numbers of seizures have been made of illegal shipments of shark products in trade (both exports and imports, dried and fresh) by at least 14 Parties, with a total weight of 37.63 tonnes of fins (Bond et al., 2022).

Hong Kong SAR, the world’s largest shark trading hub, had been importing >5,000 tonnes of shark fin annually (imports have declined significantly in recent years, which is attributed to declining market demand by government and consumers, Dent and Clarke, 2015; see ***Changes in trade***, above). Taking wildlife conservation and CITES obligations seriously, Hong Kong SAR has made major investment in enforcement capacity for combating illegal shark fin imports since 2014, when the first listings of commercially-important sharks came into effect. The result has been substantial seizures of imports between 2014 and 2020: 70 cases of undocumented products, totalling >28 tonnes of shark fins from nine CITES-listed shark species (Table 3.6). These seizures peaked in number in 2019, with 28 cases of illegal fin trade from 14 countries, involving 6.452 tonnes of fin derived from four CITES species, an estimated value of HKD 20.7 million. Also in 2019, seizures were followed by prosecutions and substantial fines. However, in 2020, the weight of shark fin seized more than doubled, due to the largest single seizure in Hong Kong SAR’s history: two containers of dried shark fin from

Ecuador, weighing 26 tonnes and worth over USD 1 million. Some 90% of the fins seized were from listed species, including an estimated 31,000 threshers and 7,500 silky sharks.[35]

Table 3.6 summarises records of CITES shark fin seized by Hong Kong SAR's Customs and Excise Department (C&ED) from 2015–2019,[36] with additional data for 2014 and 2020 from S. Shea (pers. comm., 18 May 2022).

Table 3.6. Seizures of shark fins by Hong Kong SAR's Customs and Excise Department, 2014–2020.

Year	2014	2015	2016	2017	2018	2019	2020
Number of Cases	2	6	4	11	8	28	11
Estimated Value (HKD million)		0.38	0.65	1.92	0.52	20.7	
Shark Species (Weight/ kg)		Oceanic whitetip shark (283.5), Hammerhead shark (215.4), Whale shark (12)	Oceanic whitetip shark (0.3), Hammerhead shark (1 035.4)	Oceanic whitetip shark (1 263.1), Hammerhead shark (1 382.7)	Oceanic whitetip shark (143.3), Hammerhead shark (464.4)	Oceanic whitetip shark (604.2), Hammerhead shark (2 143.2) Silky Shark (2 138) Thresher shark (1 566.7)	
Total weight (kg)	986	510.827	1 035.7	2 645.8	607.7	6 452.1	15 880
Mode of Trade		Import	Import	Import	Import	Import	
Countries Involved (Number of Cases)		Seychelles (1) Panama (1) Nicaragua (1) United Arab Emirates (UAE) (1) Peru (1) Morocco (1)	Madagascar (1) Somalia (1) Panama (1) unknown (1)	India (1) Egypt (1) Kenya (1) Peru (2) Senegal (1) Guatemala (2) Indonesia (1) Somalia (1) UAE (1)	Peru (1) Indonesia (2) UAE (1) Madagascar (1) Kenya (1) Costa Rica (1) Sri Lanka (1)	Morocco (1) Mexico (9) Madagascar (1) Venezuela via Mainland China (1) Sri Lanka (4) Panama (1) Democratic Republic of the Congo (1) UAE (1) Somalia (1) Pakistan (1) Kenya (2) Senegal (1) Suriname (1) Philippines (3)	
Mode of Transportation (No. of cases)		air (4), sea (2)	air (2), sea (2)	air (1), sea (10)	air (3), sea (5)	air (15), sea (12), land (1)	
Number of Persons Prosecuted		0	0	0	0	5 (Note)	
Fine (HKD)		Nil	Nil	Nil	Nil	6,000 and 8,000	

Note: A total of five cases involving illegal import of controlled shark fins were prosecuted in 2019, two have been fined, and the remaining three cases will be tried at the District Court.

While Hong Kong SAR has reported the largest quantities of illegal shipments of products seized at the point of import, seizures are also made in exporting and transit countries. For example, Sri Lanka Customs have intercepted large quantities of products from CITES shark and ray species prior to export to Hong Kong SAR, both from domestic fisheries, and illegal imports from India en route to Hong Kong SAR through Sri Lanka.[37,38]

[35] www.oceanographicmagazine.com/news/shark-fins-seizure-hong-kong/
[36] Government of Hong Kong SAR. 27 May 2020. LCQ 15 Smuggling of shark fins. Press Release.
[37] Daily Mirror Online 27 May 2022. Customs seize endangered dried shark fins.
[38] Sri Lanka Customs press releases, www.Customs.gov.lk/category/biodiversity-protection-detections/

Participants in FAO's Southeast Asia study recognized that stricter trade controls had been put in place in most of the eight countries surveyed following the Appendix II listings in 2013 (Friedman et al., 2018). However, undocumented trade was found to be continuing, but at lower levels, in Myanmar, the Philippines, Indonesia, and Malaysia. Viet Nam, Thailand, Japan, and Cambodia either had insufficient knowledge to determine level of illegal trade, or no clear evidence of illegal transactions (Friedman et al., 2018).

The case study by Booth et al. (2021; 2020) also examined local trends in manta trading activity following the protection of manta rays in Indonesia. This declined among 200 former manta traders, who perceived a high risk from the local enforcement measures (three traders were arrested and prosecuted). Local manta product prices declined, unlike those for similar mobulid ray products in the same markets, and national and international prices.

3.3.5 Breeding/farming/ranching

None of the CITES-listed shark or ray species are being bred or ranched for commercial trade. Their biological characteristics of these large-bodied species (very slow growth, late maturity, small litter size, very low rate of population increase), hence the long periods that would be necessary to grow them to a size relevant for marketing, currently make them unsuitable for commercial aquaculture operations. The few offspring that are successfully raised in captivity are transferred between large public aquaria to reduce the need to capture new stock in the wild and avoid inbreeding.

3.3.6 Monitoring

Cashion et al. (2019) observed that, in 2008, 76% of shark catches reported to FAO were recorded under broad taxonomic groupings, with FishStat recording 35% of chondrichthyan catch data classified as 'sharks, rays and skates' and only 24% at the species level. They recognised that more detailed national catch data may have been aggregated into higher taxonomic groups before being reported to FAO. By 2017, 62% of global reported catches were recorded within broad taxonomic groupings, including 19% under the category 'Sharks, rays, skates etc., nei', and 38% at species level. Although more than 120 countries report some form of shark catch to FAO (FishStatJ database), only 70 of them provide any species-specific data on species listed in CITES. A very few countries with large landings of marine fishes still do not report any catches of sharks and rays, and others continue to aggregate all shark and ray landings into a single category.

Data on trade and markets in shark fin and meat (the two most-traded products), has also improved in recent years, although there remain problems of missing data, mis-coded or aggregated products (e.g., meat combined with fins) and potential double-counting and modification of products that move through several stages of trade (Dent & Clarke, 2015). For example, a product may initially be recorded when sold at a fish landing site, again when exported in unprocessed form (sometimes to trade hubs where re-export then occurs), through to import by major processing centres, and eventually a final export to the country where retail sale takes place. Product volumes consumed in domestic markets, which are not CITES' concern but represent important data for fishery assessment and management, and are critical in the development of CITES NDFs, may not be recorded at all.

In the absence of a CITES listing and documentation, most trade in shark products is not identified by taxonomic group, and shark products other than meat and fins may not be recorded. Dent and Clarke (2015), with assistance from the IUCN Shark SG, evaluated trade recording systems for shark products in major shark producing, processing, and consuming countries and assessed likely reliability of data. They identified under-reporting by countries with large artisanal fleets, inability of trade data to account for products consumed domestically, and lack of information on consumption of products such as oil, skin and cartilage as major obstacles to comprehensive evaluation of data on shark trade. Dried mobulid gill plates are also under-recorded. Among these authors' recommendations is improved alignment of national fisheries and trade data recording

and data sharing between fisheries and CITES Authorities, initially at least for CITES species. They recognised the benefits that CITES can bring not only to trade monitoring, but monitoring, control and surveillance of illegal fishing.

For about a decade, CITES Parties and the CITES Secretariat had urged the World Customs Organisation (WCO) to provide more species-specific commodity codes for shark and ray products, including fins and meat. In 2012, the WCO recommended that its 179 members implement commodity codes for shark fins and for ray meat. While the result has been an improvement in data availability for the latter products in several large ray fishing countries, which now separate ray and shark meat, Dent and Clarke (2015) describe the unintended consequences that this has had for the classification of shark products: namely the less detailed reporting of shark fin products in some major trading nations. For example, some major trading countries that formerly recorded unprocessed frozen fins and dried fins separately, because of their different weight and economic value, now combine these data into a single category. China has changed to combining records for frozen shark fin and frozen meat, which were previously enumerated separately. This has significantly hindered the tracking and analysis of shark product trade (Dent & Clarke, 2015).

Friedman et al. (2018) conclude by offering guidance on future needs, which notably included more effort for long-term collection of fundamental fisher-, stock- and market-related data to inform adaptive management and facilitation of legal trade where it is shown to be sustainable.

3.4 Level 4: Population impacts (biological change)

The previous sections have outlined a selection of the wide range of actions taken by Parties for the implementation of CITES shark listings, from regulatory reforms (Level 1) and preparing NDFs and/or defining quotas (Level 2), to implementation of fishery management and trade monitoring (the latter as evidenced by Customs seizures; Level 3). These measures are complementary to increased attention (Level 1) and activity for fisheries regulation (Level 3) and monitoring (Level 3) at national, regional and international scale. The latter was already underway to some extent, following the adoption of FAO's voluntary IPOA-Sharks (1999) and RFMO measures (some of which are binding upon Members), the legally-binding Port State Measures Agreement (2009, entered into force in 2016, currently with 70 Parties), and other actions to address IUU fishing. However, CITES has measurably raised both the priority placed upon and the resources available specifically for shark conservation and management, with the treaty's binding nature an important incentive for this work. This section discusses whether and how the above have been reflected in improved conservation status for sharks, and if not, why not.

3.4.1 Population change

It will be many years before we can detect the influence of CITES listings on most shark populations. The shark species listed in Appendix II (and many more unlisted species) have intrinsic life history characteristics that make populations even less resilient to exploitation than seahorses and humphead wrasse (Reynolds et al., 2005), and particularly slow to respond to stock rebuilding efforts. Indeed, because of their large body size, late maturation, longevity and small litter size (Pardo et al., 2016), the biology of some shark species is closer to that of large birds and mammals (perhaps more recognisable to CITES SAs than marine fishes), including great whales (Kindsvater et al., 2016). Furthermore, most CITES-listed shark species were severely depleted before the listings were adopted (e.g., pelagic sharks, Figure 3.1), in some cases possibly already qualifying for listing in Appendix I. This slow response time poses a challenge for measuring the extent to which CITES listings have, to date, benefited listed species by reducing mortality to sustainable levels, and which will therefore (eventually) enable stock recovery.

In light of these biological constraints, it is unrealistic to expect to see an improved conservation status for the commercially-exploited species whose listings came into effect at most eight years ago, in 2014 or later. To illustrate this point: intense exploitation of economically-valuable young juvenile North Atlantic shortfin mako from the late 1980s had no effect upon fishery catch per unit effort (CPUE) for nearly 30 years. CPUE only fell when the missing cohorts failed to recruit into the adult population to replace aging reproductive animals. Under these conditions, ICCAT scientists warn that the stock will inevitably continue to decline for another 15 years even after the fishery has been closed (Anon., 2019; CITES, 2019i; Figure 3.1).

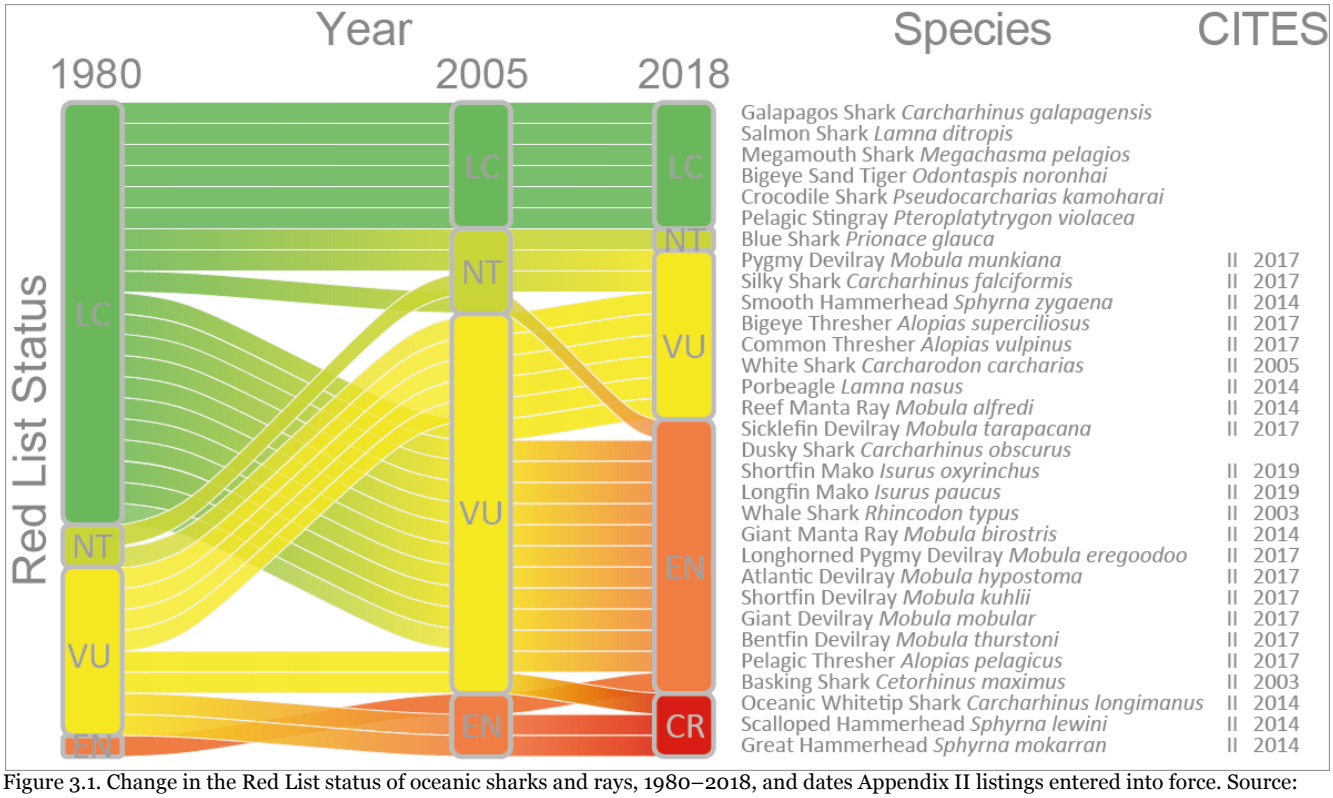

Figure 3.1. Change in the Red List status of oceanic sharks and rays, 1980–2018, and dates Appendix II listings entered into force. Source: Fowler et al., 2021.

Population change for marine fish is traditionally measured through fishery stock assessments, which are regularly undertaken by a few Parties and by some of the RFBs (e.g., the tRFMOs and some RFABs, including International Council for the Exploration of the Sea, ICES). These require high quality fishery-dependent and fishery-independent data (Musick & Bonfil, 2005), but long-term data sets are not always available. Trade data are valuable where landings data are incomplete and may be used to confirm trends in fishery data, but they cannot take into account domestic use and trade, or international trade that supplies unmonitored destinations (for example, smaller wedgefishes that are known to enter trade in large quantities are not reported in the trade hubs monitored in Hong Kong SAR and mainland China; R. Jabado, pers. comm., May 2022). It is also possible, to some extent, to assess population change for some species and regions (e.g., whale sharks and basking sharks) through the use of diver surveys, tagging studies, citizen science initiatives, and observations from fishers, traders and other stakeholders.

The Global FinPrint project[39] provides a valuable baseline from 2016-2017 for the health of and trends in reef shark populations, which will enable conservation and management measures. Although no reef shark species

[39] globalfinprint.org

are listed in CITES, Global FinPrint also records some hammerheads, wedgefishes and guitarfishes, illustrating the potential for baited remote underwater video (BRUV) monitoring also to assess population change in a range of CITES species.

The role of CITES in securing the recovery of basking shark, whale shark and white shark populations will be difficult to discern and may be supplementary to the national and regional protections (e.g., closure of fisheries, legal protection, measures to prohibit disturbance) that in many cases took place before these species were listed in CITES (Fowler et al., 2005; CITES listing proposals, and IUCN Red List Assessments).

The CITES listing of the historically-depleted basking shark could have contributed to halting a continued decline from Endangered to Critically Endangered driven by utilisation of bycatch due to the high value of its huge fins. Arguably, for whale shark, the CITES listings came too late to prevent its IUCN status deteriorating from Vulnerable in 2005, to Endangered today (Figure 3.1), but likely contributed to halting the unsustainable fisheries that were supplying products for export. In all cases, CITES would certainly have improved international management for these species by requiring trade to be legal, sustainable and traceable, and is very likely a contributing factor for the very low numbers of commercial trade records in the CITES database since these species were listed.

In the case of basking shark, most former basking shark fisheries had closed following stock collapse, and legal protections were in force across part of its North Atlantic range and in the Mediterranean before the CITES listing twenty years ago (CITES, 2002b; Table 3.1). The species is now protected or under zero fishery quotas across even greater parts of its range. Although some bycatch continues, there have been few CITES trade records of bycaught products (e.g., a shipment of 39 fins from New Zealand to Singapore in 2006). Given that basking shark is now so widely protected, CITES' role is to help ensure that any trade is legal – not in contravention of protected status, and sustainable – so that recovery can take place. Indeed, there are now early signs of population increase in this strictly protected stock: more frequent sightings of very large sharks and small juveniles are reported in the Northeast Atlantic by citizen science programmes, fishers and researchers (Rigby et al., 2021; Sims et al., 2015).

Whale sharks and white sharks have benefited from three decades of protected status in some important range States, starting well before the CITES listings (which were strongly supported by Parties that had adopted these measures, and/or who recognised that sustainable tourism is more valuable than fishing and product trade). White shark stocks are now reportedly increasing in some regions (Rigby et al. 2019). Both species have been assessed for the IUCN Green Status Assessment, which will monitor their recovery, and are the only sharks to be included thus far.

- The whale shark Green Status Assessment has a Recovery score of 29% (Largely Depleted – the score is measured against an unexploited baseline of 100%; Pierce et al., 2021). This depletion is attributed to target fishing that began in the 1980s. Without conservation measures this score would likely have been worse, at 25%. Cessation of current conservation measures (including the CITES listing) could lead, in ten years, to a status reduction from the current 29% down to 27%. There is scope for stock stabilization though, if further target and bycatch fisheries mitigation is introduced, and potentially a Recovery score of 50% in ten years' from now. Because the generation time for this species is only 25 years, full recovery should be possible within 100 years (Pierce et al., 2021).
- The white shark Green Status Assessment is Moderately Depleted – threatened in many spatial units and functional in only one – with a current Recovery Score of 56% due to past conservation efforts (Spaet, 2021). The species should continue to recover if current management measures (including the CITES

listing) are maintained. However, because the white shark has a generation time of 53 years, over 100 years will be needed for full recovery.

Regarding the next tranche of CITES listings (oceanic whitetip, porbeagle, hammerheads and manta rays): the updated Red List assessment trend for oceanic whitetip, two of the three hammerheads and manta rays suggests that these are also CITES listings that came too late. Although the oceanic whitetip had been protected by all tRFMOs between the first unsuccessful proposal to list it in Appendix II and the eventual listing, which came into force in 2014, the species had already entered a downward population trajectory that took it from Vulnerable to Critically Endangered in less than fifteen years. Two of the three hammerheads have also declined over this period, from Endangered to Critically Endangered, despite the adoption of some RFMO conservation measures. It is unrealistic to expect a rapid reversal in the status of these species. The porbeagle may recover more rapidly under a combination of fishery management measures and CITES regulations ensuring that they are complied with – there were only two commercial trade records for porbeagle during the four years 2017-2020.

Moving on to the listings of threshers, devil rays and silky shark in 2016, implemented in 2017, and the most recent listings of all, in 2019: it is clearly too soon to expect signs of population change, particularly for the Endangered and Critically Endangered pelagic mobulids and coastal guitarfishes and wedgefishes, and for some mako shark stocks. Despite the adoption of stringent management measures by ICCAT, the Atlantic stock of shortfin mako, for example, is committed to a continued downwards trend for at least another 15 years, followed by an increase to biomass levels sufficient to support maximum sustainable yield by 2070.[40]

3.4.2 Fisheries change as a proxy (catch per unit effort)

As noted in the introduction, while fisheries change can be a proxy for stock trends, if there are no other sources of information, commercial fishery catch per unit effort (CPUE) is not always a good indicator of population change. Indeed, CPUE can be very misleading if the fishery is selective, as described above for shortfin mako, where CPUE for juveniles remained fairly constant until the overfished cohorts failed to recruit into the breeding population. In those cases where fishery data, including CPUE are not available, total catches of high value species taken by unregulated fisheries might be used as an unsatisfactory proxy for stock trends, but this is not helpful for regulated fisheries. A consequence of the fishery prohibitions that have been adopted by RFMOs and some Parties to prevent further declines in depleted CITES-listed species, is that they hinder the collection of the fishery-dependant data (other than bycatch records) that are required for stock assessments. It is therefore even more important that fishery-independent monitoring continues for CITES species. Increasingly, in recent years, researchers are examining fishers' local ecological knowledge (Almojil, 2021; Karnad, 2022; Leduc et al., 2021) to track historic and recent changes in fish stocks.

[40] https://www.iccat.int/Documents/Meetings/COMM2021/PRESS_RELEASE_ENG.pdf

3.5 Conclusions

A great deal of work has been done by many Parties across all CITES regions to implement Appendix II listings for sharks, supported by substantial levels of funding from governments and NGOs, and practical contributions from FAO and RFBs. Activities have included detailed consultations to identify Parties' greatest needs for capacity building and other support; the development of implementation tools; and the dissemination of these tools through regional and national training and capacity building workshops, which have covered a wide range of subjects, from the identification of products in trade to the development of NDFs and associated action plans.

Implementation of CITES can be measured through human-level outcomes, *inter alia*, in the form of better management of and data collection from target and bycatch fisheries; higher quality, more detailed fisheries and trade data becoming available; the sharing of large numbers of detailed NDFs; trade records in the CITES database (including of specimens taken in "the marine environment not under the jurisdiction of any State"); enforcement of trade controls, evidenced by the identification and seizure of illegal shipments and penalties for traffickers; and (in some countries) greater public and fisher awareness of CITES, its requirements, and the need for all stakeholders to contribute to more precautionary management and utilisation of sharks. This work continues.

While there has been close collaboration between the CITES and FAO Secretariats, contributing significantly to the delivery of many of the above outcomes, there is still work to be done to build regional-level synergies between CITES and RFMOs. Work is also needed to improve mutual understanding and harmonize the efforts of national CITES and fisheries bodies, which is where the great majority of decisions on management of CITES species takes place, and practical actions follow (CITES, 2021c).

It is still too early, for most large, late-maturing, long-lived CITES-listed shark species listed during the past decade, to expect to see signs of population recovery following the introduction of CITES controls. Their biology is incompatible with rapid population growth. However, there are early signs of recovery for stocks of some species listed two decades ago, which are likely benefiting from a combination of regional and domestic management measures, for which CITES regulations improve compliance.

4. Humphead / Napoleon wrasse

4.0 Implementation of humphead wrasse listings

4.0.1 Background to listing

Humphead wrasse, *Cheilinus undulatus*, also known as the Napoleon fish or Napoleon wrasse, is the first coral reef-based food fish to be listed on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendices. The humpback wrasse's Vulnerable status was first reflected in an International Union for the Conservation of Nature (IUCN) Red List Assessment in 1996, and it was reassessed as Endangered in 2004 because of declines in exploited populations. It was originally proposed for a CITES Appendix II listing because of such large declines, which were exacerbated by low rates of population replacement, high catches of juveniles, and the natural rarity of the species (CITES, 2004). A listing proposal was rejected at the 12th Conference of the Parties (CoP12) in 2002 but accepted at CoP13 in 2004 by consensus. The CITES Appendix II listing came into effect on 1 December 2005.

The great majority of trade in the species is international and in live animals for a luxury seafood trade centred in Chinese cuisine (Fabinyi, 2012). All animals are taken from the wild, mostly in targeted fisheries that include cyanide use; small adults and larger juveniles are otherwise difficult to catch at preferred market size (e.g., Sadovy et al., 2003). For ranching, large numbers of very small juveniles are targeted seasonally with handnets in specific macroalgal habitats in a very few locations (Anambas and Natuna Is., Indonesia) (Arieta, 2022; Mujiyanto et al., 2020). Such grow-out of wild-caught post-larvae (termed 'ranching' by Indonesia) was already occurring at the time of the listing but was not known beyond local authorities and traders at the time. Indeed, the challenge of regulating exports in ranched animals was only really raised in 2015 (IUCN, 2019; Sadovy de Mitcheson, 2015).

The trade in humphead wrasse started in about the 1980s and by the mid-1990s was estimated to involve at least 100-200 tonnes annually (about 133,000 – 266,000 individuals, assuming average size in trade is 0.75 kg), coming from multiple countries, predominantly those in Asia and the western Pacific (Hau, 2022). In response to the proposed CITES Appendix II listing in 2004, the species was determined to be 'conservation dependent' in a Food and Agriculture Organization of the United Nations (FAO)-commissioned evaluation of its management system, monitoring and enforcement (Gillett, 2010).

4.0.2 CITES actions at the time of listing

The humphead wrasse listing was not accompanied by any Decisions or any conditions.

4.0.3 Summary of current situation with trade

Implementation of the CITES listing for this species has shown some encouraging progress but has also proven problematic, particularly in relation to illegal, unregulated and unreported (and unmonitored) (IUU) fishing and trade, both within source countries and into/through importing/demand centres. Almost all trade involves live fish, declared as wild (source code W) or ranched (source code R). The major legal exporter in the past decade, and currently the only legal exporter, is Indonesia. The major legal importer continues to be China, predominantly the mainland but also Hong Kong SAR; fish largely enter the mainland as re-exports from Hong Kong SAR.

From early 2020 until present (May 2022), AFCD (Agriculture, Fisheries and Conservation Department, government of HKSAR), has not received requests for legal CITES imports. This change is associated with the huge constraints on dining out during the COVID-19 pandemic. However, tens of fish have been visible on sale at retail outlets in the city sporadically at any one time over the past two years. Given that the typical turnaround time of a live humphead wrasse in the city is less than about a month, all of this must be illegal trade. Likewise, in

the mainland, humphead wrasse are regularly posted on social media and often available to special order (Y. Sadovy, pers. obs., 2020-2022).

After the CITES listing, regulation of trade in wild humphead wrasse (with source code W on the permit) benefited from meaningful engagement by Indonesia, Hong Kong SAR, the Food and Agriculture Organization of the United Nations (FAO) and the IUCN Species Survival Commission (SSC) Groupers and Wrasses Specialist Group (GWSG), who together achieved gains in implementation. The export of ranched humphead wrasse (with source code R on the permit) has only been allowed since 2018, and has caused significant challenges for successful implementation of the Appendix II CITES listing for this species. The limited trade in frozen fish is poorly understood and not controlled. However, it may be substantial in mainland China where frozen fish are marketed online. The Philippines continues to be a source for (smuggled) humphead wrasse even though under domestic law all exports are illegal for this and other Appendix II listed marine species (see ***National level protection***, below).

4.1 Level 1: Technical outputs (tools and capacity building)

Since the effective date of the listing, there has been positive and encouraging progress in filling information gaps, building Party capacity, and raising awareness about IUU fisheries. Multiple meetings/workshops and resulting reports were organized and produced, predominantly by the GWSG. Such work was funded by both the US National Oceanographic and Atmospheric Administration (NOAA) and CITES Authorities, and always executed in partnership with national fisheries agencies and national CITES Authorities, sometimes with participation of FAO. Importantly, non-detriment finding (NDF) guidance was developed in collaboration with FAO, specifically tailored for the sustainable management of the species and adaptable to different circumstances (using an interactive programme; Sadovy et al., 2007). Hong Kong SAR is hoping to improve enforcement by adapting to its needs a phone app, already in the public domain, that can track individual fish along the market chain. It is working with the GWSG on this.

4.1.1 Funding through CITES

Funding was made available on two occasions through the CITES Secretariat to support aspects of implementation of the Appendix II listing for humphead wrasse and to follow up on several of the CITES Decisions. The GWSG led on organizing the events, in collaboration with Indonesian or Hong Kong SAR CITES Authorities. CITES Decision 16.140 specifically directed the GWSG to continue its support to Parties in achieving sustainable fishing of humphead wrasse and in making NDFs in compliance with CITES.

4.1.2 Capacity building meetings

Following the CITES listing in 2004, the GWSG organized and conducted consultative meetings and workshops to, variously: advise Authorities of the listing; consider development of NDF protocols and field sampling in Indonesia; and discuss trade dynamics, implementation, enforcement, and IUU fishing. National level meetings were held in 2006, 2010, 2012, and 2015, either in Hong Kong SAR (13 Jan 2006) or Indonesia (15-16 Feb 2006, 24 Mar 2006, 3 Nov 2006, 3-4 Jun 2010, 18 Sept 2012, 8-10 Dec 2015). The Western Pacific Workshop (5-7 Jun 2006), held in China, involved most key countries then active in the international trade of the species. Participants provided updates on how they were implementing the CITES requirements and made progress on deciding aspects of humphead wrasse management and enforcement. Recommendations from that workshop included the recognition of the need for regional cooperation among the importing and exporting Parties, research related to CITES requirements, increased efficiency of trade monitoring, collection of fisheries data, legislation on law enforcement, and compliance. The workshop also stressed the importance of developing guidelines for the monitoring and management of humphead wrasse in the field.

4.1.3 Identification materials – development and training

The species is distinctive and relatively easy to identify, particularly since it is generally traded live. It is also distinguishable from its congeners by the black eyelashes that extend posterior to the eyes at all life history phases, although body coloration and proportions change somewhat with growth (i.e., with body size). Training of Customs officials for species identification was conducted at a meeting in southern mainland China (5-7 June 2006), as well as opportunistically for Customs officials and or fisheries officials during shark identification training workshops (Stanley Shea, Bloom Association, pers. comm., 12 April 2022). These Customs trainings occurred four times in Hong Kong SAR, twice in each of Fiji and Sri Lanka, and once in each of the following jurisdictions: mainland China, Indonesia, Maldives, Samoa, Taiwan, Province of China and Viet Nam.

4.1.4 Non-detriment findings framework – development and training

A science-based NDF framework was developed from a fishery model tailored for the species in collaboration with independent fisheries experts, FAO, and the GWSG (Sadovy et al., 2007). To estimate model parameters, information on the species' biology, ecology, trade, culturing (grow-out) and fishery were compiled either from existing literature or from dedicated field studies in Indonesia. The NDF framework was developed in a format that enables countries to modify input parameters to suit their own local circumstances and to accommodate changes in parameters over time. Underwater visual census (UVC) surveys in the field were always conducted with Indonesian fisheries or research staff and they have since adopted this method and applied it themselves.

4.1.5 Legal acquisition findings frameworks – development and training

There are no humphead wrasse-specific legal acquisition finding (LAF) frameworks at the time of writing. However, there are ongoing concerns about legal acquisitions. Before issuing export permits, Indonesia's CITES Management Authority (MA) needs to ensure the source of an animal (W or R), the location where it was fished, and ensure that it is within the legally-permitted export size range according to national law (further details under ***Making NDFs***, below).

4.1.6 Monitoring guidelines – development and training

Guidelines and protocols for monitoring humphead wrasse in the field and in trade were developed during research conducted by the GWSG in support of the CITES Appendix II listing. The fieldwork in Indonesia was funded variously by NOAA and the CITES Secretariat with the objective of adapting standard reef fish UVC protocols for this large, wide-ranging and uncommon species, using GPS for tracking surveys. The novel methodology was then used to undertake surveys for population abundance, to train field workers in Indonesia, and to generate information for ultimate use in evaluating the effectiveness of the CITES listing (IUCN, 2006a). For example, the UVC method was used to assess selected areas shortly after the CITES listing and then again 6-9 years later at the same locations to assess changes over time (further details in ***Data generation and synthesis***, below). It is recommended that surveys continue in the same areas every 5-10 years to track the status of fish densities and size distributions (Sadovy de Mitcheson et al., 2019).

To support monitoring of trade in Hong Kong SAR, and in relation to Decision 16.139 and in support of Decision 18.209 (Table A1.3; details in ***Action by CITES as a whole***, below), the GWSG is working with the Hong Kong SAR CITES MA (the Agriculture, Fisheries and Conservation Department, AFCD) to tailor - for their use in law enforcement - a facial recognition phone app (Hau & Sadovy de Mitcheson, 2019). The app would be used in Hong Kong SAR to follow individual humphead wrasse, each of which has distinctive facial features. The initial idea was to photograph all fish on import – for individual identification along the sales chain – but the large numbers of fish arriving with source code R has made it necessary to shift to retail outlets instead. It is now directed at public use (citizen science) to provide information on fish for sale. Each retail outlet is assigned a particular number of fish to sell based on legal imports and all sales must be tracked. Having an app that can recognise fish individually reduces the risk of retail outlets laundering extra fish (that were not legally acquired). The app, developed by Yvonne Sadovy and Loby Hau together with a team of technical experts (Hau & Sadovy de

Mitcheson, 2019) has been developed and released in Hong Kong SAR. While it continues to be refined, the app is already good enough to provide partial evidence in court.

4.1.7 Data generation and synthesis

To develop the NDF framework for exports from Indonesia, data were collected and parameters estimated to establish a fishery model, tailored to the species that allows for calculation of an export quota (Sadovy et al., 2007). Estimates of natural fish abundances and other parameters for model development were conducted through a series of collaborations between the GWSG, LIPI (Indonesian Institute of Sciences), and staff of the Ministry of Marine Affairs and Fisheries (KKP). These were funded variously by the CITES Secretariat, US National Marine Fisheries Service, University of Hong Kong, and LIPI.

Data on population trends in support of quota calculation and to assess any changes in populations came mainly from field surveys for abundance and density (see ***Monitoring guidelines***, above; Sadovy de Mitcheson et al., 2019), as well as from occasional trader questionnaires. For the field surveys, six sites were selected (two each of high, medium and low fishing pressure across Indonesia) and each surveyed at intervals of 6-9 years, in consideration of the longevity of the species, to determine population abundance over time following the CITES listing (Sadovy de Mitcheson et al., 2019).

The CITES listing meant that CITES Parties were obliged to track trade data formally so they could meet their obligation to report trade to CITES in annual reports. Such information provides a global insight into legal and reported trade, although the CITES database has several shortcomings for humphead wrasse (Pavitt et al., 2021). Since the Convention does not mandate that importing Parties report trade in CITES-listed species (though many do) and since not all Parties report imports, it is not always possible to cross-check all trade data. For humphead wrasse, this is particularly problematic in the case of mainland China because declared exports (or re-exports from Hong Kong SAR) to China do not match the large number of fish regularly observed for sale in the country; China does not regularly record imports of this species (Hau & Sadovy de Mitcheson, 2019). Note that sale of these stocks should be reflected in Parties' export or re-export data to China in the trade database; trade from Hong Kong SAR into mainland China should be included under re-exports from Hong Kong SAR (Hau & Sadovy de Mitcheson, 2019).

Trade and field data were collected and published for the post-CITES period in a number of jurisdictions. In Indonesia, field data were collected by GWSG and Indonesian government departments. In the Philippines the government endorsed a trade and field survey (BFAR, 2017). These surveys have been used to improve understanding of the status of the species in the wild although how such data were applied by Parties is not known. Trade surveys in Hong Kong SAR (e.g., Hau & Sadovy de Mitcheson, 2019; Wu & Sadovy de Mitcheson, 2016) resulted in increased inspections of retail outlets/traders with an increase in confiscations and convictions arising as a result.

4.1.8 Technical advice and briefings to CITES

Recommendations for cooperative work and specific actions are reflected in various CITES documents issued for humphead wrasse (Table A2.3). TRAFFIC/IUCN (2009) covered shortcomings in transboundary implementation of CITES Appendix-II listing of the humphead wrasse and made many recommendations: limit international trade to air or land (to reduce illegal trade by vessels); increase monitoring and verification of trade records by both exporting and importing countries; improve communication among trading Parties, including for law enforcement information; regularly compile and distribute a comprehensive summary of violations of the Convention for the species; increase awareness of the CITES listing for humphead wrasse, including improved identification capacity among law enforcement officers; and discuss the action to be taken in the case of illegally imported live fish, in both the long and short term. Subsequently, until 2018, trade was limited to air-only and

training in identification was given. The GWSG identified aquaria in Europe prepared to received small numbers of confiscated fish although this was never followed up by Hong Kong AFCD (which serves as the Hong Kong SAR CITES MA).

Due to questions about the sustainability of ranching operations (in SC69 Doc. 48; CITES, 2017b; pursuant to Decision 17.201), FAO collaborated with the GWSG and the CITES Secretariat to highlight the need to ensure the sustainability of a new "ranching" designation (CITES source code R; CITES, 2017c) by Indonesia for this species (See ***Making NDFs***, below). However, this Decision was deleted at CoP18 (2019) without justification and without the required tasks being completed. The new export of humphead wrasse with source code R from Indonesia in 2018, without a biologically established quota, resulted in an increase in undocumented trade into Hong Kong SAR and is now a significant risk factor affecting implementation and conservation for the species in Indonesia (Hau, 2022). The need to introduce cost-effective tracing techniques, including technologies for tracking live-fish-transporting vessels has been ignored. A related call for individual fish recognition and tracing techniques to assist in excluding illegal market product – acquired in violation of the convention and related national laws – is only now being considered and only for Hong Kong SAR (see ***Monitoring guidelines***, above).

4.1.9 Action by the CITES as a whole

Decisions were adopted at CoP meetings in 2010 (3 Decisions), 2013 (2 Decisions), 2016 (2 Decisions), and 2019 (1 Decision), respectively (i.e., CoP15 to CoP18 summarized in CoP18 Doc. 67; Table A1.3). They called for action by both exporting and importing Parties in five dimensions: (i) enhance monitoring, trade control and enforcement; (ii) strengthen domestic regulatory measures; (iii) exchange information among trading partners; (iv) improve training in species identification; and (v) address the handling of live animal confiscations. The most recent Decision, 18.209 adopted at CoP18, directs the Secretariat to continue "supporting major importers and exporters to address remaining CITES implementation challenges and ensure well-regulated, sustainable management of, and trade in, the species" (CITES 2019j).

No CITES Decisions on the species prior to CoP 18 are still in effect (Table A1.3), even though key problems raised in the earlier Decisions remain (including ongoing illegal trade, poor vessel control, and poor communication among Parties) and new challenges have arisen (e.g. the introduction of humphead wrasse with source code R in 2018). FAO has been unsuccessful in obtaining funding for biological work to assess the implications of ranching operations.

Two notifications have been issued for humphead wrasse, informing Parties of Decisions adopted at the previous CoP (Table A1.3). Neither required any reporting by, or information gathering from, the Parties.

4.2 Level 2: Policy outcomes (governance change)

Several Parties have made progress with policy outcomes since the 2004 CITES Appendix II listing of humphead wrasse. Some countries opted to cease exports of the species altogether (Hau, 2022). The remaining major legal exporters after 2004 were Indonesia and Malaysia, with illegal exports continuing from the Philippines (BFAR, 2017). The major importing Party after 2004 (as before) was China, including both the mainland and Hong Kong SAR. After 2009, Malaysia ceased exporting the species because of low abundance, leaving Indonesia the only legal exporter. Export quotas for humphead wrasse with source code W were adopted by Indonesia, according to an NDF model and trader input, and are modified annually. Hong Kong SAR applied Cap. 586, a city regulation that regulates possession of species listed on CITES Appendix II. This regulation was weakened in 2018 when humphead wrasse with source code R were introduced because they are considered to be 'non-wild' (despite being caught in the wild) and, hence, subject to weaker oversight than for humphead wrasse with source code W.

4.2.1 Reservations

No CITES Parties took out reservations for the humphead wrasse.

4.2.2 National level protection

A number of Parties enacted national level legal protection for humphead wrasse with timings that indicated they were influenced by the CITES listings, including the following examples.

- The Philippines cannot legally export the species initially because the Fisheries Act 10654 (Section 102) prohibits even capture of any CITES-listed species until scientific assessments show such activities to be sustainable and a legal framework is put in place. Subsequent assessments have shown that humphead wrasse cannot sustain pressure of collection or trade so the ban on export remains (BFAR, 2017; Nañola, 2021).
- Hong Kong SAR's Protection of Endangered Species of Animals and Plants Ordinance in Hong Kong (Cap. 586), under the authority of AFCD, mandates the following rules for humphead wrasse, which go beyond the requires CITES provisions for Appendix II (Wu & Sadovy de Mitcheson, 2016):
    - Import of live humphead wrasse of wild origin requires a valid import licence issued by AFCD in advance (dead, i.e., frozen or chilled, or captive bred humphead wrasse does not need an import licence from AFCD)
        - Legal possession of humphead wrasse in Hong Kong SAR requires:
        - A valid "possession licence" issued by AFCD for commercial purposes for any type of specimen (live or dead).
        - A valid "possession licence" issued by AFCD for wild origin live humphead wrasse in Hong Kong SAR, regardless whether for commercial purposes or not. Some confusion with this regulation has arisen because ranched fish are considered to be 'non-wild' and hence subject to weaker controls, and the CITES source code R is interpreted by the government (in practice, without explanation or documentation) to mean 'non-wild' (AFCD, pers. comm., 2022). Clarification on interpretation has been sought on multiple occasions by the GWSG, without success.
        - Dead humphead wrasse for personal use are exempted from possession licence requirements.
- In mainland China, humphead wrasse was listed as a Grade II nationally protected species in 2021, one of few marine fish to be thus listed. This listing means that the species cannot be sold anywhere in the mainland. Hence imports to mainland China are now illegal. However, a recent investigation of social media postings and enquiries at seafood retail outlets in multiple cities show that the species is still available for sale although traders clearly know that sales are illegal (Sadovy & Wong, 2022).

In addition to national measures, the Coral Triangle Initiative (CTI) includes the humphead wrasse as one of its threatened and charismatic species (along with sharks, cetaceans, and turtles). The inclusion of humphead wrasse signals a need for attention for this within this initiative, although no action has been taken to date (DENR, 2009).

4.2.3 Making non-detriment findings (NDFs)

Indonesia is currently the only Party with ongoing legal exports of humphead wrasse according to CITES records. Several countries ostensibly permit exports above 65 cm total length (TL) but such exports have not been recorded or imported, perhaps because this minimum size is well above the preferred size range for normal seafood trade in humphead wrasse. Initially, when Indonesia only allowed exports of individuals with source code W, implementation of the CITES listing was progressing well. Indonesia regulated its exports of humphead wrasse with annual quotas, allocated according to province and duly adjusted each year and, with further regulations on permitting body size for catch and export. All humphead wrasse in Indonesian trade are wild-caught but their exports are, as of 2018, listed under two CITES source codes – W for wild (since 2005) and R for ranched (since 2018; CITES, 2018d) – each with its own export quota. The quotas differ enormously, being set at less than 1,000 individuals for source code W and tens of thousands for source code R. While export quotas for source code W were determined by a science-based NDF (details above), following government consultations with traders, the NDF for exports of humphead wrasse with source code R is not linked to biologically sustainable limits. Rather, it apparently arises from economic and social considerations; (1) ranching had been ongoing for decades, its exports occurring (illegally) by vessel; and (ii) farmers/traders were pushing for permission to export their hundreds of thousands of fish that had been grown to market size in cages for years (Directorate of Conservation and Marine Biodiversity, 2016; Sadovy de Mitcheson, 2015; Syam et al., 2020)

Introduction of source code R for humphead wrasse has increased legal exports of the species multi-fold without any apparent scientific rationale. The CITES definition for the allocation of source code R is "the rearing in a controlled environment of animals taken as eggs or juveniles from the wild, where they would otherwise have had a very low probability of surviving to adulthood" (CITES, 2000), but there is no evidence that the Indonesian ranching meets these criteria. Humphead wrasse with source code R are currently only exported from Anambas Regency (Anambas/Natuna islands) which has a long and unique history in Indonesia of catching post-larvae and small juveniles of the species followed by a long, multiple year, grow-out period. For pelagic-spawning fishes, peak mortality is in the planktonic egg phase prior to settlement and, to a lesser extent, in the short period at settlement. Hence, all humphead wrasse are captured well beyond the highest natural mortality phase. Moreover, (a) many humphead wrasse are taken weeks or months after the settlement stage of higher mortality, (b) once in captivity there is high mortality and (c) adults were once common in the area but are now rarely evident (Arieta, 2022; Sadovy de Mitcheson et al., 2019; Syam et al., 2019). Exports of grown-out fish from this region, the only one where this 'ranching' of early post-larvae activity takes place, had long occurred illegally but were legalized in 2018 following the introduction of the R source code. From prices charged in Hong Kong SAR, it seems highly possible that humphead wrasse with source code R are passed off as fish with source code W, which fetch a higher price (Y. Sadovy, pers. obs., 2022).

There has been no scientific-based study as a foundation for the NDF for humphead wrasse with source code R (Directorate of Conservation and Marine Biodiversity, 2016; Prianto, 2019; Syam et al., 2020; Syam et al., 2019), and there is no evidence that exports are biologically sustainable. The only type of study conducted was of the culture practices and social implications (Mujiyanto et al., 2020) with concerns expressed over the very high mortalities, following collection in the wild, of these small fish (Arieta, 2022). Instead, the unjustified rationale for source code R was that such humphead wrasse were "cultivated" but not "wild-caught", and hence could be managed differently as suggested in the latest NDF (Directorate of Conservation and Marine Biodiversity et al., 2016). The humphead wrasse with source code R are, in fact, all wild-caught. Use of source code R does not

relieve Parties of the requirement to make a science-based NDF, which must include the impact of collection in the wild on populations.

The Indonesian ranching of humphead wrasse contravenes the CITES suggestion that a certain percentage of grown-out individuals at the age of enhanced survival rate should be released into the wild (CITES, 2001) or the Party should engage in effective protection of settlement habitat. There is no demonstrated conservation benefit associated with source code R, and the species has not recovered in the Anambas/Natuna islands where all of this ranching occurs. A further concern is that it is not possible (despite claims to the contrary) to distinguish humphead wrasse with source codes W and R based on their colour, and law enforcement cannot disentangle the fish by origin (Directorate of Conservation and Marine Biodiversity, 2016; IUCN, 2018b).

CITES has made a recommendation for NDF work to be conducted for the R-coded quota (CITES, 2017b). Research support, especially for a scientific NDF for humphead wrasse with source code R was identified to be crucial to policies and management strategies towards biological sustainability, and to minimize illegal trade (i.e., confusion of humphead wrasse with source codes W and R; CITES, 2018a; IUCN, 2018b). There is, in fact, no reason not to adapt the existing NDF for humphead wrasse with source code W to determine an appropriately cautious export quota for those with source code R.

With respect to size limits, which are a key component of the Indonesian NDF for humphead wrasse with source code W, the fishery for humphead wrasse in Indonesia that supplies international trade is legally constrained by upper and lower size limits of individual fish permitted for export. Regulations that predate the CITES listing state that only animals weighing 1-3 kg can be exported. However, animals smaller than 1 kg can be caught if they are to be used for grow-out (called ranching) within Indonesia and subsequently exported within the 1-3 kg size range.

4.2.4 Making legal acquisition findings (LAFs)

There have been no concrete or reported outcomes with respect to LAFs for humphead wrasse.

4.2.5 Introduction from the sea (IFS)

This is not relevant to humphead wrasse, which are not found in areas beyond national jurisdiction in their post-settlement, exploited state.

4.2.6 Export restrictions

Considering that fishing pressure on this species is almost entirely for export, mostly live for seafood, enforced export quotas and size limits are expected to constrain target fisheries and thus benefit wild populations. The main exporter, Indonesia, has implemented export quotas for humphead wrasse with source codes W and R (that are usually adjusted annually for W and less predictably for R), and has, since about 1995, had national level size regulations for humphead wrasse of 1-3 kg for export (about 40 to 55 cm TL; Keputausan Menteri Kelautan Dan Perikanan Republik Indonesia NOMOR 37/KEPMEN-KP/2013; CITES, 2018d) (see ***Making NDFs***, above). Indonesia has also issued a CITES Notification to the Parties (No. 2018/22) regarding legal permitted sizes of export for humphead wrasse with both source codes W and R.

Notably, Indonesia has regulated the mode of transport for humphead wrasse with source code W to facilitate higher levels of oversight in support of the CITES listing, but distinguishes among humphead wrasse with source codes W and R. Indonesia introduced an air-only restriction in 2007 for humphead wrasse with source code W, to reduce illegal trade by the poorly regulated Hong Kong-based live fish carrier vessels (Sadovy de Mitcheson et al., 2017). On the other hand, Indonesia requires sea transport for humphead wrasse with source code R, although these must be in Farmed Fish Carrier vessels that have been licensed by the Indonesian government (CITES, 2018d). Oversight and control of these fish carrier vessels by both Indonesia and Hong Kong SAR is so

poor that illegal international trade of humphead wrasse by vessel is challenging to control (Hau & Sadovy de Mitcheson, 2022; further details under ***Changes in enforcement***, below).

Several other Parties set a minimum size limit as one way of regulating exports for sustainability, effectively banning significant export numbers of fish for the seafood trade. As of 2018, the Solomon Islands made it illegal to fish, sell or buy humphead wrasse shorter than 65 cm TL; this has effectively ended export of live humphead wrasse for seafood because the market prefers much smaller (plate-sized) fish (Solomon Islands Subsidiary Legislation, 2018). As of 2019, Kiribati (a non-Party to CITES) similarly restricted fishing, sale and export of individuals less than 65 cm TL (Government of Kiribati Ministry of Fisheries and Marine Resources Development, 2019). Prior to its total export ban (see next section on ***Export suspensions***), Papua New Guinea also forbade exports of animals less than 65 cm TL (PNG Fisheries Regulations 2005). Papua New Guinea participated in export trade for humphead wrasse from 2005 and the last year shown for recorded trade was 2008. The reasoning behind the common 65 cm TL limit is unclear, but it is well into the size at maturity and so should help to protect reproductive potential of humphead wrasse populations.

4.2.7 Export suspensions

Malaysia, Papua New Guinea and Taiwan, Province of China have all suspended exports of the species.

- Malaysia was a major exporter until the status of the species was assessed in the country and IUU fishing was identified following the CITES listing along with illegal imports from the Philippines (Chen & Justin, 2009; Fabinyi & Dalabajan, 2011; Poh & Fanning, 2012). The country issued a zero export quota in January 2010 for live fish (Poh & Fanning, 2012). Frozen exports of humphead wrasse were occasionally reported thereafter but they were also prohibited as of 2015.
- Papua New Guinea suspended exports after the CITES listing with no exports recorded after 2008.
- Taiwan, Province of China has forbidden fishing, disturbing, importing and exporting humphead wrasse since 2014 (Council of Agriculture, 2015). However, 'Long Dian Marine Biotechnology Company Ltd' has just applied to Taiwan's Marine Conservation Office of the Oceanographic Commission to import juveniles from Indonesia for 'expanded artificial restoration'.

4.2.8 Import restrictions

Hong Kong SAR Cap. 586 (Protection of Endangered Species of Animals and Plants Ordinance) requires a permit to be issued for import of live humphead wrasse with source codes W and R. Hong Kong SAR's AFCD keeps records of CITES imports, as required under city ordinance (Cap. 586) and of re-exports, as required by CITES; re-exports go predominantly to mainland China, but the requirement applies to all trading partners. Note that at the time of the Appendix II listing (2004) the Hong Kong SAR government indicated that the control / oversight of Hong Kong SAR fishing vessels which import this species, in addition to air transport, would be a challenge. It continues to be so. Live fish carrier vessels are exempted from reporting their movements to the Hong Kong SAR government (Marine Department) and hence effectively lack any form of control or restrictions even though they regularly import humphead wrasse (Hau & Sadovy de Mitcheson, 2022). Re-exports to mainland China are rarely reported even though they regularly occur (Wu & Sadovy de Mitcheson, 2016).

4.2.9 National plans of action agreed by Parties

Two national plans of action (NPOAs) for humphead wrasse were developed after the CITES listing, by the governments of Indonesia and the Philippines, because of concerns for the species (BFAR, 2017; RAN, 2016-2020).

In Indonesia, the NPOA was intended as a strategy and action plan for conservation to protect and conserve the species and harness its potential to provide sustainable economic benefits as well as to meet the CITES provisions related to its international trade (RAN, 2016-2020). Targets of this NPOA were for the period 2016-2020 and covered five elements: (1) develop a database of humphead wrasse population status at selected

locations across Indonesia; (2) improve enforcement in areas prone to illegal take; (3) issue a ministerial decree on the management of humphead wrasse exploitation; (4) protect important humphead wrasse fish habitat in at least one conservation area; and (5) make an NDF for humphead wrasse ranching.

The Indonesian NPOA has not been actioned for most targets. The sole exception is that, in support of target 1, Indonesians have conducted several field surveys of abundance in Indonesia using the methodology developed by the GWSG, to assess the species' status as well as evaluate its potential for dive tourism (e.g., Oktaviani et al., 2021 and references therein). The apparent failure to fully pursue the NPOA helps explain why exports of humphead wrasse from Indonesia have substantially increased and, with one possible exception, recovery of the species is not yet apparent (Y. Sadovy, pers. obs.). The introduction of humphead wrasse ranching – in which wild humphead wrasse are captured, grown, sold – without a relevant NDF substantially increased fishing pressure on the species and the numbers of animals exported (see ***Making NDFs*** above), despite surveys showing that population status had not improved. Related to NPOA target 4, above, humphead wrasse are protected in several Indonesian marine protected areas (MPAs; e.g., Bunaken) although these were not established solely for this species. Although protection is not perfect, larger fish are found in these areas while they are never seen in areas that experience moderate to heavy fishing.

In the Philippines, an NPOA was conducted pursuant to the CITES 2004 listing and in recognition of the threatened status of the species and concerns over declines. One recommendation was to "strictly enforce fishery laws pursuant to CITES, Fisheries Code as amended by RA 10654, Wildlife Act RA 9147, and FAO [Fisheries Administrative Order] 233" (BFAR, 2017). The intent of the NPOA was to produce a science-based, collaborative and systematic management approach for the humphead wrasse, however, management and enforcement do not seem to be forthcoming and a ban on even extraction remains in place (see ***National level protection***, above).

4.2.10 Monitoring plans agreed by Parties

In its NPOA, Indonesia (as the only Party legally exporting humphead wrasse) committed to make available a database of population status of humphead wrasse captured at those locations where export quotas have been issued. While several field surveys to assess populations have been conducted (e.g., Oktaviani et al., 2021 and references therein), no database is available to the public.

The GPS survey method developed by the GWSG was adopted for the humphead wrasse survey work by workers in Indonesia (e.g., Hau, 2022; Oktaviani et al., 2021 and references therein). This simple to use, robust and inexpensive approach was used to survey humphead wrasse abundance and density across multiple areas in Indonesia; these surveys documented changes over time from the CITES listing until 2016 (Sadovy de Mitcheson et al., 2019 and references therein; see ***Population change***, below).

On the import side, the facial recognition app developed to facilitate tracking of illegal trade (explained under ***Monitoring guidelines***, above) has been trialled for enforcement by the CITES MA (AFCD) in Hong Kong SAR. The AFCD plan is to have it adapted specifically to their database and privacy requirements; approval for government funding is pending as of May 2022.

4.2.11 Review of Significant Trade

Humphead wrasse has not yet been included in the Review of Significant Trade (RST) process. However, it is evident that the trade associated with humphead wrasse designated as source code R requires scrutiny by the RST process (see ***Making NDFs***, above).

4.2.12 Action by Regional Fishery Bodies (RFBs)

The only Regional Fishery Body (RFB) to engage with the live trade in humphead wrasse is the Asia-Pacific Fishery Commission (APFIC). It has yet to take action for reef fishes and threatened species, despite a declared

purpose of managing and optimally utilizing living aquatic resources and assessing their status. Southeast Asian Fisheries Development Center (SEAFDEC) does not address matters related to the humphead wrasse.

4.2.13 Action by industry

With one noteworthy exception, the seafood industry has not responded to the CITES listing, although the Chairman of the Hong Kong Chamber of Seafood Merchants confirmed concern over illegal imports to Hong Kong SAR (Mr. Lee, pers. comm., 2017). One major Indonesian trader of the species (Heru Perumo, PLMBali) did, however, voluntarily opt to cease trading humphead wrasse in 2007 once he realized the rarity of the species after joining underwater visual census surveys for population abundance (Sadovy de Mitcheson et al., 2019). Ocean Park, Hong Kong SAR's aquarium and theme park, has supported the government and has accepted and housed confiscated live humphead wrasse, within its capacity. Some of these fish were used for research into changes in individual facial markings over time, in support of enforcement (Hau & Sadovy de Mitcheson, 2019). Ocean Park also included educational information on the species in-house and on its website after the CITES listing. The fish were then transferred to S.E.A. Aquarium in Singapore which aims to provide educational material. European aquaria have also indicated interest and readiness to receive confiscated animals for display and educational purposes (Y. Sadovy, pers. comm.).

4.3 Level 3: Field outcomes (practical change)

Some practical outcomes have occurred through management changes following the Appendix II listing of humphead wrasse. Following the listing, export trade initially declined substantially (as reflected in UNEP-WCMC data and in city-wide surveys; Hau, 2022), largely because of introduction of export quotas by Indonesia. Recorded numbers in export trade decreased from several tens of thousands annually in 2005 to about a thousand fish annually by 2016 (Hau & Sadovy de Mitcheson, 2019; UNEP-WCMC, 2022b). Export bans by Malaysia (implemented in 2009 for live animals and 2015 for frozen) and other countries were also important in reducing overall international trade between 2004 and 2018. International trade then increased markedly from 2018 when Indonesia began allowing exports of humphead wrasse with source code R. Despite the recent surge, overall number of live humphead wrasse traded according to official CITES records have declined markedly from the 2007-2009 period although high levels of illegal trade mean the actual numbers are not known.

In Hong Kong SAR, enforcement improved after 2016 following exposure of illegal trade until inspections declined in 2019 because of the COVID-19 pandemic. Mainland China's classification of humphead wrasse as a Grade II species in 2021 – which prohibits sales – leads us to infer that sales are likely to be far fewer as the trade has gone underground and traders are wary. However, China is obviously still not fully achieving implementation at Level 3 as humphead wrasse are regularly on sale according to multiple social media posts (Y. Sadovy, pers. Obs.)

4.3.1 Changes in target fisheries

We can infer that target fisheries in Indonesia were probably reduced for humphead wrasse designated as source code W by the introduction of annual export quotas according to the NDF. These were assigned at a provincial level. Regulations on export sizes (and thus capture sizes) as part of the NDF also help constrain fishing, although these were actually already in place before the CITES listing. Given that the major trade of humphead wrasse is by export and numbers on retail sale in Hong Kong SAR declined substantially following the listing (Hau, 2022), this implies an initial substantial decline in targeted fishing. However, the surge in traded fish with source code R since 2018 is of concern since such ranching is dependent on extraction of wild fish (caught after peak wild mortality) that are then grown-out; the number caught to supply the ranching is not known but will be greater than the number of ranched fish exported, given high mortality rates during grow-out.

4.3.2 Changes in non-selective fisheries

Incidental removal is not a major concern for humphead wrasse.

4.3.3 Changes in trade

The CITES Appendix II listing catalysed big changes in the scale of international trade in humphead wrasse. Indonesia's new controls meant that exports of humphead wrasse from Indonesia to Hong Kong SAR declined from several tens of thousands annually in 2005 to about a thousand fish annually with source code W by 2016 (Hau & Sadovy de Mitcheson, 2019; UNEP-WCMC, 2022b). The scale of trade then accelerated again when Indonesia began allowing export of tens of thousands of humphead wrasse annually with source code R in 2018. There are hints that Indonesia may be poised to create a zero quota for humphead wrasse with source code W in favour of source code R, even though the latter are also obtained from the wild.

Market changes indicate ongoing challenges with CITES implementation. According to trade records held by UNEP-WCMC as well as the regulation requirements for import and sale of humphead wrasse, all humphead wrasse available in mainland China, regardless of whether in physical or online markets, have been illegally imported. Hong Kong SAR Customs data also suggested that no humphead wrasse have been legally re-exported from Hong Kong SAR to mainland China (Wu & Sadovy de Mitcheson, 2016).

Market reach was expanded by online sales of humphead wrasse, particularly in mainland China, prior to its mainland listing as a Grade II protected species in 2021 (Wu & Sadovy de Mitcheson, 2016). Unlike Hong Kong SAR, where live fish is the product, mainland China also accepts chilled/frozen humphead wrasse at a lower price than live fish. In 2015 five online seafood companies specifically advertising humphead wrasse for sale were located in Beijing, two in Shanghai and three in Guangzhou. Such distribution highlights that markets for humphead wrasse in mainland China also exist in northern metropolitan cities and not just in the south of the country, the traditional humphead wrasse consumer market. Although the advertisements do not reveal information about the availability and sales volumes for humphead wrasse, the accompanying images, descriptions and price information, coupled with the offer for guaranteed live fish delivery in these major cities, indicates that these companies know the species well and can supply genuine products. All sales/social media are in Chinese. Since humphead wrasse became a Grade II listed species, open advertising online, including readily accessible public information such as restaurant menus, has stopped. However, searches of social media, WeChat and Baidu show personal messages and videos of humphead wrasse in seafood restaurants in Hainan, Xiamen, Fuzhou, Zhongshan, Shanghai, Shantou, WeChat, and Baidu messages and videos (Gonzalo Wong, pers. Comm., May 2022).

Overall, traders indicate that the species has become more difficult to obtain in recent years compared to their experience one or more decades ago, with declining trade per unit effort. Humphead wrasse in the retail sector have also become smaller on average over the last 15 years since the CITES listing (Hau & Sadovy de Mitcheson, 2019). This is at least partly due to reduced availability in the wild, with very large adults becoming particularly scarce in trade (Anon, pers. Comm., January 2022).

4.3.4 Changes in enforcement

Exporters:

Indonesia's sea-only transport regulation for humphead wrasse with source code R, introduced as of 2018, is difficult to control both in Indonesia, where vessels evidently do not use the Automatic Identification Systems (AIS) (Y. Sadovy, pers. Obs.), and in Hong Kong SAR which effectively has no controls on vessels (Class IIIa in Hong Kong SAR) that import live humphead wrasse: they are exempted from reporting entry and exit from Hong Kong SAR; they do not report humphead wrasse to Customs (as they should); and many do not use AIS, rendering them largely untraceable for movements or spot-checks (Y. Sadovy, pers. Obs.). Indeed, when the

humphead wrasse were listed in 2004, AFCD warned of this problem. Despite efforts by the GWSG to engage the Hong Kong Customs and Marine Department, controls have not increased. In support of its sea-only regulation for humphead wrasse with source code R, Indonesia has requested the CITES MA of the importing Party (currently only China through Hong Kong SAR) to check the validity of any humphead wrasse shipment upon its arrival to ensure only legal specimens were being traded. One aspect of legality is that the humphead wrasse must be in size range for 1-3 kg dictated by Indonesia. That said, Hong Kong SAR does not scrutinise the size because the information is not on the export permit.

Exports from the Philippines continue even though the Fisheries Act decrees that harvesting, injuring, possession and export of the species are all illegal because the species cannot sustain pressure of collection or trade (BFAR, 2017; Nañola, 2021). According to an independent report from the Philippines, exports occurred from the Philippines to Malaysia, mainland China, Hong Kong SAR and Taiwan, Province of China (BFAR, 2017; Fabinyi & Dalabajan, 2011; Wu & Sadovy de Mitcheson, 2016). These would, therefore, all be illegal; there is no known control or enforcement on trade of humphead wrasse out of the Philippines.

As mentioned under ***Export restrictions*** and ***Export suspensions*** above, several other source countries either introduced size constraints that would effectively end exports if adhered to, or reportedly ended exports altogether. It is not known how successful these measures have been, but there is no evidence for any trade (reported or anecdotal) from any of the countries with a *de facto* or formal trade suspension in place.

Importers:
Enforcement of CITES implementation for trade in humphead wrasse in Hong Kong SAR initially improved but has now severely weakened. After the listing, Hong Kong SAR tried hard to regulate trade in humphead wrasse with source code W, in accordance with the its legislation that covers CITES-listed species (Cap. 586; Protection of Endangered Species of Animals and Plants Ordinance[41]). Occasional cases of illegal possession of humphead wrasse occurred in 2007 and 2009, but the number of successful prosecutions and fines increased after 2016 and 2018 when enforcement tightened in response to a study on trade which revealed illegal trade/laundering in the city (Wu & Sadovy de Mitcheson, 2016; see ***Data generation and synthesis***, above). For example, between 2014 and 2016, AFCD CITES data indicated that 434 humphead wrasse were imported into Hong Kong SAR. However, official data were substantially underreporting imports; retail market surveys indicated that several thousand fish were probably imported over that time period (Wu & Sadovy de Mitcheson, 2016).

In 2017-2018, enforcement improved because of concerns over laundering (AFCD, pers. comm.) and subsequently the discrepancy between the numbers of legal imports and numbers of humphead wrasse on sale in retail outlets was reduced, suggesting tighter enforcement (Hau & Sadovy de Mitcheson, 2019). As an indicator of enforcement, 35 convictions (2007-2018 inclusive) for illegal possession – mostly of small quantities – were made in Hong Kong SAR, primarily between 2016 and 2018. All penalties were fines (of HKD 700 to 50,000). Up until 2020 there is evidence of 36 prosecutions and the confiscation of 109 animals. AFCD further proposed the adoption of a facial recognition app to assist enforcement (see ***Monitoring*)**, which will be a first for CITES to our knowledge.

4.3.5 Breeding/farming/ranching

Implementation challenges for humphead wrasse since 2018 largely centre around ranching, which does not involve captive breeding but rather encompasses the capture (from the wild) and grow-out of small post-settlement fish. Although such ranching had been operating for decades, well before the Appendix II listing, it was not well known, understood, or classified as such until 2018; it appears that most exports of ranched fish

[41] www.elegislation.gov.hk/hk/cap586

prior to that year were illegal (Y. Sadovy, pers. obs., 2013). The details of this challenge are explained under ***NDF findings***, above. The humphead wrasse are taken from the wild to be ranched well after the early stage of high natural mortality, and hence do not meet the definition of ranching under CITES (CITES, 2002a). humphead wrasse with source code R have much higher quotas than for humphead wrasse with source code W, but without any scientific justification (CITES, 2018d; Directorate of Conservation and Marine Biodiversity, 2016; Syam et al., 2020), despite this being a CITES requirement. Moreover, humphead wrasse with source code R can only be exported by vessel (those with source code W can only be exported by air) and those vessels are exempted from the annual export quota assigned to humphead wrasse with source code W (CITES, 2018d). The much-increased export quota associated with humphead wrasse with source code R represents a significant threat to the species in Indonesia: a great many fish are taken from the wild at various stages after peak mortality, without management, and they suffer high mortalities in captivity (which may drive yet more to be taken from the wild).

The introduction of exports for humphead wrasse with source code R has seriously undermined control and oversight of this species in both Indonesia and Hong Kong SAR for at least four reasons, each covered in more detail above: (a) the number of exports of humphead wrasse with source code R is not determined by a biologically based NDF and is far higher than exports of fish with source code W (which are subject to a scientifically defensible NDF); (b) humphead wrasse with source code R can only be exported by sea which is a poorly controlled transport method and which CITES Decision 15.86 recommended should be suspended; (c) it is not possible to distinguish humphead wrasse with source codes W and R and hence laundering is occurring in Hong Kong SAR because humphead wrasse with source code R are far easier to import (by uncontrolled ships); and (d) controls under Hong Kong SAR's Cap. 586 for humphead wrasse with source code R (considered by AFCD to be non-wild even though they are taken from the wild) is more lax than controls for humphead wrasse with source code W.

Ranching facilities in Indonesia are currently holding big inventories of humphead wrasse, such that large numbers of humphead wrasse with source code R could arrive in Hong Kong SAR. Changes in dining practices during the COVID-19 pandemic – few people are eating out in the restaurants that usually serve humphead wrasse – mean that few humphead wrasse have been imported to Hong Kong SAR from early 2020 to present (May 2022); however, all of those few fish have arrived illegally since AFCD has not been granting import permits. As a consequence, ranching facilities are holding hundreds of thousands of humphead wrasse which they are eager to export as soon as permits can be obtained.

4.3.6 Monitoring

In Indonesia, teams of academics and government workers have conducted multiple UVC surveys in areas where humphead wrasse is both fished and unfished. These data are often published (see references in Oktaviani et al., 2021). It is, however, not known whether the data are used to adjust/assign export quotas, as part of adaptive management. One study evaluated the humphead wrasse in the Banda Islands, where it is not fished, for its tourism potential and recommended good prospects for tourism (Oktaviani et al., 2021).

4.4 Level 4: Population impacts (biological change)

More must be done before the CITES Appendix II listing will be sufficiently implemented to ensure recovery of depleted populations, with controlled and sustainable fishing and export trade. On the positive side, several management plans (Level 2) have been implemented in the field (Level 3). Evidence for improvements in wild populations are limited to increased numbers and sizes in areas in a few areas where fishing is either banned or very light (Level 4). The largest pressure appears to come from poorly constrained exports of humphead wrasse with source code R, and little is known about the consequences of capturing young wild fish for grow-out.

4.4.1 Population change

In the case of Indonesia, the outcomes of the UVC surveys at six locations repeated at an interval of 6-9 years showed that: (a) removing fishing pressure entirely on depleted humphead wrasse resulted in detection of increased abundance and more larger fish within five years; (b) protected areas where humphead wrasse are targeted lightly or not at all evidently helped to safeguard the species (e.g., Bunaken MPA, Banda Is.); and (c) further population declines occurred in areas that continued to be fished (Sadovy de Mitcheson et al., 2019). The results show that the species cannot sustain high levels of fishing pressure but can persist at low levels of extraction. On the one hand, these findings highlight the importance and effectiveness of protection from fishing, demonstrating that fully protected areas are beneficial for the species. On the other hand, fishing pressure also needs to be reduced in exploited areas to halt further declines. Surveys should be repeated within a decade to assess for any further possible changes. The species is clearly a 'conservation-dependent' species as concluded by Gillett (2010) but a controlled fishery with light fishing pressure (i.e., low annual offtake) could be sustained.

The fact that the species is not recovering in fished areas in Indonesia indicates one or several of the following: (a) the export quotas (which drive fishing pressure) for humphead wrasse with source codes W and/or R are set too high to be biologically sound for humphead wrasse and, hence, should be revised/reduced; (b) exports are higher than assigned quotas but illegal exports are not being detected, and hence, enforcement should be increased; or (c) significant catch in addition to export is occurring and not being documented.

4.4.2 Fisheries change as a proxy (catch per unit effort)

Fishery monitoring for humphead wrasse has not been regularly conducted by any Party trading the species internationally.

4.5 Conclusions

Overall, the CITES listing initially substantially reduced international trade relative to pre-CITES levels for humphead wrasse. Underwater field surveys specially developed for the species have been adopted (and surveys published) by workers in the major legal source country, Indonesia. A robust NDF was developed and published (Level 1) tailored to the species for use on humphead wrasse with source code W. Several management plans (Level 2) have consequently been implemented in the field, including actively constraining exports of humphead wrasse with source code W to air transport only (Level 3). Moreover, increases in enforcement efforts led to confiscations and prosecutions for illegal trade (Level 3). It even appears that areas where fishing for humphead wrasse was severely limited or eliminated have seen increases in humphead wrasse abundance and size (Level 4).

Of concern, major challenges to management and enforcement have recently appeared with Indonesia's export approval for humphead wrasse with source code R: these have an NDF that lacks scientific justification, are subject to weaker enforcement in the major import hub, Hong Kong SAR, and cannot be distinguished from humphead wrasse with source code W, which are more valuable. Marine vessels transporting humphead wrasse internationally have little oversight and there is limited/if any communication between major trading Parties in relation to this species.

The remaining challenges of fully implementing the humphead wrasse listing could reasonably be addressed if Indonesia and Hong Kong SAR gave humphead wrasse with source code R (which are indeed wild-caught) the same support as humphead wrasse with source code W. Indonesia needs to make science-based NDFs for humphead wrasse with source code R, regulate exports of source code R to allow air only transport, and indicate on the export permit whether the specimen has source code W or R. Hong Kong SAR needs to engage fully with regulating import of humphead wrasse with source code R according to Cap. 586 to ensure valid imports and sales are tightly regulated; humphead wrasse with source code R are wild-caught and need to be recognised as

such. A facial recognition app, being trialled by the Hong Kong SAR, may also help to improve enforcement. CITES needs to tighten its definition of 'R' and require a biologically based NDF for ranched fish. Tighter oversight of live fish carrier vessels transporting internationally is also needed from source to destination.

The situation for implementation of the CITES Appendix II listing for humphead wrasse remains uncertain. Apparently, Indonesia may contemplate a zero quota for humphead wrasse with source code W in favour of source code R, even though the latter were also obtained from the wild. Moreover, COVID-19-induced slowdowns in sales mean that ranching facilities in Indonesia are currently stocked with hundreds of thousands of humphead wrasse with source code R. How and when will those hit the market and what will that mean for wild populations?

5. Synthesis and Recommendations

5.1 Summary from taxon sections

Having developed our layered way of thinking about the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) implementation, we applied it to the three marine fish taxa that were the first placed on Appendix II, the ones for which we are among the global experts. They are an interesting set of fishes: seahorses are small and iconic, with many millions traded internationally each year for traditional medicine (dried), curios (dried) and ornamental display (live); sharks are long lived fishes that are traded for all manner of uses, often in parts or derivatives (mostly notably as fins and/or meat), with notable economic implications; the humphead wrasse (humphead wrasse), a reef giant when adult but mostly sold live at juvenile sizes that can fit onto a plate, is currently legally traded between just two Parties. Our analysis covered the 20 years since CITES first listed marine fishes on Appendix II, a landmark transition in which we all played a role.

Our scan of the first three taxa of marine fishes to be listed on CITES Appendix II indicates progress on implementation, potentially of real benefit to the species, but also reveals that much more must be done for Parties to be confident that their international trade in these species is not harming wild populations. In general, there were substantive achievements on technical outputs (Level 1) for all three taxa, such that the need for guides, frameworks, and protocols is no longer a rate-limiting step (although they can always be improved, of course). Progress on policy changes (Level 2) looked hopeful but was very patchy, encouraging for some species and countries/entities and deficient for others; in general, sharks and humphead wrasse fared much better than seahorses. A few Parties have clearly been trying very hard to make evidence-based decisions on what level of international trade wild populations of particular species can tolerate, sometimes even erring on the side of caution. In general, however, many more Parties still need to make evidence-based non-detriment findings (NDFs) and legal acquisition findings (LAFs) – both of which are mandatory – for some or all of the taxa. Perceptible implementation of marine fish listings dropped noticeably at the critical level of practical changes (Level 3), when Parties had to translate intention and declaration into front line action at the vessel, dock, Customs shed or market. Some encouraging progress was evident but there was a real dearth of documented transformative action where the policy and protocol directly reached the fish. Finally, we have scant evidence that CITES listings have supported the health of fish populations (Level 4); this is unsurprising given the lack of Level 3 implementation, the essential precursor to Level 4 change. The situation seems currently to be most encouraging for some humphead wrasse in some areas, whereas continued declines have been reported for seahorse populations in key source countries and it is still too early to expect to detect signs of recovery in the long-lived sharks.

5.2 Comparing implementation across focal taxa

When we compare across our taxa, we find that implementation for seahorses has, overall, been slower and less comprehensive than that for sharks and humphead wrasse. The challenge is that many seahorse species are exported by many countries and entities to multiple importing jurisdictions in several forms, and that implementation is hampered by a dearth of resources and political will. In contrast, listings for a similar number of shark and ray species have garnered many more resources and much more political commitment (and media attention). Because most seahorses and many listed shark and ray species are caught incidentally in nonselective gear, management action must extend beyond species themselves. In contrast, the third taxon, the humphead wrasse presents a much more tractable challenge as only one (large and distinctive) species that is target caught and is currently exported live from only one Party to one other Party.

The CITES Appendix II listing for seahorses has made little or no difference to the enormous and dominant trade in dried seahorses (which persists at high levels, mostly illegally) even though it has prompted the trade in live seahorses to transition from wild sourced to captive breeding. Regulating trade in dried seahorses is challenging at a global level because it involves tens of millions of individuals annually from more than 30 species (which are mixed in shipments), exported and imported by about 80 countries, and most trade is supplied by nonselective or illegal gears. At the mandated national level, however, each Party that implements the Appendix II listing is only dealing with its own trade in a small number of species, and has many ways to meet its obligations. A high proportion of the effort and initiative on the seahorse listing has come from Project Seahorse, often acting in its capacity as host of the International Union for the Conservation of Nature Species Survival Commission Seahorse, Pipefish and Seadragon Specialist Group (IUCN SSC SPS SG). Collaboration with Parties and the Secretariat led to the production of crucial technical outputs (Level 1): identification materials, NDF framework, interim means of making NDFs, monitoring guidelines, field studies, and Party engagement in the form of briefings, workshops and discussions. The challenges lay in moving seahorses up Parties' lists of priorities so they would actually make the NDFs, develop and/or follow through with national plans of action, and enact monitoring plans. In the limited instances where Parties did take policy action (Level 2), they rarely translated those intentions into practical outcomes such as targeted enforcement of any fisheries or trade rules (Level 3) and even more rarely tracked the effect of their interventions. The most common policy action (Level 2) for seahorse trade has been in the form of export suspensions (Level 2), sometimes decided by a Party and sometimes imposed by CITES, rather than engaging in fisheries management for sustainability. Worryingly, many Parties have really not enforced, declared, or required suspensions (Level 3) and the dried trade that provoked the listings continues at very high levels, now mostly through smuggling. Fishers in key source countries for the dried trade have reported continued declines of seahorse catches per unit effort, indicating that trade remains detrimental to wild populations (Level 4). It does seem likely that wild populations subject only to live trade may have benefited from trade transitions under CITES (Level 4), as markets shifted towards cultured fish, but the dearth of population monitoring leaves that as a supposition only. Such a transition to captive bred owes a lot to the vigilance of the European Union (EU) and the United Stated (US) whose careful implementation of the CITES listing prompted industry to make changes in its sourcing. In the dried trade, the main markets are in Asian countries that certainly could and should have done more to implement the seahorse listing. Parties will need to tackle the challenge of indiscriminate capture of most seahorses in nonselective fisheries if they are to see population impacts, since the large supply of seahorses may be driving the dried trade and not vice versa.

The story of sharks is encouraging, if still very incomplete, when it comes to implementation of the Appendix II listings. Sharks broke new ground for CITES in 1994, as the first taxonomic group for which a Conference of Parties (CoP) adopted a Resolution before any species had been listed in its Appendices (paving the way for similar action for seahorses). Parallel to CITES' early interest in sharks, and in response to this Resolution, the Food and Agriculture Organization of the United Nations (FAO) decided to develop an International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks), stimulating action by national fishery agencies. The CITES-FAO Memorandum of Understanding (MoU) ensures that the Secretariats continue to work together on marine fish issues. The first wave of shark species listings came long after their populations had collapsed and CITES' main role was to support national and regional protections by ensuring that the remaining small amount of trade in these very large sharks was legal, and facilitate seizures of illegal trade. CITES' second shark Resolution was adopted at the same time as the first listings, which make it 20 years old in 2022. A pause in CITES action followed; some Parties thought that the IPOA–Sharks had made CITES engagement unnecessary. Implementation efforts really took off following the second wave of listings in 2013, with a deluge of interest and substantial funding, preparation of implementation tools, and assistance with capacity building in fishing countries and major trading hubs. This high level of support prompted a tidal wave of

meetings, tools and guidelines (Level 1) that are still being generated today. These have propelled many Parties towards policy action (Level 2), not only at national level, but also through their membership of regional fisheries management organisations (RFMOs – particularly but not exclusively the tuna RFMOs). Many RFMOs have adopted management (frequently prohibitions, sometimes quotas and/or mitigation measures) for threatened shark species on CITES – in several cases before CITES listings were adopted. RFMO management measures, national conservation actions (a rising number of Parties are designating shark sanctuaries), and Convention on the Conservation of Migratory Species of Wild Animals (CMS) Appendix I listings for shark species that are also listed in CITES can now be supported through CITES LAFs. Not only are many Parties making NDFs, but they are also sharing them through the CITES Secretariat, generating support for their exports and allowing validation. The CITES Trade Database has, since 2020, begun recording introductions from the sea (IFS) for the newly listed mako sharks. Moving from policy change to practical change (Level 3), CITES has been a catalyst for improved fishery data collection and enforcement of compliance with fishery and trade management measures, from the dock to the warehouses and Customs sheds where international shipments leave and enter countries. The RFMOs require catch reporting, sometimes observer coverage, and monitor the compliance of their Contracting Parties and Cooperating non-Contracting Parties' (CPCs') fleets – awareness and compliance in many industrial pelagic fleets is high, driven by pressure to certify catches and products. Capacity building and new identification tools for fisheries and Customs officers (Level 1) have begun to yield field outcomes (Level 3), with limited prosecutions of fishers and traders in breach of prohibited species rules at the point of landing, and some seizures of illegal fins, meat and gill plates at the points of export and import – sometimes at a very large scale. Genetic surveys in end markets can monitor compliance with management measures at the source – and are beginning to do so. Fisher and trader awareness, particularly in large scale traditional fleets, however, is still largely low. The life history characteristics of sharks means it will be many years before we might detect the influence of CITES listings on most shark populations (Level 4). That lag time makes it very important to implement CITES fully now at Level 3; getting it wrong would have consequences that might not even be detected for decades. More support is also needed now to establish monitoring efforts that can track changes over that long time frame.

Of all the current Appendix II listings for marine fishes, we might expect humphead wrasse to be the best implemented, which turns out to be partly true. These fish – which can exceed 1.5 m in length (huge for a reef fish), are late maturing, and change sex from female to male – are primarily traded as live food in their juvenile size range, fetching high prices per fish. Indeed, humphead wrasse is one of the top two most highly valued fish in the luxury seafood market. For the past decade, only one Party (Indonesia) has legally exported humphead wrasse to only one other Party (China and particularly into and via Hong Kong SAR). Moreover, these fish are easy to identify, large, and transported and sold live, making them more visible. For the first 14 years after listing, implementation progressed very hopefully. Indonesia made NDFs (Level 2) based on capture of wild humphead wrasse (source code W) – using (i) quotas (a few thousand fish dropping to about 1000 fish or less annually, with permitted volumes decided through fisheries modelling and trade consultation), (ii) size limits for export (1-3 kg), and (iii) transport restrictions (air only) – to help protect wild populations. In turn, Hong Kong SAR scrutinized imports and actively fought against illegal trade with a variety of measures (Level 3). That said, trade out of Hong Kong SAR (re-exports) and into mainland China, a major trade route for humphead wrasse, is poorly documented. In 2018, along this promising road to implementation, Indonesia decided to also allow exports of ranched humphead wrasse (source code R), thereby exposing an industry that had long been largely invisible and exporting illegally. Problematically, Indonesia's new NDF for ranched humphead wrasse is only based on social and economic considerations and does not take into consideration the biological ability of the species (in the single area where it is ranched) to sustain high levels of capture of small fish from the wild for grow-out in the ranching operations. Also, a worry, ranched fish may be exported by sea in vessels that are difficult to control, especially as those vessels have been exempted from the national export

quota of wild fish. Indonesia's NDF for ranched fish provokes concern; it uses quotas (tens of thousands of fish annually, with no scientific basis), allows capture of juveniles (well after the peak of natural mortality), and permits transport means that are notoriously difficult to regulate (seagoing vessels). Hong Kong SAR is struggling to scrutinize such imports to the same previous high standards (a major challenge is that ranched and wild-caught fish are indistinguishable) and illegal trade is increasing (with both excessive numbers of fish and many of illegal size). The good news is that Indonesia could rapidly improve its implementation for humphead wrasse with source code R, by (i) producing a science-based NDF for ranched fish, (ii) restricting exports to air transport or, if that is not possible, closely overseeing vessel exports, and (iii) developing transparency that allows Hong Kong SAR to evaluate imports of ranched fish. Communication between Management Authorities (MAs) on individual shipments and insistence that vessels use Automatic Identification Systems (AIS) at all times would allow better regulation of the dozens of vessels involved in moving humphead wrasse from Indonesia to Hong Kong SAR.

5.3 Factors promoting enhanced implementation for species listed on Appendix II

Our case studies suggest that the intensity with which Appendix II listings are implemented strongly depends on the profile of a taxon, for marine fishes and probably for other taxa too. That profile emerges from a tangle of public interest, non-governmental organization (NGO) engagement, media attention, and political will. Public interest seems to be largely influenced by a species' perceived charisma and its media profile. NGO engagement is often driven by availability of funds to work on the animals, which is also linked to a species perceived charisma and its media profile. Political will, in turn, responds in large part to public interest and the taxon's economic value; interestingly, perceived high economic value in trade can reduce political will, while high economic value in tourism can enhance political will.

A mixture of charisma and low economic value at a global level probably helped obtain the initial CITES Appendix II listings for marine fishes, but that combination was not enough *per se* to mobilise the necessary support and actions for implementation. In making the decision to list them, seahorses benefited from being considered highly charismatic but of low economic value globally, and from not facing a strong organized industry lobby (Vincent et al., 2014). After listing, though, their cause largely had to be advanced by Project Seahorse, host of the IUCN SSC SPS SG, without a groundswell of public opinion, significant media interest or political will. The first wave of sharks to be listed – basking sharks, whale sharks and white sharks – were also charismatic, had little economic value (by then) because their populations had been so depleted, and had very limited international trade, although they were increasingly important for tourism. Again, these traits helped the IUCN SSC Shark SG, governments, and NGOs work together to get them listed but, again, there was limited popular interest in the listing (Vincent et al., 2014). Once listed, the seahorses and first sharks were given little attention and implementation was slow and minimal for nearly a decade (2002-2013). The splendid humphead wrasse was little known on a global scale, even to an extent that might explain why the species was not listed at CoP12 in 2002 (Vincent et al., 2014). By CoP13 (2004) it was better known – but still peripheral enough that listing was not perceived to pose economic or political problems – and the IUCN SSC Groupers and Wrasses (GW) SG was able to catalyse its listing. There was also support for the species from several Pacific Island States (one of which was a co-proponent for the listing) where the species has some cultural importance. As with seahorses and the early sharks, humphead wrasse had limited global economic importance (even though each fish was valuable), its trade constrained to a few range States in the Indo-West Pacific. However, when it came to implementation, that regional economic importance, while not enough to deter listing, meant that FAO rather quickly offered support for the species and regional Parties established conservation measures.

By the time more shark species – including some more heavily fished and valuable species – were proposed for listing in 2013, sharks had become matters of huge public and media interest and engagement, such that implementation of the listings was much better supported. Proponent Parties had a much easier time making their case for the listings of oceanic whitetip, porbeagle, and the charismatic hammerheads and manta rays (especially given the preceding shark listings). Various NGOs had worked to garner media support for the plight of sharks (highlighting the role of international trade in driving shark finning), whereas there has never been a great push or media interest for seahorses or humphead wrasse. Great interest from divers, underwater photographers and NGOs (and donors) helped focus attention on the non-consumptive value of some shark species (for tourism) and prompted significant media attention on sharks and their conservation. This tremendous popular support, and associated media attention and work of observers at CITES CoPs, helped persuade some resistant Parties to overcome concerns about listing sharks of economic importance on Appendix II, deflecting industry and political pressures, with more listings of commercially-important species added at the following CoPs (2016, 2019). Then, too, the combination of public support and economic value created a context and impetus for significant political engagement by some Parties. This heady stew, in turn, prompted an influx of resources from Parties and donors as soon as the sharks were listed, including from the EU and the US, which served to build yet more support among Parties.

While the role of Parties in implementation is, by definition, paramount, external agents were very important in supporting Parties to make progress for some species. For seahorses and humphead wrasse, most technical development and support was fueled by external groups and not by the Parties themselves, whether directly or through the Secretariat. Sharks benefited from the support of Parties that had proposed the listings (chief among them the EU), the interest of some large charitable foundations, and the relationship between CITES and FAO – with FAO also receiving funding from its Members for work on sharks. However, some of the most important external contributors were members of the IUCN SSC SGs for the particular taxa: the SPS SG (under the aegis of Project Seahorse), the Shark SG, and the GW SG. As well as being central to the listing process as technical advisors, members of the SGs also provided much of the expert advice that initiated and supported the original engagement of CITES with these taxa (during the mid-1990s for sharks) and powered implementation of the listings. NGOs, foundations, and other civil society catalysts helped with listing and implementation, by providing scientific and technical expertise, funding, capacity building and training, assistance with legislation, enforcement assistance, and outreach capacity; this was particularly true for sharks, where a great many organizations and agencies have been keen (or mandated) to play a role in CITES implementation. It is notable that monitoring and evaluation of trade, trade routes, fisheries, and wild populations was particularly dependent on data and information from external catalysts rather than from the Parties themselves; the latter are charged with such duties but often lack resources, capacity, or sufficient political will. Fisheries and trade research in the field by non-Party contributors allows critical assessment and validation of CITES processes and must be prioritized for support.

The level of funding clearly and directly influences action for implementation once the taxon has been listed. When it comes to support for CITES implementation, seahorses have been allocated very little money through CITES (totaling USD 203,000) even though tens of millions of these animals are traded in complex ways all around the globe. In contrast, the funding allocated to sharks, immediately after their listing (initially 1.2 million euros, later an additional 0.9 million euros from the EU alone, plus more from others), allowed immediate and substantial action on technical outputs that promoted policy action (CITES, 2014b; 2015a; 2017a). For humphead wrasse, funding in the range of tens of thousands of dollars was provided by the US (a proponent of the original proposal). It is vital that Parties, private donors, and bilateral and multilateral aid agencies appreciate the value of CITES in fostering durable marine resource management and sustainable development… and that they allocate funds accordingly. The corollary is that exporting Parties need to seek

funding support from FAO, the Global Environment Facility (GEF), the EU, the US, and other bilateral and multilateral sources to support implementation of CITES for marine species. Importing countries and entities also have a responsibility to provide technical and financial resources to exporting countries and entities for effective implementation, particularly since their industries profit significantly from the trade. Finally, industry should support implementation, including through funding, of CITES listings for taxa that they exploit and benefit from economically.

It is essential that support for CITES implementation be well distributed across taxa, not just favouring those with high public profiles, like the sharks (important though they be). Governments need to prioritize funding and political support for general CITES implementation, management, and enforcement for marine fishes, serving many taxa rather than operating species-by-species. Appropriate funding for implementation of marine fish listings should eventually allow for collaboration with FAO and Regional Fishery Bodies (RFBs) in making NDFs – as for humphead wrasse – in a way that most Parties might appreciate.

5.4 Changes needed to enhance implementation

Going forward, Parties will want to build on their current progress in implementing Appendix II marine fish listings which is good at Level 1 (technical outputs) and moderate at Level 2 (policy outcomes). We are seeing only very limited implementation at Level 3 (field outcomes) and little to no evidence of Level 4 changes (population impacts), while recognizing that such change would take time for long-lived species such as sharks. Level 3 changes are largely about taking Parties' (often very good) plans, policies, decisions, and declarations (Level 2) and making them come alive on the docks, at borders, on boats, in the Customs sheds, and in the courts. Such transfer of ideas and intentions to practical action (Level 3) includes measurable changes in target fisheries, non-selective fisheries, trade, enforcement, breeding/farming/ranching, and monitoring. Moving forward with commitments at Level 3 means taking actions that directly affect the fish, which should lead to healthier wild populations of marine fishes (populations impacts, Level 4) and more enduring benefits to people in the long run.

Experience with the first three marine taxa listed on Appendix II indicates that CITES needs to make changes to help improve implementation, particularly at Levels 2 and 3 (policy and field outcomes). At Level 1, individual Parties and CITES as a whole need to enhance their capacity for marine fishes. At Level 2, Parties need to meet their obligations as exporting Parties (make NDFs, make LAFs, advance IFS, and monitor exports), meet their obligations as importing Parties (report imports, practice due diligence, and query shipments when appropriate), and advance Review of Significant Trade (RST) processes. At Level 3, Parties need their policy outcomes to secure field outcomes in target fisheries, non-selective fisheries, trade, and enforcement – actually putting into action the plans they decreed at Level 2, and documenting their progress to allow evaluation in the spirit of adaptive management. We now offer suggestions to improve these aspects of implementation.

5.4.1 Level 1: Enhance national capacity for marine species

For a Party to succeed in implementing marine fish listings, it is vital that national Management Authorities (MAs) and Scientific Authorities (SAs) have competency in fisheries-related matters. In 2002, at the time of the first marine fish listings, Decision 12.53 explicitly called on CITES MAs to strengthen their collaboration and cooperation with appropriate fisheries agencies for management of seahorse species, while Res. Conf. 12.6 (Rev. CoP18) makes similar calls for collaboration over sharks. In some countries, the MA and SA do work closely with their national fisheries agency while other countries have designated separate MAs and SAs (including fisheries agencies) for marine species (Foster & Vincent, 2022). Twenty years since Decision 12.53, however, and with Res. Conf. 12.6 (Rev. CoP18) still in force, connections between CITES expertise in

national forestry or environment agencies and marine species expertise in national fisheries or ocean agencies are often still tenuous. Staff in the agencies experienced with CITES may have little understanding of marine fish issues while staff in national fisheries agencies often still know little about CITES, its obligations or its processes. This lack of mutual understanding extends into RFBs. Given that mismanaged or unmanaged exploitation – commonly linked to international trade – is the biggest threat to marine fishes, it is vital that fisheries and/or oceans agencies be supported and empowered to play an active role in CITES implementation for marine fish species threatened by international trade, and that CITES Authorities be empowered to engage with relevant fisheries agencies. A move towards restricting fisheries and trade to support endangered or threatened species can be uncomfortable for people who were trained to focus on fisheries productivity. In reality, though, making NDFs under CITES Appendix II largely equates to good fisheries management, unless the NDF is affected by a trade suspension that is fully enforced.

5.4.2 Level 1: Enhance CITES capacity for marine species

The CoP needs to direct the Animals Committee (AC) and Standing Committee (SC) to make sustained efforts for all marine fishes on Appendix II, ensuring that implementation is supported systematically and reliably. One challenge is that the AC and SC are small groups of elected regional representatives who can never have expertise in all taxa… and seldom have marine expertise. Ideally, the Secretariat would have a dedicated marine point person (as happened previously) to support the AC and SC, and both Committees would have enduring WGs with specialization in marine fishes and invertebrates. As it is, the AC has had a WG solely for sharks for the past 20 years, but engaged with no other marine fishes. The AC and the proposed marine WG should prioritize supporting Parties to make science-based NDFs and to monitor in support of adaptive management. It should also advance the effectiveness of RST by rethinking its approach to related recommendations. The AC should, in turn, refer issues with marine fishes that emerge during RST or relating to illegal wildlife trade (IWT) to the SC, with full technical support. The Parties and the CoP should direct the SC to prioritize advancing concerns about marine species LAFs, IFS, and RST. The proposed new marine species WG for the SC should focus on IWT and illegal, unregulated, and unreported (IUU) fishing for marine taxa, along with IFS implementation. The difficulty is that the SC agenda, as directed by the CoP, is very large, keeps growing, and has become overly bureaucratic. The AC and SC are asked to review progress on Decisions and should renew them if the work has not been completed. Policy issues should be decided by the CoP, and not just deferred to the SC, giving the latter more time to dig deeper into priorities.

The CITES Parties through the CoP should require that the Secretariat, AC & SC consult the Chair(s) of relevant IUCN SSC Specialist Groups, where they exist. These sets of independent volunteer taxon experts on the SGs are recognized as vital sources of knowledge and information – and provide CITES with rigorous evidence-based advice on their taxa. At present, the Committees and Secretariat reach out to them sporadically and inconsistently. The SGs (comprised entirely of volunteers) are obliged to find their own resources to contribute to CITES processes and thus to secure evidence-based action by CITES (with the exception of cases where the Secretariat has issued a contract to a SG for a particular product). Given the limited expert knowledge of marine species on the AC or SC, it is concerning that those Committees have no obligation to consult the SGs or support their CITES-related work, or to consult other experts, to the detriment of Committee work. For example, it has happened that the CITES AC commissioned United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) to evaluate Party/species combinations for RST, and then UNEP-WCMC (whose staff are not taxon experts) drew heavily on SG experts without funding them. It has also happened that the Secretariat and SC assessed whether a Party has met RST recommendations without reference to the SG experts who could have ensured that their decisions were fully informed and guided by the best available science. Some Parties may be able to marshal enough expertise to cover the vast array of CITES species, but most cannot, particularly for poorly studied taxa like seahorses. A protocol – perhaps even a formal agreement with the IUCN – requiring that the CITES Secretariat, AC and SC consult the appropriate SGs

(or other relevant expertise), where available, would lead to much more taxon-specific expertise in the CITES process. Of course, SGs would need to have access to resources to support such responsibilities.

Given the importance of marine fish issues, all elements of CITES should seek strong relationships and tight cooperation with the FAO Secretariat (Fisheries and Aquaculture) and RFBs, for all listed marine fishes and not only for sharks. FAO Fisheries and Aquaculture has sometimes opposed CITES listings, but has also deployed its global expertise to add considerable value to CITES listings and implementation once species are on the CITES Appendices, as for the sharks and humphead wrasse. The FAO can also be very helpful in encouraging countries to embrace Appendix II listings and implementation by explaining their convergence with existing commitments to sustainable use and adaptive management of fisheries. The RFBs can similarly play an important part in CITES implementation for marine fishes, if their members allow them to do so. CITES Parties need to encourage RFBs to pay new attention to species that (i) have been overlooked by RFBs (e.g., seahorses, wedgefishes, humphead wrasse, and many other species subject to smaller coastal fisheries), (ii) are only partly covered by an RFB (e.g., eels), (iii) are covered by more than one RFB (e.g., porbeagle, oceanic whitetip shark), or (iv) are not in the forefront of RFB interests (e.g., sharks for some tuna RFMOs). Most RFBs have significant scientific and management expertise and can help by providing advice on the development of NDFs and LAFs when the RFB has developed stock assessments and/or adopted management measures for the species. For example, although NDFs are a sovereign state responsibility, they should consider all sources of mortality upon the stock in question, which may cross international boundaries, be fished by more than one Party, and/or involve straddling stocks that spill into areas beyond national jurisdiction (thus invoking the CITES IFS process). In such cases, broad co-operation is needed. Parties to CITES are also members of RFBs, and therefore have the authority to bring these institutions together to develop the best advice for NDFs, particularly for species that cross national jurisdictions. The RFBs can determine the total allowable catch (TAC) for the stock for CITES-listed species – to a level compatible with CITES Article IV – and then explore how they can help CITES range States that fish the species to allocate the TAC between them. RFBs can help to harmonize data, and then share these data among their members and with other RFBs.

5.4.3 Level 2: Meet obligations as exporting Parties (NDFs, LAFs, IFS and humane transport)

Given the patchy level of implementation at Level 2 (policy outcomes), it is clear that many Parties need to do much more to meet their obligations, which include making NDFs, making LAFs, addressing IFS and transporting live animals humanely. Exports must be at levels that do not damage wild populations (NDFs) and individual specimens must not have been obtained in violation of any national law or regulation (LAFs), two central premises for valid exports of species listed on Appendix II (and the very core of CITES). IFS is effectively a form of making NDFs and LAFs for fish coming from areas beyond national jurisdiction (high seas). However, scrutiny of marine fish listings indicated great unevenness in how many Parties made NDFs and how well they made them, too, in terms of evidence and analysis. Some Parties have moved to making thoughtful (and public) NDFs for particular shark species, and Indonesia has good means of making NDFs for wild humphead wrasse (although not for ranched fish), but many Parties are doing little for seahorses and other marine fishes. There is currently scant evidence that Parties are meeting the requirement for LAFs (or how they are doing so) and no real discussion about humane transport of marine fishes.

Non-detriment Findings (NDFs)

An NDF for marine fishes is similar to a good fisheries management protocol, does not need to be perfect, and can be improved as Parties learn more. Approaches for making science-based NDFs can range from simple to complex, tailored to available information and capacity. For example, standard fishery assessment models, tailored to target species, can be used for CITES-listed species, as in making NDFs for

humphead wrasse (Sadovy et al., 2007) – but so too can a simple spatial approach be used, as has been suggested for seahorses (Vaidyanathan, 2021).

The process of making NDFs addresses implementation at all levels: (i) assists Parties to assess what they need in terms of data, information, tools and approaches (Level 1 – technical outputs); (ii) leads Parties to consider the policy instruments that might best allow them to make science-based NDFs, including adaptive management (Level 2 – policy outcomes); (iii) motivates Parties to translate policy and management protocols into practical actions (Level 3 – field outcomes); (iv) mobilizes Parties to develop, establish and execute the necessary monitoring and evaluation programmes to assess the status of wild populations repeatedly (Levels 1 to 3); and (v) implements adaptive management when needed (responding to Level 4 – population impacts). Even trying to make NDFs creates a gap analysis and road map – plus awareness and training – that can drive action for the taxon. The corollary is that failing to embark on making proper NDFs leaves the listing in limbo, facilitates trade not in compliance with the Convention, undermines the effectiveness of the Convention, and further threatens the species in question as well as the country's reputation.

CITES Parties need to improve the quantity, quality, and utility of NDFs for marine fishes by making change in six ways, some of which are already underway:

1. Parties (through the CoP) should insist on completion of science-based NDFs for Appendix II listed species, according to CITES guidelines, specific to the relevant source codes (e.g., W, R and F). These NDFs should be filed with the Secretariat, as evidence of completion (though see also point 3, below). Effective implementation of marine fish listings depends, first and foremost, on science-based positive NDFs for marine fish species Parties wish to export, and remedial action if a positive NDF is not possible.
2. Parties need to find the political will to support their SAs to issue negative NDFs when the export might be detrimental to the species in the wild. Given that MAs cannot and should never issue an export permit when there is a negative NDF (or no NDF at all), it is vital there be no external pressures on MAs or SAs in executing their responsibilities.
3. Parties should require that NDFs be submitted to a public repository that is easily accessed (including by importing countries). It is very difficult for CITES structures (the AC or SC) or importing Parties to assess and be confident of the validity and legality of exports unless the rationale for the export permits is shared. Sharing NDFs in this manner also supports other exporting Parties by providing models on which their own NDFs might be based, and creates a level playing field. In this respect, it is very encouraging that at least nine Parties have documented their means of making NDFs for sharks on the CITES website (Table 3.3). In addition, two Parties have shared their means of making NDFs for live exports of seahorses (CITES, 2021b), and the only Party legally exporting humphead wrasse has shared one science-based NDF for fish with source code W (Sadovy de Mitcheson & Suharti, 2008) and another NDF for humphead wrasse with source code R that lacks justification (Sadovy de Mitcheson, 2015; Syam et al., 2020).
4. Parties should work with experts to develop automated electronic NDF frameworks – that prompt Parties for minimum information and then guide them through the analytical process – to help make NDFs easier, more transparent, more open, and more readily adaptable to new or changing circumstances. Such work is already underway for sharks, and is intended to be broadly applicable, useful and available (Table 3.3). The humphead wrasse source code W NDF also has an online component that can generate updated quotas when different parameters are inserted (Sadovy et al., 2007).
5. Parties should assess the costs and benefits of trade suspensions/zero quotas, and understand the full implications. Trade suspensions are sometimes necessary, are fully consistent with CITES when a

science-based positive NDF cannot be made, and are effective in some circumstances. However, trade suspensions can also be counterproductive when they exacerbate illegal trade, facilitate fraudulent claims of captive breeding, or fail to address significant threats such as bycatch (see below). The case of seahorses is informative, where poorly enforced trade suspensions have failed to constrain trade, driven by high levels of trawl bycatch. Certainly, any management of marine fish exports will require complementary measures beyond quota setting, and necessitate strong enforcement.

6. Parties need to address the challenge of culturing/farming/ranching in making NDFs, distinguishing among wild (F0, source code W), captive born (F1, source code F), captive bred (F2+, source code C), and ranched (source code R) individuals, and analysing how exports for each source code affect wild populations. Export of specimens with source code F require an NDF but this requirement is not scrutinized under the RST (which only considers trade in source codes W and R). For example, large volumes of live trade in source code F seahorses took place for nearly 10 years without any evidence of science-based NDFs (Foster et al., 2021). The relatively new Res. Conf. 17.7 (Rev. CoP18) "Review of trade in animal specimens reported as produced in captivity" does include sources codes F and R, but does not scrutinize related NDFs, focusing instead on addressing fraudulent claims that wild-caught specimens are captive bred. The humphead wrasse example highlights the challenge of ensuring that wild specimens are not laundered as ranched, when they were all extracted from the wild as younger animals. Indeed, the criteria for applying source code R in the first place are worryingly vague under CITES provisions and should be tightened, especially around what qualifies as the earliest life history of highest mortality.

Given the distinct challenges for marine fishes, we welcome the plan for CITES (the Secretariat, and Animals and Plants Committees) to convene a global expert workshop on making NDFs for these and other taxa. We particularly encourage an emphasis on pragmatic approaches that would enhance implementation of marine fish listings. The current NDF frameworks for both seahorses and sharks are commonly perceived as overly complex and challenging, to an extent that discourages Parties from embarking on NDFs (even though they are obligatory). They are not more complex than for other taxa… and are entirely in keeping with good fisheries management, yet many Parties are slow and reluctant to fulfill this core responsibility. CITES needs to identify pragmatic measures that would represent a way forward even if they are not yet perfect, always in a framework of adaptive management.

Setting aside ambitious frameworks, we need to find ways for Parties to make NDFs with less effort. Making imperfect NDFs will commonly serve the species better than making none at all. Project Seahorse considers that the NDF process can, if necessary, in data poor situations, be simplified into four sequential queries: (i) where are populations of the species found, (ii) where are pressures exerted on those populations (nationally and regionally), including from targeted and indirect fisheries and other threats, (iii) what remedial measures are in place to address such pressures and (iv) how well are such measures working (Vaidyanathan, 2021)? Integrating these four layers of information is most easily done through mapping, with the goal of identifying areas where populations are under pressure, yet have poor management responses. Such an approach may be indicative rather than conclusive but it will certainly serve seahorses better than no NDF at all. As well, it helps identify gaps in management effectiveness that can guide priority setting as to where more attention is needed.

Parties might find it easier to make NDFs if they regarded the process as generating adaptive management (Walters, 1986). Essentially Parties need to do the best they can with available information, explicitly recognizing that such approaches should be refined as new data and knowledge are obtained. We commonly lack the spatial and temporal coverage needed for good understanding of population trends with or

without exploitation. We can, however, proceed with management as part of an ongoing experimental process, seeking to formulate management objectives and inform policy choices. A serious adaptive management approach requires that stakeholders be part of the process, engaging with decisions and helping to improve them. It also critically requires monitoring and evaluation of wild populations, their managed extraction, and their regulated trade to create a feedback loop that prompts and necessitates adjustments and improved NDFs. Such reviews are aimed to make it easier to work through NDFs, keep records of the process, be confident about sharing the outcomes, and reduce the chance of serious concerns regarding the legitimacy or veracity of their NDFs, either by importing countries or the RST process.

Legal Acquisition Findings (LAFs)

CITES Parties must meet their obligation to make LAFs before issuing export permits. It is a concern that trade in seahorses and humphead wrasse continues when no LAFs are known to exist for these fishes. A total of only 13 Parties reported their experience with LAFs for sharks, finding them complex and needing more development, but many more Parties export sharks. Parties need to be reminded that they should not be making LAFs or issuing export permits if the specimen came in the following contexts, inter alia:

a. Was caught using illegal gear.
b. Came from a closed fishery or protected area.
c. Was purportedly captive bred but was actually wild-caught.
d. Is from an uncertain origin (e.g., wild-caught, captive bred, ranched).
e. Was obtained in violation of any relevant national law or regulation.
f. Was obtained in contravention of obligations under other treaties or agreements.
g. Was obtained in contravention of RFB obligations.
h. Is listed on CMS Appendix I and the CITES Party is also a CMS Party.

Parties need new toolkits and approaches that can help ensure legal sourcing and traceability to match the emerging toolkits on making NDFs.

1. Recent CITES initiatives need to advance. The first CITES workshop dedicated to LAFs, held in 2018 – and attended by representatives of 31 Parties, six intergovernmental organizations (IGOs), and more than 10 NGOs – worked on drafting the initial guidance for LAFs. CoP18 adopted Res. Conf. 18.7 on Legal Acquisition, which aims to support MAs with making LAFs and provides guidance in Annexes. CoP18 also directed the SC to continue to develop guidance on LAFs and the control and monitoring of stockpiles, based on feedback from Parties. Parties need to translate such initiatives into action.
2. MAs in exporting Parties need to work with relevant national fisheries and/or oceans agencies to compile and publicly document national fisheries laws, management decrees, and regional/global regulations that might influence an LAF for an Appendix II listed marine species. Such transparency and tools would support MAs in in exporting countries to make LAFs, while also supporting government agents (Customs, enforcement, management) in importing and re-exporting countries to exercise due diligence in assessing the requirement of legal acquisition. The FAO database of measures on conservation and management of sharks provides a useful model (FAO, 2022a).

A focus on legal sourcing (making LAFs), required by the Convention, would help reduce overall export of bycaught species, and could stimulate bycatch mitigation measures. Many Parties have spatial management regulations that exclude bottom trawls and other nonselective gear from coastal areas and beyond. These need to be considered in issuing CITES permits. For example, a Party must not make LAFs and grant export permits for seahorses that were obtained as trawl bycatch in areas closed to bottom trawling. Nor should Parties make LAFs for a shark species taken in an RFMO fishery where the retention of that species is prohibited.

Introduction of the sea (IFS)

The provisions for IFS are important for taxa – notably sharks – taken in areas beyond national jurisdiction. Essentially, it has been a challenge for CITES Parties to determine which Party is responsible for ensuring that export trade deriving from fisheries on the high seas (beyond the 200 nautical mile exclusive economic zone [EEZ]) is not detrimental to populations of listed species and has been legally obtained, but both conditions must be met before international trade is allowed. "The Conference of the Parties adopted Resolution Conf. 14.6 (Rev. CoP16) on Introduction from the sea to provide practical guidance regarding the correct and effective implementation of the Convention for the harvesting and landing into a State of specimens taken in marine areas beyond the areas subject to the sovereignty or sovereign rights of a State" (CITES, 2022h):

- The Party whose flag flew on the vessel that caught the fish (Flag State) is responsible for making NDFs and LAFs for listed species caught in areas beyond national jurisdiction.
- The Party where the fish is landed (Port State) is responsible for verifying those NDFs and LAFs, and for issuing an export permit.
- If the Flag State and the Port State are the same, then that State must provide an NDF and an IFS certificate.

It is vital that Flag States, particularly those "flags of convenience" where a country sells the use of its flag on a fishing vessel, are informed that they are responsible for issuing IFS certificates or export permits (depending on where the specimen is landed). There is currently little to no accountability and pressure on Flag States in this regard, and little evidence that compliance is happening. Such non-compliance has consequences not only for the implementation of CITES for listed pelagic species, but also for compliance monitoring and enforcement for RFMO management measures. A starting point to provide support for populations on the high seas would be for CITES Parties to develop a guide to transnational issues such as IFS, Chartering, fishing in another Party's EEZ, Port State Measures Agreement and more (CITES, 2022g).

Humane transport of live specimens

CITES Parties and Committees need to pay attention to the third requirement for granting export permits, that of humane treatment of live animals. Before issuing a CITES export permit for live specimens of an Appendix I or II species, an MA is required to be satisfied that "that specimens will be prepared and shipped so as to minimize the risk of injury, damage to health or cruel treatment" (CITES, 2013d). CITES has provided its own guidance for non-air transport (just revised in 2022; CITES, 2022c), and follows International Air Transport Association (IATA) Live Animal Regulations for transport by air (IATA, 2022). So far, Parties' compliance with this humane transport requirements has been mainly for terrestrial species (though many large aquaria do comply with the IATA regulations). It is important this third requirement also be met for the large number of marine fish on Appendix II that are traded live, including for seahorses and humphead wrasse and increasingly, for sharks and rays for public aquaria. Live seahorses in trade (usually sent by air) are destined for private or

public aquariums while live humphead wrasse in trade (sent by air and sea) are intended for sale in restaurants to be served as fresh food.

Monitoring

CITES Parties need to embrace monitoring as a central and vital responsibility, using technically sound approaches to discern the real value of CITES implementation to listed species. Without monitoring, we cannot know how fisheries and trade are responding to CITES requirements, or how to regulate them better. Nor will we ever know how populations are responding to changes (Level 4). The CITES theory of change is, of course, that compliance with CITES provisions will benefit the species, but it is vital to probe that theory, and to learn and to adjust actions accordingly.

1. Parties needs to develop and agree (through the AC and CoP) guidelines on minimum data requirements, and then insist that Parties meet these minimal standards, with particular emphasis on monitoring simple variables in well-designed programs. Initial guidance on monitoring marine fishes was provided to the CoP as an Information Document jointly authored by FAO and IUCN (FAO-IUCN, 2016). Such guidelines would benefit from being developed in dialogue with fisheries managers. As we have noted, making NDFs for marine fishes largely represents good fisheries management, and fisheries science is also trying to discern how to reduce the challenges associated with complex data-heavy models (e.g., www.datalimitedtoolkit.org).
2. Parties need to tackle the challenge of monitoring both export permits and actual exports, comparing them to seek and address discrepancies. Marine examples of this challenge have been recently highlighted in Pavitt et al. (2021).
3. Parties should collaborate with a wide array of people – other Parties, fishers and traders, national and regional taxon and trade experts, national and international NGOs, scientists, and the IUCN SSC SGs – to help generate, compile and analyse data. That said, some Parties only trust or use their own data (or industry data) and defer action by pleading a lack of knowledge, even when external partners and stakeholders have generated substantial information (as has been documented for seahorses; Foster & Vincent, 2022).

5.4.4 Level 2: Meet obligations as importing Parties

After assessing implementation of our three marine fish taxa, we know that importing Parties could greatly enhance implementation of the Appendix II listings for marine fishes, in five ways:

1. Importing Parties need to fulfill their mandate by scrutinizing export permits, including interrogating the basis of NDFs and LAFs, and probing them with the exporting MA when there are concerns. For example, the EU has several times consulted the IUCN SSC SPS SG in its evaluation of export permits for live seahorses issued by source Parties. Such scrutiny would be greatly facilitated by a requirement for Parties to document their NDFs in a central CITES repository (as some Parties are now doing for some sharks and for humphead wrasse with source code W: see above).
2. Importing Parties are required to detect and combat illegal trade, which can be facilitated by checking whether a shipment exported by a Party or entity actually has an export suspension in place. Again, they need to be able to access a repository of such information. For example, trade suspensions declared by Parties in response to RST for seahorses were never communicated to the CITES Parties (Foster & Vincent, 2021).
3. Importing Parties should report their imports carefully and comprehensively (e.g., considering product form) to facilitate comparison of declared exports and imports, and support scrutiny of trade record keeping and detection of illegal trade. It would be even more helpful if reporting imports became obligatory for CITES Parties, as is the case for exports.

4. Inspections of volumes on sale in importing countries (where this is feasible due to low volumes, or sale of readily visible, high-turnaround live animals on retail display) could help cross-checking and identify possible illegal imports. For example, a study reported to Hong Kong SAR Authorities found that the number of live humphead wrasse being marketed was far higher than the number of recent legal imports (Wu & Sadovy de Mitcheson, 2016).
5. More importing Parties may wish to follow Hong Kong SAR's policy that was specifically drafted to give effect to CITES in Hong Kong SAR (Cap. 586). It requires import permits and commercial possession licenses for live fish of wild or captive origins, which must match the export permits from the source Party. Despite some weaknesses, such a system allows government to trace trade and possession to some extent, and has supported implementation of the humphead wrasse listing at Level 3.

5.4.5 Level 2: Advance and improve RST

An analysis of the only application of RST to marine fishes, for three rounds of seahorse Party/species combinations, has revealed the need to address serious limitations with RST as currently implemented, for marine fishes as for other taxa (Foster & Vincent, 2021). The critical problem for seahorses was that the RST process did not end in defensible NDFs for these species, a failure of its very raison d'être. Indeed, a key CITES indicator for effective implementation is the number of Appendix II species for which trade is assessed as non-detrimental after implementing recommendations from the RST (CITES, 2009). Instead of leading to NDFs for seahorses, the RST led to export suspensions or bans for most historically important source Parties for dried trade, which together represent the vast majority of international trade in these species. The end of permitted trade is a valid CITES move, if it is accompanied by a meaningful enforcement effort to ensure trade does not continue illegally. However, it seems clear that such enforcement has not been marshalled for seahorses (CITES, 2022m), with the result that exports are still putting undue pressure on the species, with detrimental effects for the populations. The RST process is well meaning and derives from serious concerns by Parties that NDFs were not being made properly, thereby undermining the very effectiveness of CITES. It has, however, become weak, cumbersome, and bureaucratic. Most importantly, it is commonly not leading to meaningful NDFs.

Keeping in mind that other marine fishes that will soon be evaluated under RST (e.g., some sharks in the near future), the RST process needs substantial refinement to meet its potential to enhance implementation of all Appendix II listings, on six levels (Foster and Vincent 2021):

1. To reach its declared objectives, CITES Parties need to recommit to the goals of the RST and move beyond a focus on technical outputs (e.g., lists, reports, workshop – Level 1) to insisting on policy outcomes (e.g., management policies – Level 2) that generate field outcomes (e.g., protected areas – Level 3) and lead to population impacts (Level 4).
2. The CITES AC needs to tailor recommendations to the particular Party/species challenge, using a SMART framework required by Res. Conf. 12.8 (Rev. CoP18): specific, measurable, and attainable, as well as relevant and timebound.
3. The AC and SC should engage independent species experts (often the IUCN SSC SGs) to help prepare RST recommendations (Level 2) and evaluate the effectiveness of Parties' responses to those requirements (Level 3), respectively, to ensure that the RST makes a meaningful difference to the species (implementation Level 4 – population impact), and that decisions and recommendations are transparent and based on sound scientific and technical advice and information. Committee members can never be experts in all taxa, nor can the Secretariat, meaning that such independent expertise is vital (as is discussed in more detail, above).
4. The SC needs to engage with Parties that set trade suspensions or zero quotas in response to an RST to check for meaningful implementation of that suspension (and explore false claims of captive breeding or misapplication of source codes). The SC and Secretariat must also monitor trade closely, to ensure that

Parties that declare a trade suspension to avoid the RST process do not restart trade without issuance of valid science-based NDFs.

5. The CoP needs to establish an automatic process whereby the AC follows up with Parties three years after they leave the RST to explore their progress. The revised RST process may offer part of the solution, as it suggests creating a "final recommendation" requesting States to report on the new basis for NDFs and how actions taken will address concerns identified during the RST (CITES, 2020c). Making this suggestion a norm, and setting the deadline for this final recommendation at as many as five years after completion of the other recommendations, would allow Party progress to be evaluated in an adaptive management framework and discourage Party inertia after the formal RST. It will be important to keep the levels of our implementation framework in mind and not be misled into thinking that technical outputs will, per se, make a difference to wild populations.
6. The CoP needs to formalize a funding mechanism for the RST process, for all taxa. The lack of funding for most RST activities makes it rather difficult for many Parties to embrace and enact the measures recommended through RST. Many Conventions provide assistance (GEF, 2020) and CITES should also develop a funding mechanism that will provide assistance to Parties – including for RST.

5.4.6 Level 3: Changes in non-selective fisheries

CITES Parties need to address the reality that non-selective fisheries (such as bottom trawls, gill/set nets, seine nets or blast fishing) are a big problem for a great many marine fish species, including many seahorse species and some shark species. The fact that Appendix II listed species are caught in such indiscriminate gear is not, however, justification for avoiding the challenges of implementation. Instead, CITES Parties, along with the AC and SC, need to help advance solutions. Incidental mortality is not a new issue for CITES Parties, and not unique to marine fishes. For example, snares and traps are nonselective gears that catch indiscriminately on land, with some of those animals entering trade. As well, orangutans are killed during forest clearcutting and their babies sold into international trade. Nonetheless, bycatch – removal of species that are not intentionally sought by the targeted fishery or for which the fishery is not actively managed (Davies et al., 2009) – is particularly problematic for marine species, given the global scale and impacts of non-selective gears; for example, one-quarter of the global fisheries landings is caught in bottom trawls (Amoroso et al., 2018).

Sourcing in bycatch is not a valid excuse for failure to implement CITES provisions for Appendix II. For example, one Party objected to inclusion of the first seahorses in the RST at AC23, on the basis that "most of the trade is in bycatch, for which no non-detriment findings can be made" (OFI, 2008). As well, during the RST process for seahorses, the UNEP-WCMC reviews included a section "Problems identified that are *not related* to the implementation of Article IV, paragraphs 2(a), 3 or 6(a)" (CITES, 2014c) which noted that bycatch was reported as a main threat (the same is true for most CITES-listed sharks, so will presumably be similarly annotated as sharks begin entering RST). However, while bycatch might complicate CITES implementation, it does not exempt it. The Secretariat's advice to Parties regarding IFS at SC74 included the fact that "All parts and derivatives of CITES-listed marine species are covered by the provisions of the Convention unless otherwise indicated…It makes no difference to CITES whether the specimen was caught intentionally or as by-catch. … In other words, there is no by-catch exemption in CITES." (CITES, 2022h).

The challenge of making NDFs for Appendix II listed species obtained in non-selective fishing gear must be addressed. Implementing CITES for bycatch species requires development and implementation of management measures that reduce indiscriminate fishing pressure to avoid detriment to wild populations and/or curb supply to illegal trade. The vast majority of seahorses in international trade are obtained in catch by bottom trawlers, gill nets and other non-selective gears (Lawson et al., 2017), which also affect some pelagic and many benthic sharks such as the recently listed guitarfishes and wedgefishes. In addition, some seahorses and some sharks are sought as secondary catch, adding value to the non-selective fishery. As the many trade suspensions in place for seahorses will not reduce their incidental or secondary capture/mortality in nonselective gears, such trade restrictions will not improve the conservation status for seahorse populations (Foster & Vincent, 2021). Moreover, since demand persists, the seahorses landed in such indiscriminate gear often continue to be exported – but illegally, without permits. In the case of sharks, some live animals can be released from nets and vessels with proper training but this seldom works for seahorses. Sharks also benefit because some RFMOs are adopting bycatch reduction measures in longline tuna fisheries, including the use of whole finfish bait, circle hooks and monofilament lines, modified handling techniques, and/or prohibition on the use of "shark lines".

To reduce the accidental take of Appendix II-listed species by bottom trawls (or those protected under national law), Parties will generally find it most effective to create permanent spatial or temporal closures. Common remedial fisheries management measures such as minimum size limits, sex selective take or gear modifications will not be effective for many species obtained in nonselective gears, as is so evidently the case with seahorses (Foster & Vincent, 2013). However, NDFs could certainly be made in cases of nonselective fisheries where enough protected area had been set aside, free of indiscriminate gear. To address the management challenges associated with seahorse bycatch that drives unsustainable and/or illegal trade, jurisdictions should take the following steps: 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 marine protected areas (MPAs) to ensure vulnerable habitats and ecosystems are effectively protected and recovered; end harmful subsidies for bottom trawling; and limit expansion of bottom trawling (Foster & Vincent, 2022). Such ideas are not new to most Parties, and many already have laws that aim to constrain the impact of trawling on marine life by excluding it from coastal waters (Foster & Vincent, 2022). Indeed, the first RST recommendations for a marine fish (seahorses) urged Thailand to ensure that its coastal trawl exclusion zones were being well-enforced (Foster, 2016). This is an area where CITES could collaborate actively with FAO, RFBs and the CMS, which are all addressing the challenge of bycatch avoidance and mitigation.

5.4.7 Level 3: Changes in trade

Exporting and importing Parties need to collaborate closely to ensure that trade is legal and in compliance with CITES obligations (see Res. Conf. 11.3 (Rev. CoP18) and 18.7; CITES, 2019a; 2019e), addressing at least seven forms of violation:

Trade documented in the CITES database but with flawed permits.

(i) export permits are issued but no NDFs were actually made (see above), or those that were made were perfunctory ("ticking the box") and not based on any science or management;
(ii) export permits are issued but the specimens were not legally sourced (e.g., are an illegal size or came from a closed fishery or protected area, or otherwise contravened national laws, thus precluding valid LAFs);
(iii) export permits are issued for captive-bred specimens but in reality, they were wild-caught;
(iv) export permits are issued in excess of the quota issued for the species pursuant to the NDF;
(v) export permits are issued but the species or specimens in a shipment do not match the permit, including intentional misidentification;

(vi) export permits are issued but do not include enough detail to allow the importing Party to be confident in enforcement (e.g., Hong Kong SAR needs Indonesia to indicate size on the permit because of export regulations on size).

Trade in the absence of valid export permits:

(i) the supposed permits are fraudulent;
(ii) no export permits have been issued and this is a case of smuggling.

Most CITES implementation work for marine fishes has focused on trade documented in the CITES database and much more should be done to address illegal wildlife trade (IWT) in the absence of export permits. CITES Parties and the SC need to direct resources at preventing, identifying, and reducing IWT in Appendix II listed marine fishes. Most CITES-related IWT efforts are focused on Appendix I species (terrestrial and marine), and much more attention is needed on illegal trade in Appendix II species, to prevent them from qualifying for inclusion on Appendix I. The discrepancies between volumes in field surveys of marine fish trade and the official CITES records indicate significant illegal export of some marine fish species. For seahorses, research in Hong Kong SAR showed a vast IWT in seahorses; about 95% of the seahorses (by number of individuals) in Chinese medicine traders' and retailers' facilities had come from Parties that had officially suspended exports (Foster et al., 2019a). For sharks, analyses suggest a significant disconnect between catches and reported trade in listed species (Okes & Sant, 2022; Pavitt et al., 2021). For humphead wrasse, market surveys in Hong Kong SAR showed far more fish on sale than should have been available from legal CITES import records, even several years after the last legal import (Hau, 2022; Y. Sadovy, pers. obs., 2022). More evidence of illegal trade comes from reported seizures, as we documented for seahorses and sharks. However, it is important to note that any analysis of seizures is an incomplete index of illegal trade because so few illegal exports are actually seized. Moreover, seizure data must be accompanied with data on enforcement effort if it is to have any validity for comparison over time and space.

At present, CITES Parties' enforcement efforts against IWT tend to be weak and/or uneven. For example, the rampant illegal trade in seahorses through Hong Kong SAR (Foster et al., 2019a) contrasts with Hong Kong SAR's considerable attempts to enforce CITES restrictions for sharks and humphead wrasse. For dried seahorses, as we note above, Parties' individual initiatives and the CITES RST process should have eliminated almost all global trade in these fishes (Foster & Vincent, 2021). Yet trade continues into Hong Kong SAR at high levels, now illegally, without an apparent government response. In contrast, Hong Kong SAR has made major investments in enforcement capacity for combating illegal shark fin imports since 2014, when the first listings of commercially-important sharks came into effect. Government enforcement action also led to marked declines of trade in humphead wrasse with source code W into Hong Kong SAR. Unfortunately, later introduction of humphead wrasse with source code R in 2018 has led to increased illegal imports and weakened the effectiveness of Hong Kong SAR's oversight of humphead wrasse trade under local ordinance (CAP586).

Communication among Parties could help investigate, address, and interdict illegal trade, particularly that which occurs without permits issued by the Parties. Decision 16.139 called for range States and importing Parties to strengthen bilateral and regional cooperation, including sharing intelligence and collaborating on enforcement actions. Intelligence-led enforcement is key to effective enforcement of CITES and ending illegal shipments. In the case of seahorses, communications from exporting Parties about their trade suspensions/zero quotas – which is not compiled or publicised anywhere – would have greatly helped exporting Parties to discern illegal trade and respond accordingly. Suspensions declared in response to RST, in particular, are currently buried in RST documentation, and should instead be posted on CITES website. Communication among Parties would also be particularly helpful, for example, in the case of exports of humphead wrasse from Indonesia to Hong Kong SAR. Shipments of humphead wrasse with source code R are transported by vessels that often engage in questionable activities; sharing intelligence around specific shipments could substantially aid enforcement operations. Good communications between the MAs could help implement Indonesia's export size limits on humphead wrasse (CITES, 2018a) and sort out detected or suspected irregularities in trade. The value of knowledge exchanges is evident in that, when illegal trade of humphead wrasse was reported to the Hong Kong SAR Authorities, they increased inspections of retail outlets. Another example of successful action on illegal trade comes from CITES Decision 16.169 – to investigate reported violations of the Convention and of related national laws in relation to trade in humphead wrasse, and take appropriate enforcement actions in accordance with national legislation – which has been helpful to the species, although it is still not fully actioned. However, efforts must be directed at crime prevention in the first place, and not only at detection and enforcement upon export/import.

CITES needs to make sure that other agencies also tackle IWT in marine fishes, connecting IWT to IUU fishing to end illegal exploitation of marine fishes. Attention by CITES Parties and the SC can help in the battle against IWT and illegal fishing, but other fora that deal with crime (e.g., UNODC, UNCTOC, and the UNGA)[42] must also engage. In 2021, Hong Kong SAR adopted the Organized and Serious Crimes Ordinance for wildlife trade[43] although it is unclear whether it has yet been applied. CITES will need to begin by emphasising that marine fishes are wildlife too. For example, recent UNODC World Wildlife Crime Reports (UNODC, 2016; 2020) have each included only one fish issue relating to the ocean, each time for diadromous fish (sturgeon caviar and eels) rather than fully marine species. As another example, UN Sustainable Development Goal (SDG) Target 15.7 (to eliminate poaching and trafficking of protected species) only covers terrestrial organisms with no counterpart for aquatic species. CITES Parties and the Secretariat also need to encourage donors with expertise in wildlife trafficking to reach beyond concerns associated with terrestrial mammals into IWT and IUU fishing in CITES-listed marine fishes (both in terms of interdiction and crime prevention). In fighting IWT and IUU fishing, CITES will need many collaborators, especially as some illegal trade in marine fish and products involves transnational organized crime, which raises issues far beyond trade without valid export permits.

[42] UNDOC: United Nations Convention on Transnational Organized Crime; UNCTOC: United Nations Office on Drugs and Crime; UNGA: United Nations General Assembly

[43] www.wwf.org.hk

6. Conclusions

6.1 Overview

In assessing the effectiveness of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listings on Appendix II, we need to distinguish carefully between activities by Parties to the Convention and actual gains for the species concerned, whether for marine fishes or other taxa. “It is often unclear to what degree CITES and associated regulations lead to tangible conservation outcomes. Robust impact assessments are needed to understand whether regulations are effective for achieving biodiversity conservation goals, and to learn lessons for future policy interventions.” (Booth et al., 2020). It is, of course, impossible to know what the conservation status of the species would have been without CITES listing and implementation, and many taxa are threatened by factors unrelated to over-exploitation for trade. We have to keep in mind that merely sustaining populations or slowing the rate of decline might sometimes represent a success. But our ambitions must lie in restoration and recovery. Whatever our aspiration, it is vital to understand and analyse the outcomes of CITES implementation activities, to challenge assumptions about their effectiveness, and to implement adaptive management measures.

Appendix II listings for marine fishes are here to stay and will only grow in number until humanity determines how best to reconcile fisheries with conservation; CITES’ aspirations form part of that discussion. It is, therefore, encouraging that Appendix II listings for our three key marine fish taxa have led to many outputs (Level 1) such as reports, workshops, non-detriment finding (NDF) frameworks, papers, briefings, guides and other identification tools, consultations, and trainings. They have also provoked an array of policy outcomes (Level 2) that range from scrutiny of Parties’ exports and updated legislation, through to trade measures including suspensions of exports or imports. It is vital, however, that those policy decisions translate into field outcomes (Level 3) such as verifiable application of quotas and restrictions, reductions in exports, protection of closed areas, gear modifications, reductions in illegal take, successful prosecutions, and more. Evaluation of the extent of those field outcomes must be priorities, with sufficient financial, technical, and political support. Only then can we hope to see the Convention’s work reflected in the true metric of effectiveness: resilient populations (Level 4) which are not being affected detrimentally by export activity. A goal of CITES Appendix II is to take management measures necessary to prevent species from being traded at levels incompatible with their survival or qualifying for inclusion in Appendix I; hence measurable implementation and reductions of threats to species are key to delivering on that goal. The key aspects of our evaluation are not unique to marine fishes but should prompt a focused commitment to the conservation goals inherent in any Appendix II listing.

6.2 CITES Appendix II listings for the three focal taxa

The stories of our three focal taxa each involve important aspects of the CITES tools and processes, and convey important lessons for marine fishes and for other taxa. Seahorses were the first marine fishes to be taken through RST and the ineffectual nature of that supposedly remedial process leads us to call for significant revision to both its intent and the execution; the process did not curb trade, but instead led to the enormous exports of dried seahorses becoming illegal. This contrasted with the transition to captive breeding for the small live seahorse trade, with potential relief of trade pressure on some wild populations. Implementation of the Appendix II listing for sharks has been marked by encouraging levels of information sharing with many Parties publishing their means of making NDFs, complete with targets and actions (Level 2). The challenge now is to determine how many of those well intended plans have actually been executed on boats and docks (Level 3) and to what effect on the wild populations (Level 4). Implementing the listing of humphead wrasse (humphead wrasse) has resulted in a model fisheries-based NDF and impressively high levels of involvement from the importing Party, addressing illegal wildlife trade (IWT) in humphead wrasse that have source code W (wild) with quotas, size limits and transport restrictions (all Level 3). However, it also involved a failure to address the concerns posed by

humphead wrasse caught from the wild and reared in grow-outs (Levels 2 and 3). They are being exported with source code R (ranched) without an evidence-based NDF or enforcement. Taken together, with further examples emerging from our species case studies, these three taxa capture many of the biggest concerns and opportunities about CITES for marine fishes and well beyond.

If we contrast implementation of the Appendix II listing across taxa, we find that seahorses have benefited least, while the story has been more encouraging – although still very incomplete – for sharks and humphead wrasse. Very little attention was paid to seahorses when they were first listed and, twenty years later, only two Parties have shared science-based NDFs – both for live seahorses – even though tens of millions of dried individuals are traded globally each year. Most large exporting countries ended up with trade suspensions that, partly because of huge catches in nonselective gear and lack of enforcement by exporting and importing Parties, merely resulted in huge IWT. There does seem to have been transition to captive breeding for the small live trade. The listed sharks have benefited from notable public, media, industry, and political interest, with substantial amounts of money supporting widespread engagement with CITES across many Parties. This has led to development of many useful tools, published NDFs, and management policies. The translation of such work to field outcomes (Level 3) is less apparent. After listing, humphead wrasse, mostly traded live, benefited from a rapid narrowing of the (legal) trade to just one exporting Party, where the Food and Agriculture Organization of the United Nations (FAO) provided support to help manage the fishery well, and where the importing Party has played an active role in seeking sustainability (although the issue of ranching is very problematic for both exporting and importing Parties).

6.3 CITES implementation for marine fishes

Overall, the path to success for CITES-listed marine fishes lies first and foremost in good fisheries management, informed by adequate data on species, and often on trade. In ensuring that exports are sustainable and legal, Parties need to be accountable for how those fishes are removed from the ocean, in number, in season, in method, in space, in size, and so much more. Making NDFs is not a mystery. It is merely based around good and enduring fisheries management, something that countries should be doing anyway for exploited marine resources. For all marine fish species that are targeted (threatened or not), it means setting and enforcing catch limits and quotas, avoiding critical reproductive seasons and/or locations, and controlling for size taken. For a wide array of species, including many of the seahorses and some sharks, it means constraining non-selective gear by good spatial (or sometimes temporal) restrictions. For humphead wrasse it means limiting collection of those intended for the live fish market and of those intended for grow-out by size. If the method of exploitation is verifiably managed for long term sustainability (Level 3), as it must be, then the export trade should not pose undue risks to the wild populations, and both it and the fishery that serves it can continue to bring benefits (Level 4).

In assessing the effectiveness of CITES Appendix II listings, it is important to consider the relationship between actions taken by Parties to the Convention and the resulting gains for the species concerned, whether for marine fishes or other taxa. The goal should be to reduce threats, including from international trade, to such an extent that a species can be removed from its CITES listing (if feasible and in the context of other threats). The lack of evidence of biological impacts from CITES listings does not necessarily mean that there are not benefits to populations. Sometimes, the benefits may be challenging to measure, CITES implementation cannot address multiple threats, and/or species that are long-lived and slow to reproduce may only show benefits slowly. It would, however, be dangerously cavalier to assure ourselves of success in implementation without biological evidence to that effect.

6.4 Framework for assessing action and implementation

Our framework for evaluating implementation forces a layered analysis of CITES effectiveness that cuts through the noise. With so much happening, it could be easy to confuse activity with achievement. We were guided to articulate this framework by the complexity of discussions we had about whether CITES Parties were implementing Appendix II listings for marine fishes well or not. People tended to argue effectiveness based on a tally of what was done rather than what it achieved. But we were most interested in whether CITES was working for the fish. Our analyses led us to discover some promising gains at Levels 1 and 2 and a need for much more progress at Levels 3 and 4… and even at Level 2 for seahorses.

Disentangling the different types of contributions allowed us to determine which types of implementations happen more than others and to realise that the most frequent are commonly not the most important for the species. All four levels of activity progressing towards implementation offer something of value. It is, however, clear that Levels 1 and 2 are remote from the fish and that Level 3 is where the theoretical becomes the practical, and actually drives change. Initially, soon after listing, almost every activity makes a contribution but over time technical outputs accumulate, policy outcomes dominate the discussion, field outcomes turn out to be comparatively negligible (or perhaps not documented or too small in scale), and population impacts are imperceptible (or exist but are not assessed). It does not have to be this way but that is how inertia tends to flow: technical outputs can be developed by a few people, often quite quickly, with few resources and limited government involvement; policy outcomes are more complicated and cumbersome, depending on political will, and take much longer; field outcomes involve many people, require actual changes in people's lives and practices, can be costly, challenging to collect, and produce uncertain results; and population impacts are often very challenging to determine (commonly relying uneasily on fisheries-dependent data), and worryingly rare, given the diversity of pressures on wild species.

It is certainly possible that some Parties are doing better at generating field outcomes (Level 3) than is yet obvious. Unfortunately, evidence of the implementation of CITES enforcement measures is scant. Sometimes reports of progress may appear in the news when it makes a good story. For example, large seizures of illegally fished or imported products, or fishing boats impounded and owners fined, are clear demonstrations of successful implementation. But the extent to which confiscations lead to convictions is often not easy to determine. Press releases are not issued to commemorate another year's work in an airport or fish market confirming that all shipments were accompanied by the correct CITES permits and that no prohibited, undersized or over-quota species have come ashore – or that the usual variety of infractions of regulations have been identified, addressed through the usual channels, and the appropriate penalties enforced. Better information is the key to greater confidence about what is happening in the implementation of marine fish listings.

We want to be clear that our framework does not represent four sequential phases of implementation. Sometimes it may make sense to develop NDF frameworks (Level 1), then make NDFs (Level 2), then address a problematic fishery (Level 3). But it may also be possible to aim for a field outcome (Level 3) almost immediately. Say, for example, a Party knows that illegal trade is dependent on illegal fishing. Rather than embarking on developing genetic identification tools (Level 1) or long planning and policy processes (Level 2), the Party could just engage in active enforcement of fisheries laws (Level 3). And sometimes, in the spirit of adaptive management, a Party may do best to make an informed judgment on the best level for action and then be prepared to switch levels as knowledge is gained. To emphasise, the very real and urgent problems for many marine fish may mean it sometimes make sense to skip straight to practical change while monitoring and evaluating the activity. The bigger worry would be if implementation got bogged down in technical outputs (Level 1) and no implementation measures were actually reaching the fish.

In the final eventuality, effective implementation will depend on national fisheries and ocean agencies working with CITES Authorities to develop and deploy effective adaptive management that fully implements CITES for these species, including efforts to: (i) make positive and meaningful NDFs that are scientifically sound and then use these to establish export quotas or other meaningful management measures; (ii) ensure legal acquisition and monitoring of actual trade (not just reported/permitted trade) to facilitate adaptive management; (iii) address illegal trade that is taking place without permits; and (iv) monitor and evaluate impacts on target species/populations. To be effective, such actions need many tools to help and need good policies in place. Much of that is happening for marine fishes. Most importantly, however, Parties need to implement effective front-line field management in support of CITES-listed species through enforcement of rules and regulations, monitoring and evaluation of representative/sentinel populations in the wild, and adaptive management to ensure the long-term viability of populations. That is where the great effort is now needed, remembering that CITES-listing is only asking for what, in fact, all natural resource management should be seeking to achieve: that any use be sustainable and legal, and not compromise the future of the species. In this, CITES-listed species will benefit from any societal change that emphasizes the intrinsic value of fish as wildlife and not just their importance as resources, a change in perspective that is fostered every time CITES decides to embrace another marine fish taxon.

References

Abercrombie, D. L., Cardeñosa, D., & Chapman, D. D. (2018). *Genetic approaches for identifying shark fins and other products: a tool for international trade monitoring and enforcement* https://static1.squarespace.com/static/5be1cec125bf028361db95dc/t/5f357ba10f513626d40618c0/1597340599110/Pew_DNA_Manual_v7-for-print.pdf

Abercrombie, D. L., Chapman, D. D., Gulak, S. J. B., & Carlson, J. K. (2013). *Visual Identification of Fins from Common Elasmobranchs in the Northwest Atlantic Ocean*. NMFS-SEFSC. https://www.cms.int/sites/default/files/publication/SharkfinID_guide.pdf

Abercrombie, D. L., & Jabado, R. W. (2022). *CITES Sharks and Rays - Implementing and Enforcing Listings: Volume II - Processed Carcass ID* Ministry of Marine Affairs and Fisheries (Indonesia), Cefas (UK).

Almojil, D. (2021). Local ecological knowledge of fisheries charts decline of sharks in data-poor regions. *Marine Policy*, *132*, 104638. https://doi.org/10.1016/j.marpol.2021.104638

Amoroso, R. O., Pitcher, C. R., Rijnsdorp, A. D., McConnaughey, R. A., Parma, A. M., Suuronen, P., Eigaard, O. R., Bastardie, F., Hintzen, N. T., Althaus, F., Baird, S. J., Black, J., Buhl-Mortensen, L., Campbell, A. B., Catarino, R., Collie, J., Cowan, J. H., Jr., Durholtz, D., Engstrom, N., . . . Jennings, S. (2018). Bottom trawl fishing footprints on the world's continental shelves. *Proc Natl Acad Sci U S A*, *115*(43), E10275-E10282. https://doi.org/10.1073/pnas.1802379115

Anon. (2018). FAO collaboration to refine species identification tools - FishFinder 2.0 Development Platform. *Regional Fishery Body Secretariats' Network,* (16), 10-11.

Arieta, S. (2022). Putting an end to the tragedy of ranching in napoleon wrasse fishery in Indonesia: a sociological approach. *International Journal of Social Science*, *1*(5), 817-828. https://doi.org/10.53625/ijss.v1i5.1333

Aylesworth, L., Foster, S. J., & Vincent, A. C. J. (2020). Realities of offering advice to governments on CITES. *Conservation Biology*, *34*(3), 644-653. https://doi.org/10.1111/cobi.13451

Aylesworth, L., Loh, T. L., Rongrongmuang, W., & Vincent, A. C. J. (2017a). Seahorses (*Hippocampus* spp.) as a case study for locating cryptic and data-poor marine fishes for conservation. *Animal Conservation*, *20*(5), 444-454. https://doi.org/10.1111/acv.12332

Aylesworth, L., Phoonsawat, R., Suvanachai, P., & Vincent, A. C. J. (2017b). Generating spatial data for marine conservation and management. *Biodiversity and Conservation*, *26*(2), 383-399. https://doi.org/10.1007/s10531-016-1248-x

Barone, M., Mollen, F. H., Giles, J. L., Marshall, L. J., Villate-Moreno, M., Mazzoldi, C., Pérez-Costas, E., Heine, J., & Guisande, C. (2022). Performance of iSharkFin in the identification of wet dorsal fins from priority shark species. *Ecological Informatics*, *68*, 101514. https://doi.org/https://doi.org/10.1016/j.ecoinf.2021.101514

BFAR. (2017). *Napoleon Wrasse "Mameng": Philippine Status Report and National Plan of Action 2017-2022*. Philippine Journal of Fisheries: Special Issue. http://www.nfrdi.da.gov.ph/tpjf/etc/Napoleon%20Wrasse%20UPDATE%20NOV%2020%202017.pdf.

Bond, M. E., Booth, H., Tanna, A., Polo, C., Shea, S. K. H., Cardiec, F., Mansur, E. F., & Jabado, R. W. (2022). *Trade regulations drive improved global shark and ray management. [Manuscript in preparation].*

Bonfil, R. (2002). *Consultancy on Elasmobranch Identification and Stock Assessment in the Red Sea and Gulf of Aden. Presented to the Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden.* https://archive.iwlearn.net/persga.org/Files_____/Common/Fisheries/Sharks/StockAssesment_Report_2002.pdf

Booth, H., Mardhiah, U., Siregar, H., Hunter, J., Giyanto, Putra, M. I. H., Marlow, J., Cahyana, A., Boysandi, Demoor, A. Y. L., Lewis, S., Adhiasto, D., Adrianto, L., & Yulianto, I. (2021). An integrated approach to tackling wildlife crime: Impact and lessons learned from the world's largest targeted manta ray fishery. *Conservation Science and Practice*, *3*(2). https://doi.org/10.1111/csp2.314

Booth, H., Pooley, S., Clements, T., Putra, M. I. H., Lestari, W. P., Lewis, S., Warwick, L., & Milner-Gulland, E. J. (2020). Assessing the impact of regulations on the use and trade of wildlife: An operational framework, with a case study on manta rays. *Global Ecology and Conservation*, *22*, e00953. https://doi.org/https://doi.org/10.1016/j.gecco.2020.e00953

Bruckner, A. W. (2005). The importance of the marine ornamental reef fish trade in the wider Caribbean. *Rev Biol Trop*, *53 Suppl 1*(suppl 1), 127-137. http://www.ncbi.nlm.nih.gov/pubmed/17465152

Bürgener, M., Louw, S., & da Silva, C. (2021). *3D printing of pelagic shark fins for use as a training and compliance tool. CITES AC31 Inf. 15*. https://cites.org/sites/default/files/eng/com/ac/31/Inf/E-AC31-Inf-15.pdf

Cardeñosa, D., Fields, A. T., Babcock, E. A., Shea, S. K. H., Feldheim, K. A., & Chapman, D. D. (2020). Species composition of the largest shark fin retail-market in mainland China. *Scientific Reports*, *10*(1). https://doi.org/10.1038/s41598-020-69555-1

Cardeñosa, D., Fields, A. T., Babcock, E. A., Zhang, H., Feldheim, K., Shea, S. K. H., Fischer, G. A., & Chapman, D. D. (2018a). CITES-listed sharks remain among the top species in the contemporary fin trade. *Conservation Letters*, *11*(4). https://doi.org/10.1111/conl.12457

Cardeñosa, D., Gollock, M. J., & Chapman, D. D. (2019). Development and application of a novel real-time polymerase chain reaction assay to detect illegal trade of the European eel (*Anguilla anguilla*). *Conservation Science and Practice*, *1*(5), e39. https://doi.org/10.1111/csp2.39

Cardeñosa, D., Quinlan, J., Shea, K. H., & Chapman, D. D. (2018b). Multiplex real-time PCR assay to detect illegal trade of CITES-listed shark species. *Scientific Reports*, *8*(1). https://doi.org/10.1038/s41598-018-34663-6

Cardeñosa, D., Shea, D. K., Zhang, H., Fischer, G. A., Simpfendorfer, C. A., & Chapman, D. D. (in review). Two thirds of species in a global shark fin trade hub are threatened with extinction: management gaps remain for threatened coastal sharks.

Cashion, M. S., Bailly, N., & Pauly, D. (2019). Official catch data underrepresent shark and ray taxa caught in Mediterranean and Black Sea fisheries. *Marine Policy*, *105*, 1-9. https://doi.org/https://doi.org/10.1016/j.marpol.2019.02.041

Chen, J. N. S., & Justin, S. R. (2009). Regulating the humphead wrasse (*Cheilinus undulatus*) trade in Sabah, Malaysia. *AMBIO*, *38*(2), 123-125. https://doi.org/10.2307/25515818

Cisneros-Montemayor, A. M., West, K., Boiro, I. S., & Vincent, A. C. J. (2016). An assessment of West African seahorses in fisheries catch and trade. *Journal of Fish Biology*, *88*(2), 751-759. https://doi.org/10.1111/jfb.12818

CITES-FAO. (2016). *Implementing CITES listings of sharks and manta rays 2013 - 2016*. Retrieved from https://cites.org/sites/default/files/eng/prog/shark/docs/Implem%20shark%20ray%20listings_E.pdf

CITES. (1995). *Status of International Trade in Shark Species. Res. Conf. 9.17*. Retrieved from https://cites.org/eng/node/2495

CITES. (2000). *Ranching and trade in ranched specimens of species transferred from Appendix I to Appendix II. Res. Conf. 11.16 (Rev. CoP15)*. Retrieved from https://cites.org/sites/default/files/document/E-Res-11-16-R15.pdf

CITES. (2001). *Control of captive breeding, ranching and wild harvest production systems for Appendix-II species. AC17 Doc. 14 (Rev. 1)*. Retrieved from https://cites.org/sites/default/files/eng/com/ac/17/E17-14-R1.pdf

CITES. (2002a). *Permits and certificates. Conf. 12.3 (Rev. CoP18)*. Retrieved from https://cites.org/sites/default/files/documents/E-Res-12-03-R18.pdf

CITES. (2002b). *Proposal: Inclusion of the Basking Shark (*Cetorhinus maximus*) on Appendix II of CITES. CoP12 Prop. 12.36*. Retrieved from https://cites.org/sites/default/files/eng/cop/12/prop/E12-P36.pdf

CITES. (2004). *Proposal: Inclusion of* Cheilinus undulatus *in Appendix II. CoP13 Prop. 33*. Retrieved from https://cites.org/sites/default/files/eng/cop/13/prop/E13-P33.pdf

CITES. (2009). *Strategic Vision: 2008-2013, development of indicators*. Retrieved 10 May 2022 from https://cites.org/eng/node/1589

CITES. (2012a). *Conservation of seahorses and other members of the family Syngnathidae. CoP12 Doc. 43*. Retrieved from https://cites.org/sites/default/files/eng/cop/12/doc/E12-43.pdf

CITES. (2012b). *Consideration of Proposals for amendment of Appendices I and II. CoP12 Prop. 12.37*. Retrieved from https://cites.org/sites/default/files//eng/cop/12/prop/E12-P37.pdf

CITES. (2013a). *Introduction from the sea. Conf. 14.6 (Rev. CoP16)*. Retrieved from https://cites.org/eng/res/14/14-06R16.php

CITES. (2013b). *Resolution Conf. 16.7 (Rev. CoP17) on Non-detriment findings*. Retrieved from https://cites.org/sites/default/files/document/E-Res-16-07-R17_0.pdf

CITES. (2013c). *Strengthening capacity in developing countries for sustainable wildlife management and enhanced implementation of CITES wildlife trade regulations, with particular focus on commercially-exploited aquatic species. Project summary sheet*. Retrieved from https://cites.org/sites/default/files/eng/prog/shark/docs/eu_project_summary.pdf
CITES. (2013d). *Transport of live specimens. Conf. 10.21 (Rev. CoP16)* Retrieved from https://cites.org/sites/default/files/document/E-Res-10-21-R16.pdf
CITES. (2014a). *Building in-country capacity to undertake non-detriment findings with regard to Hippocampus species in Indonesia, Thailand and Viet Nam. AC27 Inf. 9*. Retrieved from https://cites.org/sites/default/files/common/com/ac/27/E-AC27-Inf-09.pdf
CITES. (2014b, 12 June 2014). *FAO and CITES support Asian countries with the implementation of recent shark listings* https://cites.org/eng/FAO-and-CITES-support-Asian-countries-with-implementation-of-recent-shark-listings
CITES. (2014c). *Review of Significant Trade in specimens of Appendix-II species: Species selected following CoP15. AC27 Doc. 12.4*. Retrieved from https://cites.org/sites/default/files/eng/com/ac/27/E-AC27-12-04.pdf
CITES. (2015a, 15 December 2015). *CITES shark listings capacity building efforts recognised by UN General Assembly in annual resolution on Sustainable Fisheries* https://cites.org/eng/node/42883
CITES. (2015b). *Conservation and management of sharks. AC28 Com. 9*. Retrieved from https://cites.org/sites/default/files/eng/com/ac/28/Com/E-AC28-Com-09.pdf
CITES. (2016a). *Draft decisions on legal acquisition findings and compliance matters. Cop17 Com. II. 13*. Retrieved from https://cites.org/sites/default/files/eng/cop/17/Com_II/E-CoP17-Com-II-13.pdf
CITES. (2016b). *Review of Significant Trade in specimens of Appendix-II species: Implementation of recommendations of the Animals and Plants Committees - Annex 2: Information submitted by Thailand on* Hippocampus kelloggi, H. kuda *and* H. spinosissimus. *SC67 Doc 15 A2* Retrieved from https://cites.org/sites/default/files/eng/com/sc/67/E-SC67-15-A2.pdf.
CITES. (2016c). *Review of Significant Trade in specimens of Appendix-II species: Implementation of recommendations of the Animals and Plants Committees - Annex 2: Report on Thailand's actions addressing problems of Hippocampus spp. SC66 Doc 31.1 Annex 3* Retrieved from https://cites.org/sites/default/files/eng/com/sc/66/E-SC66-31-01_A3.pdf
CITES. (2017a). *EU provides 900,000 EUR to support CITES marine species capacity building projects* https://www.cites.org/esp/node/48914
CITES. (2017b). *Humphead wrasse (*Cheilinus undulatus*): Report of the Secretariat. SC69 Doc. 48*. Retrieved from https://cites.org/sites/default/files/eng/com/sc/69/E-SC69-48.pdf
CITES. (2017c). *Non-detriment findings for specimens with source code W, R and F. AC29 Doc. 14.2*. Retrieved from https://cites.org/sites/default/files/eng/com/ac/29/E-AC29-14-02.pdf
CITES. (2018a). *Humphead wrasse (*Cheilinus undulatus*): Report of the Secretariat. SC70 Doc. 47*. Retrieved from https://cites.org/sites/default/files/eng/com/sc/70/E-SC70-47.pdf
CITES. (2018b). *Review of Significant trade. AC30 Com. 11 (Rev. by Sec.)*. Retrieved from https://cites.org/sites/default/files/eng/com/ac/30/com/E-AC30-Com-11-R.pdf
CITES. (2018c). *Seahorses (Hippocampus spp.) on CITES – a roadmap to success. CoP18 Doc. 72. Submitted by the Governments of Maldives, Monaco, Sri Lanka and the United States of America. Written by S.J. Foster and A.C.J. Vincent*. Retrieved from https://cites.org/sites/default/files/eng/cop/18/doc/E-CoP18-072.pdf
CITES. (2018d). *Transportation mode of Napoleon Fish (*Cheilinus undulatus*) export from Indonesia. Notification to the Parties No. 2018/022*. Retrieved from https://cites.org/sites/default/files/notif/E-Notif-2018-022.pdf
CITES. (2019a). *Compliance and enforcement. Conf. 11.3 (Rev. CoP18)*. Retrieved from https://cites.org/sites/default/files/document/E-Res-11-03-R18.pdf
CITES. (2019b). *Conference Resolution on the Review of Significant Trade in specimens of Appendix II species. Conf. 12.8 (Rev CoP18)*. Retrieved from https://cites.org/sites/default/files/document/E-Res-12-08-R18.pdf
CITES. (2019c). *Consideration of proposals for amendment of Appendices I and II: Proposal - inclusion in Appendix II of the shortfin mako shark,* Isurus oxyrinchus. *CoP18 Prop. 42*. Retrieved from https://cites.org/sites/default/files/eng/cop/18/prop/060319/E-CoP18-Prop-42.pdf

CITES. (2019d). *Decisions of the Conference of the Parties to CITES in effect after the 18th meeting*. Retrieved 24 May 2022 from https://cites.org/eng/dec/index.php
CITES. (2019e). *Legal acquisition findings. Conf. 18.7.* Retrieved from https://cites.org/sites/default/files/document/E-Res-18-07.pdf
CITES. (2019f). *Resolutions of the Conference of the Parties in effect after the 18th meeting*. Retrieved 1 May 2022 from https://cites.org/eng/res/index.php
CITES. (2019g). *Securing better implementation of marine fish species listings in the Appendices. CoP18 Doc. 12*. Retrieved from https://cites.org/sites/default/files/eng/cop/18/doc/E-CoP18-012.pdf
CITES. (2019h). *Species specific matters: Maintenance of the Appendices: Standard Nomenclature. CoP18 Doc. 99*. Retrieved from https://cites.org/sites/default/files/eng/cop/18/doc/E-CoP18-099.pdf
CITES. (2019i). *Supplementary information on CITES COP 18 proposal 42: confirming that shortfin and longfin mako sharks fully meet the criteria for inclusion on CITES Appendix II. CoP18 Inf. 40.* Retrieved from https://cites.org/sites/default/files/eng/cop/18/inf/E-CoP18-Inf-040.pdf
CITES. (2019j). *Decision 18.209 Humphead wrasse* (Cheilinus undulatus). https://cites.org/eng/dec/index.php/42084
CITES. (2020a). *The CITES species*. Retrieved 10 May 2022 from https://cites.org/eng/disc/species.php
CITES. (2020b). *Non-detriment findings: NDF Reports Database* Retrieved 20 May 2022 from https://cites.org/eng/prog/ndf/index.php
CITES. (2020c). *Regulation of trade in specimens of species included in Appendix II*. Retrieved 10 May 2022 from https://cites.org/eng/disc/text.php#IV
CITES. (2020d). *Request for information on national management measures for seahorses (Hippocampus spp.) and their implementation and enforcement. Notification to the Parties No. 2020/015* Retrieved from https://cites.org/sites/default/files/notif/E-Notif-2020-015.pdf
CITES. (2020e). *Review of Significant Trade (RST)*. Retrieved 20 May 2022 from https://cites.org/eng/imp/sigtradereview
CITES. (2021a). *Reservations entered by Parties*. Retrieved 2 May 2022 from https://cites.org/eng/app/reserve.php
CITES. (2021b). *Responses to Notification to the Parties No. 2020/015. AC31 Doc. 26 Annex (Rev.1)*. Retrieved from https://cites.org/sites/default/files/eng/com/ac/31/Docs/E-AC31-26-A-R1.pdf
CITES. (2021c). *Sharks and rays (Elasmobranchii spp.). SC73 Inf. 3* https://cites.org/sites/default/files/eng/com/sc/73/Inf/E-SC73-Inf-03.pdf
CITES. (2021d). *Sharks and Rays: Information resources from Parties and other stakeholders: NDFs and NDF guidance*. Retrieved 28 April 2022 from https://cites.org/eng/prog/shark/resource_Parties_stakeholders#NDFs%20and%20NDF%20guidance
CITES. (2022a). *A brief history of sturgeons & CITES*. Retrieved 24 May 2022 from https://cites.org/eng/prog/sturgeon/history.shtml
CITES. (2022b). *The CITES export quotas*. Retrieved 20 May 2022 from https://cites.org/eng/resources/quotas/index.php
CITES. (2022c). *CITES guidelines for the non-air transport of live wild animals and plants*. Retrieved from https://cites.org/sites/default/files/eng/resources/transport/E-FINAL_CITES_Non-air_transport_Guidelines.pdf
CITES. (2022d). *Conference of the Parties*. Retrieved 20 May 2022 from https://cites.org/eng/disc/cop.php
CITES. (2022e). *Guidance for making legal acquisition findings: Report of the Secretariat (Decision 18.124). SC74 Doc. 40*. Retrieved from https://cites.org/sites/default/files/eng/com/sc/74/E-SC74-40.pdf
CITES. (2022f). *Identification of Acipenseriformes species in trade*. Retrieved 24 May 2022 from https://cites.org/eng/prog/sturgeon/identifcation.shtml
CITES. (2022g). *Introduction from the Sea*. Retrieved 24 May 2022 from https://cites.org/eng/prog/ifs.php
CITES. (2022h). *Introduction from the sea. SC74 Doc. 51*. Retrieved from https://cites.org/sites/default/files/eng/com/sc/74/E-SC74-51.pdf
CITES. (2022i). *Queen Conch*. Retrieved 24 May 2022 from https://cites.org/eng/prog/queen_conch
CITES. (2022j). *Report of the Secretariat: Species specific matters -Seahorses (Hippocampus spp.). SC74 Doc 70.1*. Retrieved from https://cites.org/sites/default/files/eng/com/sc/74/E-SC74-70-01.pdf
CITES. (2022k). *Resources for implementation: Legality*. https://cites.org/eng/prog/shark/legality.php

CITES. (2022l). *Sharks and rays (Elasmobranchii spp.). Report of the CITES Secretariat to the Standing Committee. SC74 Doc. 67.2*. Retrieved from https://cites.org/sites/default/files/eng/com/sc/74/E-SC74-67-02.pdf

CITES. (2022m). *Summary Record of the Seventy-fourth meeting of the Standing Committee. Lyon (France), 7 - 11 March 2022. SC74 SR*. Retrieved from https://cites.org/sites/default/files/eng/com/sc/74/exsum/E-SC74-SR-DRAFT.pdf

CITES. (2022n). *Supporting sustainable management of endangered tree species*. Retrieved 24 May 2022 from https://cites.org/eng/prog/flora/trees/trees_project

Clarke, S. C., Magnussen, J. E., Abercrombie, D. L., McAllister, M. K., & Shivji, M. S. (2006a). Identification of shark species composition and proportion in the Hong Kong shark fin market based on molecular genetics and trade records. *Conservation Biology*, *20*(1), 201-211. https://doi.org/10.1111/j.1523-1739.2005.00247.x

Clarke, S. C., McAllister, M. K., Milner-Gulland, E. J., Kirkwood, G. P., Michielsens, C. G. J., Agnew, D. J., Pikitch, E. K., Nakano, H., & Shivji, M. S. (2006b). Global estimates of shark catches using trade records from commercial markets. *Ecology Letters*, *9*(10), 1115-1126. https://doi.org/10.1111/j.1461-0248.2006.00968.x

CMS. (2020). *Appendix I & II of CMS (Convention on the Conservation of Migratory Species of Wild Animals)*. Retrieved 17 June 2022 from https://www.cms.int/en/species/appendix-i-ii-cms

CMS. (2022a). *concerted actions ongoing. Convention on the Conservation of Migratory Species of Wild Animals CoP 13*. Retrieved 1 May 2022 from https://www.cms.int/en/documents/concerted-actions

CMS. (2022b). *Memorandum of Understanding on the Conservation of Migratory Sharks*. https://www.cms.int/sharks/legalinstrument/sharks-mou

Cochrane, K. (2015). Use and misuse of CITES as a management tool for commercially-exploited aquatic species. *Marine Policy*, *59*, 16-31. https://doi.org/10.1016/j.marpol.2015.04.015

Davies, R. W. D., Cripps, S. J., Nickson, A., & Porter, G. (2009). Defining and estimating global marine fisheries bycatch. *Marine Policy*, *33*(4), 661-672. https://doi.org/https://doi.org/10.1016/j.marpol.2009.01.003

DENR. (2009). *Executive Order No. 797, s. 2009 - Adopting the Coral Triangle Initiative (CTI) national plan of action* https://intl.denr.gov.ph/asia-pacific-menu-2/article/3

Dent, F., & Clarke, S. (2015). *State of the global market for shark products*. FAO Fisheries and Aquaculture technical paper, 590. https://www.fao.org/3/i4795e/i4795e.pdf

Directorate of Conservation and Marine Biodiversity (2016). *Non-detriment Finding of Napoleon Fish (Cheilinus undulatus) in Anambas and Natuna Districts, Riau Islands Province, Indonesia: A Capture-based Aquaculture Operation/Sea Ranching Report. Indonesia: Directorate of Conservation and Marine Biodiversity*.

Dulvy, N. K., Pacoureau, N., Rigby, C. L., Pollom, R. A., Jabado, R. W., Ebert, D. A., Finucci, B., Pollock, C. M., Cheok, J., Derrick, D. H., Herman, K. B., Sherman, C. S., Vanderwright, W. J., Lawson, J. M., Walls, R. H. L., Carlson, J. K., Charvet, P., Bineesh, K. K., Fernando, D., . . . Simpfendorfer, C. A. (2021). Overfishing drives over one-third of all sharks and rays toward a global extinction crisis. *Current Biology*, *31*(21), 4773-4787.e4778. https://doi.org/10.1016/j.cub.2021.08.062

Environment-Canada. (1995). *CITES identification guide - crocodilians: Guide to the identification of crocodilian species controlled under the Convention on International Trade in Endangered Species of Wild Fauna and Flora*. Ottawa: Environment Canada. Retrieved from https://publications.gc.ca/collections/collection_2014/ec/En40-428-1-1995.pdf

EC. (1996). Council Regulation (EC) No 338/97 of 9 December 1996 on the protection of species of wild fauna and flora by regulating trade therein. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A01997R0338-20220119&qid=1484753427128

Ewell, C., Hocevar, J., Mitchell, E., Snowden, S., & Jacquet, J. (2020). An evaluation of Regional Fisheries Management Organization at-sea compliance monitoring and observer programs. *Marine Policy*, *115*, 103842. https://doi.org/10.1016/j.marpol.2020.103842

Fabinyi, M. (2012). Historical, cultural and social perspectives on luxury seafood consumption in China. *Environmental Conservation*, *39*(1), 83-92. https://doi.org/10.1017/s0376892911000609

Fabinyi, M., & Dalabajan, D. (2011). Policy and practice in the live reef fish for food trade: A case study from Palawan, Philippines. *Marine Policy*, *35*(3), 371-378. https://doi.org/10.1016/j.marpol.2010.11.001

FAO-IUCN. (2016). *Simple is good: moving toward pragmatic and effective monitoring to support CITES implementation for marine fishes and invertebrates on Appendix II. CITES CoP 17 Inf. 65*. Retrieved from https://cites.org/sites/default/files/eng/cop/17/InfDocs/E-CoP17-Inf-65.pdf

FAO. (2000). *Fisheries management. 1. Conservation and management of sharks. FAO Technical Guidelines for Responsible Fisheries. No. 4, Suppl. 1. Rome, FAO. 2000. 37p*. Retrieved 20 May 2022 from https://www.fao.org/3/x8692e/x8692e00.htm

FAO. (2007). *Report of the second FAO Ad Hoc Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-exploited Aquatic Species. Rome, Italy, 26–30 March 2007*. FAO Fisheries Report, 833. https://www.fao.org/3/a1143e/a1143e.pdf

FAO. (2009). *Report of the Third FAO Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-exploited Aquatic Species, Rome, 7 -12 December 2009*. FAO Fisheries Report, 925. https://cites.org/sites/default/files/eng/cop/15/doc/E15-68A03.pdf

FAO. (2013). *Report of the Fourth FAO Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-exploited Aquatic Species, Rome, 3– 8 December 2012*. FAO Fisheries and Aquaculture Report, 1032. https://cites.org/sites/default/files/eng/cop/16/doc/E-CoP16-77-A6.pdf

FAO. (2016). *Report of the Fifth FAO Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-exploited Aquatic Species, Rome, 6–10 June 2016*. FAO Fisheries and Aquaculture Report, 1163. https://cites.org/sites/default/files/E-CoP17-88-03-A5.pdf

FAO. (2017). *Voluntary Guidelines for Catch Documentation Schemes*. Retrieved from https://www.fao.org/documents/card/en/c/a6abc11e-414a-491b-888a-7819dabdac1d/

FAO. (2019). *Report of the Sixth FAO Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially Exploited Aquatic Species, Rome, 21–25 January 2019*. FAO Fisheries and Aquaculture Report, 1255. https://cites.org/sites/default/files/eng/cop/18/doc/E-CoP18-105-03-A1.pdf

FAO. (2021). *Better data collection in shark fisheries – Learning from practice*. FAO Fisheries and Aquaculture Circular, 1227. https://doi.org/10.4060/cb5378en

FAO. (2022a). *Database of measures on conservation and management of sharks. In: Food and Agriculture Organization of the United Nation [online]. Rome. Database version 1-2022*. www.fao.org/ipoa-sharks/database-of-measures/en

FAO. (2022b). *Understanding and implementing catch documentation schemes – A guide for national authorities*. FAO Technical Guidelines for Responsible Fisheries, 14. https://doi.org/10.4060/cb8243en

Fields, A. T., Fischer, G. A., Shea, S. K. H., Zhang, H., Abercrombie, D. L., Feldheim, K. A., Babcock, E. A., & Chapman, D. D. (2018). Species composition of the international shark fin trade assessed through a retail-market survey in Hong Kong. *Conservation Biology*, *32*(2), 376-389. https://doi.org/10.1111/cobi.13043

Fischer, J., & Barone, M. (2013). *Priority regions and countries impacted by the recent CITES listings of marine elasmobranchs*. FAO, Internal Report.

Fischer, J., Erikstein, K., D'Offay, B., Guggisberg, S., & Barone, M. (2012). Review of the Implementation of the International Plan of Action for the Conservation and Management of Sharks. *FAO Fisheries and Aquaculture Circular*(C1076). https://www.proquest.com/docview/1314489919?pq-origsite=360link&accountid=14656

Foster, S., Wiswedel, S., & Vincent, A. (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. https://doi.org/10.1002/aqc.2493

Foster, S. J. (2016). Seahorses (*Hippocampus* spp.) and the CITES review of Significant trade. *Fisheries Centre Research Reports*, 24(4). http://hdl.handle.net/2429/59522

Foster, S. J., Aylesworth, L., Do, H. H., Bat, N. K., & Vincent, A. C. J. (2017). Seahorse exploitation and trade in Viet Nam. *Fisheries Centre Research Reports*, 25(2). http://hdl.handle.net/2429/73972.

Foster, S. J., Justason, T., Magera, A. M., & Vincent, A. C. J. (2021). Changes in the international trade in live seahorses (*Hippocampus* spp.) after their listing on CITES Appendix II. *Fisheries Centre Research Reports*, 29(4). https://fisheries.sites.olt.ubc.ca/files/2021/12/CompleteVers5a-FCRR294CITES_Live_Trade_Report.pdf

Foster, S. J., Justason, T., Magera, A. M., & Vincent, A. C. J. (2022). *Changes in the international trade in live seahorses (*Hippocampus *spp.) after their listing on CITES Appendix II. SC74 Doc. 70.1 Annex 1* https://cites.org/sites/default/files/eng/com/sc/74/E-SC74-70-01.pdf

Foster, S. J., Kuo, T.-C., Wan, A. K. Y., & Vincent, A. C. J. (2019a). Global seahorse trade defies export bans under CITES action and national legislation. *Marine Policy*, 103, 33-41. https://doi.org/10.1016/j.marpol.2019.01.014

Foster, S. J., Loh, T. L., & Knapp, C. (2014). *Landings Trends Toolkit: Surveying wild seahorse landings in support of conservation* http://www.projectseahorse.org/conservation-tools/2015/10/1/iseahorse-landings-toolkit

Foster, S. J., Stanton, L. M., Nellas, A. C., Arias, M. M., & Vincent, A. C. J. (2019b). The catch and trade of seahorses in the Philippines post-CITES. *Fisheries Centre Research Reports*, 27(2). http://hdl.handle.net/2429/72140

Foster, S. J., & Vincent, A. C. J. (2005). Enhancing sustainability of the international trade in seahorses with a single minimum size limit. *Conservation Biology*, *19*(4), 1044-1050. https://doi.org/10.1111/j.1523-1739.2005.00192.x

Foster, S. J., & Vincent, A. C. J. (2013). *Making Non-Detriment Findings for seahorses – a framework, Version 1.0*

Foster, S. J., & Vincent, A. C. J. (2016). *Making non-detriment findings for seahorses - a framework, Version 4.* https://www.projectseahorse.org/s/NDF-framework-V4-2016March22.pdf

Foster, S. J., & Vincent, A. C. J. (2021). Holding governments accountable for their commitments: CITES Review of Significant Trade for a very high-volume taxon. *Global Ecology and Conservation*, *27*. https://doi.org/10.1016/j.gecco.2021.e01572

Foster, S. J., & Vincent, A. C. J. (2022). *Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions. SC74 Doc. 70.1. Annex 2.* https://cites.org/sites/default/files/eng/com/sc/74/E-SC74-70-01.pdf

Fowler, S., Bräutigam, A., Okes, N., & Sant, G. (2021). *Conservation, Fisheries, Trade and Management Status of CITES-listed Sharks*. BfN-Skripten, 607. https://www.bfn.de/sites/default/files/2021-08/Skript607.pdf

Fowler, S. L., Cavanagh, R. D., Camhi, M., Burgess, G. H., Cailliet, G. M., Fordham, S. V., Simpfendorfer, C. A., & Musick, J. A. (2005). *Sharks, Rays and Chimaeras: The Status of the Chondrichthyan Fishes. Status Survey*. IUCN/SSC Shark Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK. https://portals.iucn.org/library/efiles/documents/2005-029.pdf

Friedman, K., Gabriel, S., Abe, O., Adnan Nuruddin, A., Ali, A., Bidin Raja Hassan, R., Cadrin, S. X., Cornish, A., De Meulenaer, T., Dharmadi, Fahmi, Huu Tuan Anh, L., Kachelriess, D., Kissol, L., Krajangdara, T., Rahman Wahab, A., Tanoue, W., Tharith, C., Torres, F., . . . Ye, Y. (2018). Examining the impact of CITES listing of sharks and rays in Southeast Asian fisheries. *Fish and Fisheries*, *19*(4), 662-676. https://doi.org/10.1111/faf.12281

GEF. (2020). *Conventions*. Global Environment Facility. Retrieved 10 May 2022 from https://www.thegef.org/partners/conventions

Gillett, R. D. (2010). *Monitoring and management of the humphead wrasse,* Cheilinus undulatus. FAO Fisheries and Aquaculture Circular, 1048. www.fao.org/icatalog/inter-e.htm

Ha, N. M. (2022). Viet Nam. In S. J. Foster (Ed.), Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions. *Fisheries Centre Research Reports*, in prep.

Han, S. Y., Kim, J. K., Kai, Y., & Senou, H. (2017). Seahorses of the *Hippocampus coronatus* complex: Taxonomic revision, and description of *Hippocampus haem*a, a new species from Korea and Japan (Teleostei, Syngnathidae). *ZooKeys*, *712*, 113-139. https://doi.org/10.3897/zookeys.712.14955

Haque, A. B., Cavanagh, R. D., & Spaet, J. L. Y. (2022). Fishers' tales—Impact of artisanal fisheries on threatened sharks and rays in the Bay of Bengal, Bangladesh. *Conservation Science and Practice*. https://doi.org/10.1111/csp2.12704

Hau, C. Y. (2022). *Outcomes, challenges and novel enforcement solutions following the 2004 CITES Appendix II listing of the humphead (Napoleon) wrasse, Cheilinus undulatus (Order Perciformes; Family Labridae)*. [PhD, University of Hong Kong]. Hong Kong.

Hau, C. Y., & Sadovy de Mitcheson, Y. (2019). A facial recognition tool and legislative changes for improved enforcement of the CITES Appendix II listing of the humphead wrasse, *Cheilinus undulatus*. *Aquatic*

Conservation: Marine and Freshwater Ecosystems, *29*(12), 2071-2091. https://doi.org/10.1002/aqc.3199

Hau, C.Y., & Sadovy de Mitcheson, Y. (2022). Unpublished manuscript.

Herdiana, Y. (2022). Indonesia. In S. J. Foster (Ed.), Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions. *Fisheries Centre Research Reports*, in prep.

Hudson, E., & Mace, G. (1996). *Marine fish and the IUCN Red List of threatened animals. Workshop on Marine Fish and the IUCN Red List of Threatened Animals, London, G.B.* https://policycommons.net/artifacts/1371194/marine-fish-and-the-iucn-red-list-of-threatened-animals/1985367/

IATA. (2022). *IATA Programs: Cargo - Live Animals*. International Air Transport Association. Retrieved 10 May 2022 from https://www.iata.org/en/programs/cargo/live-animals/

ICCAT. (2016). *Recommendation by ICCAT on management measures for the conservation of Atlantic blue shark caught in association with ICCAT fisheries*. Retrieved from https://iccat.int/Documents/Recs/compendiopdf-e/2016-12-e.pdf

ICCAT. (2021a). *Recommendation by ICCAT amending recommendation 19-08 on management measures for the conservation of South Atlantic blue shark caught in association with ICCAT fisheries*. Retrieved from https://iccat.int/Documents/Recs/compendiopdf-e/2021-11-e.pdf

ICCAT. (2021b). *Recommendation by ICCAT on the conservation of the North Atlantic stock of shortfin mako caught in association with ICCAT fisheries*. Retrieved from https://iccat.int/Documents/Recs/compendiopdf-e/2021-09-e.pdf

IOTC. (2020). *Chair's Report of the 1st Joint Tuna Rfmo By-Catch Working Group Meeting (16-18 December 2019, Porto, Portugal). IOTC-2020-WPEB16-INF02*.

IUCN. (2016). *Assisting Parties to meet their commitments: CITES Review of significant trade for Seahorses (Hippocampus spp.), a taxon traded in high volumes. Information Document for the 17th Meeting of the CITES Conference of the Parties. CoP17 Inf. 53 Rev. 1.* https://cites.org/sites/default/files/eng/cop/17/InfDocs/E-CoP17-Inf-53-Rev1.pdf

IUCN. (2017). *A global taxonomic revision of the seahorses,* Hippocampus *spp. Information Document for the 29th Meeting of the CITES Animals Committee. AC29 Inf. 22.* https://cites.org/sites/default/files/eng/com/ac/29/inf/E-AC29-Inf-22.pdf

IUCN. (2018a). *Seahorse exploitation and trade in Viet Nam. Information Document for the 70th Meeting of the CITES Standing Committee. SC70 Inf. 29.* https://cites.org/sites/default/files/eng/com/sc/70/Inf/E-SC70-Inf-29.pdf

IUCN. (2018b). *Update on CITES implementation for Humphead (Napoleon) wrasse,* Cheilinus undulatus. *CITES SC70 Inf. 37.* https://cites.org/sites/default/files/eng/com/sc/70/Inf/E-SC70-Inf-37.pdf

IUCN. (2019). *Update on CITES implementation for Humphead (Napoleon) wrasse,* Cheilinus undulatus. *CITES CoP18 Inf. 71.* https://cites.org/sites/default/files/eng/cop/18/inf/E-CoP18-Inf-071.pdf

IUCN/SSC. (2013). *Guidelines for Reintroductions and Other Conservation Translocations. Version 1.0*. IUCN Species Survival Commission. https://iucn-ctsg.org/wp-content/uploads/2017/12/new-rsg-reintro-guidelines-2013.pdf

Jabado, R. W., & Abercrombie, L. (2022). *CITES Sharks and Rays - Implementing and Enforcing Listings: Volume I - Full Carcass ID*. Wildlife Conservation Society

Karnad, D. (2022). Incorporating local ecological knowledge aids participatory mapping for marine conservation and customary fishing management. *Marine Policy*, *135*, 104841. https://doi.org/https://doi.org/10.1016/j.marpol.2021.104841

Kindsvater, H. K., Mangel, M., Reynolds, J. D., & Dulvy, N. K. (2016). Ten principles from evolutionary ecology essential for effective marine conservation. *Ecology and Evolution*, *6*(7), 2125-2138. https://doi.org/10.1002/ece3.2012

Koehler, H. (2021). *Tuna RFMO Compliance Assessment Processes: A Comparative Analysis to Identify Best Practices*. ISSF Technical Report, 2021-06. https://iss-foundation.org/knowledge-tools/technical-and-meeting-reports/

Koldewey, H. J., & Martin-Smith, K. M. (2010). A global review of seahorse aquaculture. *Aquaculture*, *302*, 131-152. https://doi.org/10.1016/j.aquaculture.2009.11.010

Koning, S., & Hoeksema, B. W. (2021). Diversity of seahorse species (*Hippocampus* spp.) in the international aquarium trade. *Diversity*, *13*(5). https://doi.org/10.3390/d13050187

Kuo, T. C., Laksanawimol, P., Aylesworth, L., Foster, S. J., & Vincent, A. C. J. (2018). Changes in the trade of bycatch species corresponding to CITES regulations: the case of dried seahorse trade in Thailand. *Biodiversity and Conservation*, *27*(13), 3447-3468. https://doi.org/10.1007/s10531-018-1610-2

Lam, J. T. L., Koldewey, H. J., Yasué, M., & Vincent, A. C. J. (2014). Comparing interview and trade data in assessing changes in the seahorse *Hippocampus* spp. trade following CITES listing. *ORYX*, *50*(1), 36-46. https://doi.org/10.1017/s0030605314000246

Lawson, J. M. (2014). *Rare seahorses have big implications for small fishes in bycatch* [MSc, The University of British Columbia]. Vancouver. https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0166949%0Ahttp://elk.library.ubc.ca/handle/2429/50198

Lawson, J. M., Foster, S. J., Lim, A. C., Chong, V. C., & Vincent, A. C. J. (2015). Novel life-history data for threatened seahorses provide insight into fishery effects. *J Fish Biol*, *86*(1), 1-15. https://doi.org/10.1111/jfb.12527

Lawson, J. M., Foster, S. J., & Vincent, A. C. J. (2017). Low bycatch rates add up to big numbers for a genus of small fishes. *Fisheries*, *42*(1), 19-33. https://doi.org/10.1080/03632415.2017.1259944

Leaman, D. J., & Oldfield, T. E. E. (2014). *CITES non-detriment findings: guidance for perennial plants. A nine-step process to support CITES Scientific Authorities making sciencebased non-detriment findings (NDFs) for species listed in CITES Appendix II. Version 1.0*. BfN-Skripten, 358. https://www.bfn.de/sites/default/files/BfN/service/Dokumente/skripten/skript358.pdf

Leduc, A. O. H. C., De Carvalho, F. H. D., Hussey, N. E., Reis-Filho, J. A., Longo, G. O., & Lopes, P. F. M. (2021). Local ecological knowledge to assist conservation status assessments in data poor contexts: a case study with the threatened sharks of the Brazilian Northeast. *Biodiversity and Conservation*, *30*(3), 819-845. https://doi.org/10.1007/s10531-021-02119-5

Loh, T.-L., Knapp, C., & Foster, S. J. (2014). *iSeahorse: Trends toolkit: Finding and surveying wild seahorse populations in support of conservation*. https://projectseahorse.org/resource/iseahorse-trends-toolkit/

Lourie, S. A., Foster, S. J., Cooper, E. W. T., & Vincent, A. C. J. (2004). *A Guide to the Identification of Seahorses*. The University of British Columbia and World Wildlife Fund. https://projectseahorse.org/wp-content/uploads/2021/06/Seahorse_ID_Guide_2004.pdf

Lourie, S. A., Pollom, R. A., & Foster, S. J. (2016). A global revision of the Seahorses *Hippocampus* Rafinesque 1810 (Actinopterygii: Syngnathiformes): Taxonomy and biogeography with recommendations for further research. *Zootaxa*, *4146*(1), 1-66. https://doi.org/10.11646/zootaxa.4146.1.1

Louw, S., & Bürgener, M. (2020). Seahorse trade dynamics from Africa to Asia. . *TRAFFIC Bulletin*, *32*(1), 37-44. https://stopillegalfishing.com/wp-content/uploads/2020/06/bulletin-32-1-seahorses-1.pdf

Magera, A. M., Morgan, S., Koldewey, H. J., & Vincent, A. C. J. (2005). *The live seahorse trade in Los Angeles*. Project Seahorse Internal Report, Institute for the Oceans and Fisheries, The University of British Columbia.

Manopawitr, P. (2022). Thailand. In S. J. Foster (Ed.), Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions. *Fisheries Centre Research Reports*, in prep.

Mujiyanto, Sugianti, Y., Garcia, M. G., & Edrus, I. N. (2020). Institutional restructuring of fisheries management system for humphead wrasse (*Cheilinus undulatus* RÜPPELL 1835) in Anambas and Natuna, Riau Archipelago Province, Indonesia. *IOP Conference Series: Earth and Environmental Science*, *584*(1). https://doi.org/10.1088/1755-1315/584/1/012003

Mundy-Taylor, V., & Crook, V. (2013). *Into the deep: Implementing CITES measures for commercially-valuable sharks and manta rays*. Report prepared for the European Commission. https://cites.org/sites/default/files/eng/prog/shark/docs/traffic_into-the-deep.pdf

Mundy-Taylor, V., Crook, V., Foster, S., Fowler, S., Sant, G., & Rice, J. (2014). *CITES Non-detriment Findings Guidance for Shark Species: A Framework to assist Authorities in making Non-detriment Findings (NDFs) for species listed in CITES Appendix II* Report prepared for the Germany Federal Agency for Nature Conservation (Bundesamt für Naturschutz, BfN). https://cites.org/sites/default/files/eng/prog/shark/docs/Shark%20NDF%20guidance%20incl%20Annexes.pdf

Musick, J. A., & Bonfil, R. (2005). *Management techniques for elasmobranch fisheries* FAO Fisheries Technical Paper, 474. https://www.fao.org/publications/card/en/c/8aa71200-cc9a-5696-9499-ddbe42c660db/

Nañola, C. L., Paradela, M. A. C., Songco, A. M., Pagliawan, M. R. C., Alarcon, R. C., & Santos, M. D. (2021). First Report on the Density and Size Frequency Distribution of the Napoleon Wrasse, *Cheilinus undulatus* in the Tubbataha Reefs Natural Park, Philippines. *Philippine Journal of Science*, *150*(1), 209-221.

OFI. (2008). *Ornamental Fish International (OFI) report from CITES – 23rd meeting of the Animals Committee*.

Okes, N., & Sant, G. (2022). *Missing Sharks: A country review of catch, trade and management recommendations for CITES-listed shark species*. TRAFFIC. https://www.traffic.org/publications/reports/missing-sharks-a-country-review-of-catch-trade-and-management-recommendations-for-cites-listed-shark-species/

Oktaviani, D., Suharti, S. R., Edrus, I. N., Hermana, I. S., Pelupessy, J. M. S., & Nugroho, D. (2021). Initiating Napoleon wrasse (*Cheilinus undulatus* Ruppell, 1835) as watching species object in Banda Islands marine ecotourism. *IOP Conference Series: Earth and Environmental Science*, *800*(1), 012053. https://doi.org/10.1088/1755-1315/800

Oliveira, T. P. R. (2020). *Conservation status and legislation of syngnathids in Brazil. Strategic Document: Objective 2 - Improve implementation of rules and laws that affect syngnathids in Brazil.*

Pardo, S. A., Kindsvater, H. K., Reynolds, J. D., & Dulvy, N. K. (2016). Maximum intrinsic rate of population increase in sharks, rays, and chimaeras: the importance of survival to maturity. *Canadian Journal of Fisheries and Aquatic Sciences*, *73*(8), 1159-1163. https://doi.org/10.1139/cjfas-2016-0069

Pavitt, A., Malsh, K., King, E., Chevalier, A., Kachelriess, D., Vannuccini, S., & Friedman, K. (2021). *CITES and the sea: Trade in commercially exploited CITES-listed marine species* FAO Fisheries and Aquaculture Technical Papers 666. https://doi.org/10.4060/cb2971en

Pierce, S. J., Grace, M. K., & Araujo, G. (2021). *Rhincodon typus (Green Status assessment). The IUCN Red List of Threatened Species 2021: e.T19488A1948820213*. IUCN. Retrieved 1 May 2022 from https://www.iucnredlist.org/species/19488/2365291#green-assessment-information

Poh, T. M., & Fanning, L. M. (2012). Tackling illegal, unregulated, and unreported trade towards Humphead wrasse (*Cheilinus undulatus)* recovery in Sabah, Malaysia. *Marine Policy*, *36*(3), 696-702. https://doi.org/10.1016/j.marpol.2011.10.011

Prianto, E., Puspasari, R., Oktaviani, D., Sulaiman, P. S., & Anggawangsa, R. F. (2019). Pemanfaatan Ikan Napoleon (*Cheilinus undulatus* Rüppell 1835) Melalui Sistem Perikanan Budidaya Di Kabupaten Natuna. *Jurnal Kebijakan Perikanan Indonesia*, *11*(2), 101-111.

Project Seahorse. (2015). *Report to Viet Nam's CITES Authorities on joint activities in support of implementing CITES for seahorses. Annex D: Seahorse Research in Viet Nam's Aquaculture Facilities*. https://iucn-seahorse.org/cites-toolkit-countries#Vietnam

Rencana Aksi Nasional (RAN). Konservasi Ikan Napoleon, *Cheilinus undulatus*, Periode 1 2016-2020. http://kkji.kp3k.kkp.go.id/index.php/dokumen/finish/100-rencana-aksi-nasional/860-rencana-aksi-nasional-konservasi-napoleon

Reynolds, J. D., Dulvy, N. K., Goodwin, N. B., & Hutchings, J. A. (2005). Biology of extinction risk in marine fishes. *Proceedings of the Royal Society B-Biological Sciences*, *53*(6). https://doi.org/10.1098/rspb.2005.3281

Rigby, C. L., Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M. P., Herman, K., Jabado, R. W., Liu, K. M., Marshall, A., Romanov, E., & Kyne, P. M. (2021). *Cetorhinus maximus* (amended version of 2019 assessment). The IUCN Red List of Threatened Species 2021: e.T4292A194720078. https://doi.org/https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T4292A194720078.en

Rosser, A., & Haywood, M. (2002). *Guidance for CITES Scientific Authorities Checklist to assist in making non-detriment findings for Appendix II exports*. Occasional Paper of the IUCN Species Survival Commission, 27. www.iucn.org/themes/ssc

Sadovy de Mitcheson, Y. (2015). *Workshop on illegal, unregulated and unmonitored trade, conservation planning and non-detriment finding of Napoleon (Humphead) wrasse,* Cheilinus undulatus. *Jakarta, Indonesia 8-10 December 2015*. https://www.iucn.org/sites/dev/files/content/documents/napoleon-fish-jakarta-workshop-ndf-iuu-december2015.pdf

Sadovy de Mitcheson, Y., & Suharti, S. (2008). *NDF workshop case studies. WG 8- Fishes. Case Study 3: Napoleon fish,* Cheilinus undulatus*, Indonesia*. https://cites.org/sites/default/files/ndf_material/WG8-CS3.pdf

Sadovy de Mitcheson, Y., Suharti, S. R., & Colin, P. L. (2019). Quantifying the rare: Baselines for the endangered Napoleon Wrasse, *Cheilinus undulatus* and implications for conservation. *Aquatic Conservation: Marine and Freshwater Ecosystems*, *29*(8), 1285-1301. https://doi.org/10.1002/aqc.3124

Sadovy, Y., & Wong, G. (2022). Unpublished humphead wrasse market data.

Sadovy, Y., Kulbicki, M., Labrosse, P., Letourneur, Y., Lokani, P., & Donaldson, T. J. (2003). The Humphead Wrasse, *Cheilinus Undulatus*: Synopsis of a Threatened and Poorly Known Giant Coral Reef Fish. *Reviews in Fish Biology and Fisheries*, *13*(3), 327-364. https://doi.org/10.1023/b:rfbf.0000033122.90679.97

Sadovy, Y., Punt, A. E., Cheung, W., Vasconcellos, M., Suharti, S., & Mapstone, B. D. (2007). *Stock assessment approach for the Napoleon fish,* Cheilinus undulatus*, in Indonesia. A tool for quota setting for data-poor fisheries under CITES Appendix II Non-Detriment Finding requirements.* FAO Fisheries Circular 1023. https://www.iucn.org/downloads/c1023_full_pub.pdf

Sant, G., & Vasconcellos, M. (2008). *Fishes Final Report. Working Group 8. International Expert Workshop on CITES Non-Detriment Findings Mexico, November 17-22, 2008* http://www.conabio.gob.mx/institucion/cooperacion_internacional/TallerNDF/Links-Documentos/WG-CS/WG8-Fishes/WG8-FR.pdf

Shea, K. H., & To, A. W. L. (2017). From boat to bowl: Patterns and dynamics of shark fin trade in Hong Kong – implications for monitoring and management. *Marine Policy*, *81*, 330-339. https://doi.org/10.1016/j.marpol.2017.04.016

Short, G., Claassens, L., Smith, R., De Brauwer, M., Hamilton, H., Stat, M., & Harasti, D. (2020). *Hippocampus nalu*, a new species of pygmy seahorse from South Africa, and the first record of a pygmy seahorse from the Indian Ocean (Teleostei, Syngnathidae). *ZooKeys*, *934*, 141-156. https://doi.org/10.3897/zookeys.934.50924

Short, G., Smith, R., Motomura, H., Harasti, D., & Hamilton, H. (2018). *Hippocampus japapigu*, a new species of pygmy seahorse from Japan, with a redescription of *H. pontohi* (Teleostei, Syngnathidae). *ZooKeys*, *779*, 27-49. https://doi.org/10.3897/zookeys.779.24799

Sims, D., Fowler, S. L., Clò, S., Jung, A., Soldo, A., & Bariche, M. (2015). *Cetorhinus maximus*. The IUCN Red List of Threatened Species 2015: e.T4292A48953216.

Smith, M. J., Benítez-Díaz, H., Clemente-Muñoz, M. Á., Donaldson, J., Hutton, J. M., Noel McGough, H., Medellin, R. A., Morgan, D. H. W., O'Criodain, C., Oldfield, T. E. E., Schippmann, U., & Williams, R. J. (2011). Assessing the impacts of international trade on CITES-listed species: Current practices and opportunities for scientific research. *Biological Conservation*, *144*(1), 82-91. https://doi.org/10.1016/j.biocon.2010.10.018

Spaet, J. L. Y. (2021). *Carcharodon carcharias* (Green Status assessment). *The IUCN Red List of Threatened Species, 2021: e.T3855A385520213*.

Stanton, L. M., Foster, S. J., & Vincent, A. C. J. (2021). *Identifying national conservation status, legislation and priorities for syngnathid fishes globally*. Fisheries Centre Research Reports, 29(2). http://hdl.handle.net/2429/79682

Stocks, A. P., Foster, S. J., Bat, N. K., Ha, N. M., & Vincent, A. C. J. (2019). Local fishers' knowledge of target and incidental seahorse catch in southern Vietnam. *Human Ecology*, *47*(3), 397-408. https://doi.org/10.1007/s10745-019-0073-8

Stocks, A. P., Foster, S. J., Bat, N. K., & Vincent, A. C. J. (2017). Catch as catch can: Targeted and indiscriminate small-scale fishing of seahorses in Vietnam. *Fisheries Research*, *196*, 27-33. https://doi.org/10.1016/j.fishres.2017.07.021

Syam, A. R., Mujiyanto, & Indriatmoko. (2020). Sustainable aquaculture of a protected species: The case of juvenile humphead wrasse (*Cheilinus undulatus*) around the Anambas Islands. *IOP Conference Series: Earth and Environmental Science*, *521*. https://doi.org/10.1088/1755-1315/521

Syam, A. R. S., F., Tjahjo, D. W. H., & Putri, M. R. A. (2019). Napoleon fish (*Cheilinus undulatus*) resources management in Anambas Islands waters. *Indonesian Fisheries Policy Journal*, *11*, 75-87. http://ejournal-balitbang.kkp.go.id/index.php/jkpi/article/view/7193

TRAFFIC/IUCN. (2009). *Transboundary implementation of CITES Appendix-II listing of the Humphead Wrasse Cheilinus undulatus: A TRAFFIC-IUCN briefing document*. https://www.iucn.org/sites/dev/files/import/downloads/hhw_briefing_document_final_iucn_and_traffic_approved.pdf

UNEP-WCMC. (2022a). *The Checklist of CITES Species Website*. CITES Secretariat, Geneva, Switzerland. Compiled by UNEP-WCMC, Cambridge, UK. https://checklist.cites.org

UNEP-WCMC. (2022b). *CITES Trade Database*. https://trade.cites.org

UNODC. (2016). *World Wildlife Crime Report: Trafficking in Protected Species*. https://www.unodc.org/documents/data-and-analysis/wildlife/World_Wildlife_Crime_Report_2016_final.pdf

UNODC. (2020). *World Wildlife Crime Report 2020: Trafficking in Protected Species* https://www.unodc.org/documents/data-and-analysis/wildlife/2020/World_Wildlife_Report_2020_9July.pdf

Vaidyanathan, T. (2021). *The limitations of bans when conserving species that are incidentally caught : a case study of India's seahorses* [PhD, The University of British Columbia]. Vancouver, Canada. http://hdl.handle.net/2429/79421

Vaidyanathan, T. (2022). India. In S. J. Foster (Ed.), Implementation of CITES Appendix II listing for seahorses in the context of export bans and suspensions. *Fisheries Centre Research Reports*, in prep.

Vaidyanathan, T., & Vincent, A. C. J. (2021). State of seahorse fisheries in India, nearly two decades after they were banned. *Biodiversity and Conservation*, *30*(7), 2223-2253. https://doi.org/10.1007/s10531-021-02188-6

Vaidyanathan, T., Zhang, X., Balakrishnan, R., & Vincent, A. (2020). Catch and trade bans for seahorses can be negated by non-selective fisheries. *Aquatic Conservation: Marine and Freshwater Ecosystems*, *31*(1), 43-59. https://doi.org/10.1002/aqc.3419

Vasconcellos, M., Barone, M., & Friedman, K. (2018). *A country and regional prioritisation for supporting implementation of CITES provisions for sharks*. FAO Fisheries and Aquaculture Circular https://www.fao.org/3/I7685EN/i7685en.pdf

Villate-Moreno, M., Pollerspöck, J., Kremer-Obrock, F., & Straube, N. (2021). Molecular analyses of confiscated shark fins reveal shortcomings of CITES implementations in Germany. *Conservation Science and Practice*, *3*(6). https://doi.org/10.1111/csp2.398

Vincent, A. C., Foster, S. J., & Koldewey, H. J. (2011). Conservation and management of seahorses and other Syngnathidae. *J Fish Biol*, *78*(6), 1681-1724. https://doi.org/10.1111/j.1095-8649.2011.03003.x

Vincent, A. C. J., & Hall, H. J. (1996). The threatened status of marine fishes. *Trends in Ecology & Evolution*, 11(9), 360-361. https://doi.org/10.1016/0169-5347(96)30041-4

Vincent, A. C. J., Sadovy de Mitcheson, Y. J., Fowler, S. L., & Lieberman, S. (2014). The role of CITES in the conservation of marine fishes subject to international trade. *Fish and Fisheries*, 15(4), 563-592. https://doi.org/10.1111/faf.12035

Walters, C. J. (1986). *Adaptive management of renewable resources*. Macmillan Publishers Ltd. https://pure.iiasa.ac.at/id/eprint/2752/

Ward-Paige, C. A. (2017). A global overview of shark sanctuary regulations and their impact on shark fisheries. *Marine Policy*, *82*, 87-97. https://doi.org/10.1016/j.marpol.2017.05.004

Ward-Paige, C. A., & Worm, B. (2017). Global evaluation of shark sanctuaries. *Global Environmental Change*, *47*, 174-189. https://doi.org/10.1016/j.gloenvcha.2017.09.005

Wu, J., & Sadovy de Mitcheson, Y. (2016). Humphead (Napoleon) wrasse *Cheilinus undulatus* trade into and through Hong Kong. *Hong Kong, SAR: TRAFFIC*.

WWF. (n.d.). *Coalition to End Wildlife Trafficking Online - Coalition Prohibited Wildlife Policy Framework*. WWF. Retrieved 20 May 2022 from https://www.endwildlifetraffickingonline.org/coalition-prohibited-wildlife-policy

Yasué, M., Nellas, A., Panes, H., & Vincent, A. C. J. J. (2015). Monitoring landed seahorse catch in a changing policy environment. *Endangered Species Research*, *27*(2), 95-111. https://doi.org/10.3354/esr00643

Annex 1. Resolutions, Decisions, Notifications

Annex 2. Reports submitted to CITES CoP, SC and AC

Annex 1. Resolutions, Decisions, Notifications

Table A1.1. Seahorses – CITES Resolutions, Decisions, Notifications

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Seahorses)
2001	Notification No. 2001/023	NO	Parties	Information request concerning seahorses and other members of the family Syngnathidae 1. The Secretariat hereby requests Parties to provide information on seahorses and other members of the family Syngnathidae for discussion at a technical workshop on the conservation of this family, as directed in Decision 11.153. The Secretariat has consulted extensively on this subject with the Animals Committee and is pleased to forward this information request based on the advice of the Animals Committee. 2. It is expected that information on this family will be limited and that consultation with various bodies involved with their conservation or fisheries at national level may be required, e.g., fisheries management authorities, Customs authorities, fisheries organizations, traders in dried seafood, traders in traditional medicines, traders in aquarium and ornamental fishes, universities, museums, and public aquaria. Quantitative as well as qualitative input (including anecdotal information and traditional knowledge) will be appreciated. 3. Information is sought regarding the subjects below and should, where possible, distinguish between seahorses and other syngnathids. A more detailed breakdown of information by species would be welcome but is not absolutely necessary. a) Government agencies and other institutions that have or may have information on the biology, catch and bycatch of, and trade in seahorses and other syngnathids. Please provide contact details. b) Research (including biological, fisheries, trade and market studies) that is currently being undertaken on seahorses and other syngnathids. Please provide contact details of the researchers. c) Species of seahorses and other syngnathids that occur in each country. Please indicate the distribution of each species on a map, if possible. d) Any population data on seahorses and other syngnathids that may be available, particularly data indicating known or inferred changes in number over time. e) Existing monitoring of landings or trade in seahorses and other syngnathids. If any, please provide any fisheries or Customs codes used, and any available data on catch, import, export, re-export and domestic trade. f) Concern at national level about the conservation status of seahorses and other syngnathids. If any species is included in national lists of species of special conservation concern, please provide details of their conservation status and the reason for their inclusion. g) National protection of seahorses and other syngnathids. If this group is protected at national level in any way, please provide details of the legislation and explain why they are protected. 4. It would be greatly appreciated if the Secretariat could be provided with the information requested by the end of June 2001. 5. The Secretariat is looking for funding and invites the Parties or organizations that may be interested in supporting the workshop financially to inform it as soon as possible. https://cites.org/sites/default/files/eng/notif/2001/023.shtml
2001	Notification No. 2001/034	NO	Parties	Seahorses and other members of the family Syngnathidae 1. At its 11th meeting (Gigiri, 2000), the Conference of the Parties adopted Decision 11.153, which directs the Secretariat to:

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Seahorses)
				a) assist in obtaining funds from interested Parties, intergovernmental and non-governmental organizations, exporters, importers and other stakeholders, to support a technical workshop of relevant experts on the conservation of seahorses and other syngnathids; b) contingent on the availability of external funding, cooperate with other relevant bodies, including the fisheries sector, to convene a technical workshop to consider and review biological and trade information that would assist in establishing conservation priorities and actions to secure the conservation status of seahorses and other syngnathids; c) request Parties to provide, for discussion at the technical workshop, all relevant available information concerning the status, catches and bycatches of, and trade in, seahorses and other syngnathids and on any domestic measures for their conservation and protection, and to review the adequacy of such measures; d) encourage scientific research to promote the long-term conservation and sustainable use of seahorses and other syngnathids; and e) explore ways to enhance the participation of fishermen, traders and consumers in the conservation and sustainable use of seahorses and other syngnathids. 2. The Secretariat, in accordance with Decision 11.153, requests that Parties or organizations interested in funding the technical workshop mentioned in paragraph a) of the Decision contact the Secretariat as soon as possible. 3. The Secretariat also requests Parties to provide all relevant available information concerning the status, catches and bycatches of, and trade in, seahorses and other syngnathids and on any domestic measures for their conservation and protection, for discussion at the technical workshop. The Secretariat would appreciate it if this information could be submitted to the Secretariat by 31 October 2001. This is an extension of the deadline given in Notification to the Parties No. 2001/023 of 16 March 2001. 4. Regarding paragraph d) of Decision 11.153, the Secretariat would welcome the results of any scientific research to promote the long-term conservation and sustainable use of seahorses and other syngnathids and encourages Parties to expand their scientific research programmes accordingly. 5. Regarding paragraph e) of Decision 11.153, the Secretariat invites all Parties and organizations engaged in enhancing the involvement of local communities in the conservation and sustainable use of syngnathid species to inform it of its activities and to suggest possible ways of applying such programmes in other regions. https://cites.org/sites/default/files/eng/notif/2001/034.shtml
2002	**CoP 12**			All seahorse species (genus *Hippocampus*) were listed in CITES Appendix II at CoP12 (2002) – the first-time marine fishes had been added to Appendix II since the Convention launched in 1975.
2002	Decision 12.53	NO	Parties	a) Parties are encouraged, where domestic legislation bans fishing of and trade in species listed in the Appendices, as a matter of priority, to allow sustainable trade in specimens of *Hippocampus* species under the provisions of the Convention; b) Parties are encouraged to explore the benefits of trade certification options offered by independent organizations; and c) CITES Management Authorities are requested to strengthen their collaboration and cooperation regarding management of *Hippocampus* species with appropriate fisheries agencies.

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Seahorses)
2002	Decision 12.54	NO	Animals Committee	The Animals Committee shall identify a minimum size limit for specimens of all *Hippocampus* species in trade as one component of an adaptive management plan, and as a simple precautionary means of making initial non-detriment findings in accordance with Article IV of the Convention.
2002	Decision 12.55	NO	Nomenclature Committee	The Nomenclature Committee shall propose a standard taxonomy for species in the genus *Hippocampus*.
2002	Decision 12.56	NO	World Customs Organization	The World Customs Organization is invited to develop harmonized codes for live seahorses, dried seahorses, live pipefishes (and pipehorses), and dried pipefishes (and pipehorses).
2004	**CoP 13**			
2004	Notification No. 2004/033	NO	Parties	Trade in seahorses: Implementation of Decision 12.54 1. Parties are reminded that the inclusion in Appendix II of *Hippocampus* spp. (seahorses), agreed at the 12th meeting of the Conference of the Parties (CoP12, Santiago, 2002), enters into effect on 15 May 2004. 2. The Conference of the Parties also directed the Animals Committee, under Decision 12.54, to: identify a minimum size limit for specimens of all *Hippocampus* species in trade as one component of an adaptive management plan, and as a simple precautionary means of making initial non-detriment findings in accordance with Article IV of the Convention. 3. At its 20th meeting (Johannesburg, March-April 2004) the Animals Committee came to the conclusion that, for specimens of the genus *Hippocampus* taken from the wild and entering trade, a height of 10 cm would currently serve as the most appropriate minimum size. It is not recommended by the Animals Committee to be used for captive-bred specimens. The height is measured from the top of the coronet to the tip of the straightened tail (see drawing overleaf). This height falls between size at maturity and maximum size for most species. The Animals Committee recognized however that the 10 cm limit is greater than the maximum adult size of some smaller seahorse species. For the very limited international trade in these specimens, Parties may wish to find other ways to make non-detriment findings. Parties wishing to know more about the background to the Animals Committee's recommendation are referred to documents AC20 Doc. 17 and AC19 Doc 16.2 which are available on the CITES website. The Animals Committee considered that the 10 cm recommendation could be reviewed at a later date on the basis of further research. 4. The use of this minimum size limit for specimens of wild origin in trade is voluntary. Height: 10 cm - Height measurement to be made for specimens of *Hippocampus* spp. of wild origin in trade, as recommended by the Animals Committee (**insert Illustration courtesy of www.projectseahorse.org). https://cites.org/sites/default/files/eng/notif/2004/033
2004	Notification No. 2004/042	NO	Parties	Guide to the identification of seahorses https://cites.org/sites/default/files/eng/notif/2004/042
2005	Notification No. 2005/014	NO	Parties	Trade in seahorses 1. Species of the genus *Hippocampus* (seahorses) have been included in Appendix II since 15 May 2004. 2. Before this listing came into effect, the Animals Committee recommended a minimum size limit for specimens of all *Hippocampus* species in trade as one component of an adaptive management plan, and as a simple precautionary means of making initial non-detriment findings in accordance with Article IV of the Convention.

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Seahorses)
				3. At its 20th meeting (Johannesburg, March-April 2004) the Animals Committee came to the conclusion that, for specimens of the genus *Hippocampus* taken from the wild and entering trade, a height of 10 cm would serve as the most appropriate minimum size. However, the Animals Committee did not recommend any limit for captive-bred specimens. 4. The height is measured from the top of the coronet to the tip of the straightened tail (see drawing overleaf). Most species reach 10 cm in height after sexual maturity. However, the Animals Committee recognized that some of the smaller species never reach that size. For the very limited international trade in specimens of these species, Parties may therefore wish to find other ways to make non-detriment findings. 5. The use of this minimum size limit for specimens of wild origin in trade is voluntary. 6. This Notification replaces Notification to the Parties No. 2004/033 of 30 April 2004. Height,10 cm Height measurement to be made for specimens of *Hippocampus* spp. of wild origin in trade, as recommended by the Animals Committee.
2005	Notification No. 2005_E050607	**		Specific reservations entered by parties, including: *Hippocampus* spp. by Indonesia, Japan, Norway, Republic of Korea *H. denise* by Palau *H. kuda* by Palau
2006	Notification No. 2006/069	NO	Parties	Assistance from Project Seahorse 1. A Web-based project designed to assist Parties in implementing the Appendix-II listing for seahorses (*Hippocampus* spp.) is being developed by Project Seahorse, with support from the Whitley Fund for Nature. 2. Project Seahorse, an academic marine research and management non-governmental organization that has already provided considerable technical support to CITES, will be contacting Parties in order to develop a central Web-based set of information and resources. Once this website is complete, Parties will be able to access online the available data on seahorse identification, distribution, biology and trade. They will also be able to consult tools which may help in making non-detriment findings for seahorse trade. The website is expected to be operational in the course of 2007. 3. The Secretariat invites Parties to support the Project Seahorse initiative, which could become a model for providing species-specific information and capacity-building resources. Project Seahorse will initially develop the website in English, and it intends to develop French and Spanish versions at a later date. https://cites.org/sites/default/files/eng/notif/2006/E069
2007	**CoP 14**			
2009	Notification No. 2009/044			Standard nomenclature: Standard references to be considered at CoP15, including *Hippocampus* spp. In Resolution Conf. 12.11 (Rev. CoP14) (Standard nomenclature), the Conference of the Parties recommends, in paragraph h), that: the Secretariat be provided with the citations (and ordering information) of checklists that will be nominated for standard references at least six months before the meeting of the Conference of the Parties at which such checklists will be considered. The Secretariat shall include such information in a Notification to the Parties so that Parties can obtain copies to review if they wish before the meeting. 2. In compliance with this recommendation, the Animals Committee submitted the citations of checklists that will be nominated for taxonomic standard references at the 15th meeting of the Conference of the Parties.

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Seahorses)
				3. The proposed standard references for fauna are as follows: [only including *Hippocampus* spp. here] • Gomon, M.F. & Kuiter, R.H. (2009): Two new pygmy seahorses (Teleostei: Syngnathidae: *Hippocampus*) from the Indo-West Pacific. -- Aqua, Int. J. for Ichthyology, 15(1): 37-44. [for *Hippocampus debelius* and *H. waleanus*] • Kuiter, R.H. (2001): Revision of the Australian seahorses of the genus *Hippocampus* (Syngnathiformes: Syngnathidae) with descriptions of nine new species. -- Rec. Aus. Mus., 53:293-340. [for *Hippocampus biocellatus* and *H. procerus*] • Piacentino, G. L. M. and Luzzatto, D. C. (2004): *Hippocampus patagonicus* sp. nov., new seahorse from Argentina (Pisces, Syngnathiformes). -- Revista del Museo ArgentiNO de Ciencias Naturales, 6(2): 339-349. [for *Hippocampus patagonicus*] https://cites.org/sites/default/files/eng/notif/2009/E044
2010	**CoP 15**			
2013	**CoP 16**			
2013	Notification No. 2013/13	NO	Parties	Implementation of Resolution Conf. 12.8 (Rev. CoP13) (**Review of Significant Trade** in specimens of Appendix-II species): Recommendations of the Standing Committee 1. In the context of the Review of Significant Trade in specimens of Appendix-II species, the Standing Committee regularly recommends trade suspensions for countries that it has determined have failed to implement Article IV of the Convention. The Secretariat last published the list of countries and species affected by these recommendations with Notification to the Parties No. 2012/059 of 25 September 2012. 2. At its 63rd meeting (SC63, Bangkok, March 2013), the Standing Committee, having been informed that recommendations made by the Animals Committee in accordance with paragraph n) or o) of Resolution Conf. 12.8 (Rev. CoP13) had not been complied with, recommended that all Parties suspend trade covered by Article IV of the Convention for specimens of the following species from the countries indicated: *Balearica pavonina* from Guinea, the Sudan and South Sudan; *B. regulorum* from Rwanda and the United Republic of Tanzania; *Huso huso* from the Islamic Republic of Iran, Kazakhstan and the Russian Federation; *Hippocampus kuda* from Viet Nam; and *Pandinus imperator* from Benin and Togo. The Standing Committee decided that these recommendations would remain in effect until these countries demonstrated compliance with Article IV, paragraphs 2 (a) and 3 for the species concerned and provided full information to the Secretariat regarding compliance with the recommendations of the Animals Committee. 3. Parties are reminded that the complete list of Parties subject to a recommendation to suspend trade is available on the CITES website under Documents / Trade suspensions. 4. In order not to undermine the recommendations of the Standing Committee, the Secretariat encourages Parties: a) to take steps to ensure that they can effectively implement recommendations of the Standing Committee; and b) not to authorize the re-export of any specimens imported against such recommendations. 5. Parties are requested to inform their Enforcement and Customs authorities of the availability of the list of trade suspension recommendations on the CITES website in order to avoid the inadvertent acceptance of specimens of species subject to such a recommendation. Parties that require the issuance of import permits for trade in specimens of Appendix-II species are also encouraged to consult the list when processing applications.

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Seahorses)
				6. The present Notification replaces Notification to the Parties No. 2012/059. Table: Standing Committee's recommendations made in accordance with Resolution Conf. 12.8 (Rev. CoP13), not to accept permits issued under Article IV of the Convention: Includes Vietnam for *H. kuda*, SC recommendation at SC63, Mar 2013, first notification – 30 April 2013. https://cites.org/sites/default/files/eng/notif/2013/E-Notif-2013-013
2014	Notification No. 2014/039	NO	Parties	Implementation of Resolution Conf. 12.8 (Rev. CoP13) (**Review of Significant Trade** in specimens of Appendix-II species): Recommendations of the Standing Committee 1. In the context of the Review of Significant Trade in specimens of Appendix-II species, the Standing Committee regularly recommends trade suspensions for countries that it has determined to have failed to implement Article IV of the Convention. The Secretariat last published the list of countries and species affected by these recommendations with Notification to the Parties No. 2013/013 of 2 May 2013. 2. At its 65th meeting (SC65, Geneva, July 2014), the Standing Committee, having been informed that recommendations made by the Animals Committee in accordance with paragraph n) or o) of Resolution Conf. 12.8 (Rev. CoP13) had not been complied with, recommended that all Parties suspend trade covered by Article IV of the Convention for specimens of *Pandinus imperator* from Ghana. The Standing Committee decided that this recommendation would remain in effect until Ghana demonstrated compliance with Article IV, paragraphs 2 (a) and 3 for the species concerned and provided full information to the Secretariat regarding compliance with the recommendations of the Animals Committee. 3. At SC65, the Standing Committee also decided that in the light of information received from the Islamic Republic of Iran, it should withdraw its recommendation to suspend trade in specimens of *Huso huso* from that country. 3. Parties are reminded that the complete list of Parties subject to a recommendation to suspend trade is available on the CITES website under Documents / Trade suspensions. 4. In order not to undermine the recommendations of the Standing Committee, the Secretariat encourages Parties: a) to take steps to ensure that they can effectively implement recommendations of the Standing Committee; and b) not to authorize the re-export of any specimens imported against such recommendations. 5. Parties are requested to inform their Enforcement and Customs authorities of the availability of the list of trade suspension recommendations on the CITES website in order to avoid the inadvertent acceptance of specimens of species subject to such a recommendation. Parties that require the issuance of import permits for trade in specimens of Appendix-II species are also encouraged to consult the list when processing applications. 6. The present Notification replaces Notification to the Parties No. 2013/013. Table: Standing Committee's recommendations made in accordance with Resolution Conf. 12.8 (Rev. CoP13), not to accept permits issued under Article IV of the Convention: Includes Vietnam for *H. kuda*, SC recommendation at SC63, Mar 2013, first notification – 30April 2013. https://cites.org/sites/default/files/notif/E-Notif-2014-039_0

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Seahorses)
2015	Notification No. 2015/063	NO	Parties	Implementation of Resolution Conf. 12.8 (Rev. CoP13) (**Review of Significant Trade** in specimens of Appendix-II species): Recommendations of the Standing Committee 1. In the context of the Review of Significant Trade in specimens of Appendix-II species, the Standing Committee regularly recommends trade suspensions for countries that it has determined to have failed to implement Article IV of the Convention. The Secretariat last published the list of countries and species affected by these recommendations with Notification to the Parties No. 2014/039 of 12 August 2014. 2. At its 58th meeting (Geneva, July 2009), the Standing Committee reviewed its recommendations to suspend trade covered by Article IV of the Convention that had been in place for more than two years. The Committee decided that its recommendations to Parties to suspend trade in some species in the genera *Calumma* and *Furcifer* from Madagascar could be withdrawn subject to certain conditions, in some cases relating to the agreement of the Animals Committee to conservative annual export quota for wild specimens. At its 25th meeting (Geneva, July 2011), the Animals Committee agreed such conservative export quotas. Consequently, at its 61st meeting (Geneva, August 2011), the Standing Committee withdrew its recommendation to suspend trade in these species from Madagascar. The Secretariat communicated the Standing Committee's decision through Notification to the Parties No. 2011/035 of 5 September 2011. Unintentionally, Notification to the Parties No. 2011/035, omitted the following 15 taxa concerned: C*alumma amber, C. ambreense, C. capuroni, C. cucullatum, C. furcifer, C. guibei, C. hafahafa, C. hilleniusi, C. jejy, C. linota, C. peltierorum, C. peyrierasi, C. tsaratanaense, C. tsycorne* and *C. vatosoa*. The Secretariat would like to apologize for this oversight. 3. Parties are reminded that the updated complete list of Parties subject to a recommendation to suspend trade is available on the CITES website under Documents / Trade suspensions. 4. In order not to undermine the recommendations of the Standing Committee, the Secretariat encourages Parties: a) to take steps to ensure that they can effectively implement recommendations of the Standing Committee; and b) not to authorize the re-export of any specimens imported against such recommendations. 5. Parties are requested to inform their Enforcement and Customs authorities of the availability of the list of trade suspension recommendations on the CITES website in order to avoid the inadvertent acceptance of specimens of species subject to such a recommendation. Parties that require the issuance of import permits for trade in specimens of Appendix-II species are also encouraged to consult the list when processing applications. 6. The present Notification replaces Notification to the Parties No. 2014/039 of 12 August 2014. Table: Standing Committee's recommendations made in accordance with Resolution Conf. 12.8 (Rev. CoP13), not to accept permits issued under Article IV of the Convention: Includes Vietnam for *H. kuda*, SC recommendation at SC63, Mar 2013, first notification – 30 April 2013. https://cites.org/sites/default/files/notif/E-Notif-2015-063_0
2016	**CoP 17**			Seahorses were further featured as a case study in a CoP17 side-event on implementing CITES for marine fishes
2016	Notification No. 2016/018	NO	Parties	Implementation of Resolution Conf. 12.8 (Rev. CoP13) (**Review of Significant Trade** in specimens of Appendix-II species): Recommendations of the Standing Committee

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Seahorses)
				1. In the context of the Review of Significant Trade in specimens of Appendix-II species, the Standing Committee regularly recommends trade suspensions for countries that it has determined to have failed to implement Article IV of the Convention. The Secretariat last published the list of countries and species affected by these recommendations with Notification to the Parties No. 2015/063 of 26 November 2015. 2. At its 66th meeting (SC66, Geneva, January 2016), the Standing Committee reviewed its recommendations to suspend trade covered by Article IV of the Convention that had been in place for more than two years. The Committee decided that its recommendations to Parties to suspend trade in *Falco cherrug* from Bahrain, *Phelsuma comorensis* and *P. v-nigra* from Comoros, *Huso huso* from Kazakhstan and the Russian Federation, several species in the genera *Calumma, Furcifer* and *Phelsuma* from Madagascar, and *Balearica regulorum* from Rwanda could be withdrawn. 3. At SC66, the Standing Committee, having been informed that recommendations made by the Animals Committee in accordance with paragraph n) or o) of Resolution Conf. 12.8 (Rev. CoP13) had not been complied with, also recommended that all Parties suspend trade covered by Article IV of the Convention for specimens of: *Chamaeleo gracilis* and *C. senegalensis* from Benin and Ghana; *Kinixys homeana* from Benin; *Trioceros quardricornis* from Cameroon; *Psittacus erithacus* from the Central African Republic; *Plerogyra simplex* and *P. sinuosa* from Fiji; *Hippocampus algiricus* from Guinea and Senegal; *Macaca fascicularis*, *Ptyas mucosus* and *Python reticulatus* from the Lao People's Democratic Republic; *Tridacna derasa, T. crocea, T. gigas, T. maxima* and *T. squamosa* from the Solomon Islands; and *Kinyongia fischeri* and *K. tavetana* from the United Republic of Tanzania. These recommended trade suspensions will remain in place until these Parties demonstrate to the satisfaction of the Standing Committee, through the Secretariat, compliance with Article IV, paragraphs 2 (a) and 3 for the species concerned, and provided full information to the Secretariat regarding compliance with the recommendations of the Animals Committee. 4. Parties are reminded that the complete list of Parties subject to a recommendation to suspend trade is available on the CITES website under Documents / Trade suspensions. 5. Parties are requested to inform their enforcement and Customs authorities of the availability of the list of trade suspension recommendations on the CITES website in order to avoid the inadvertent acceptance of specimens of species subject to such a recommendation. Parties that require the issuance of import permits for trade in specimens of Appendix-II species are also encouraged to consult the list when processing applications. 6. The present Notification replaces Notification to the Parties No. 2015/063 of 26 November 2015 Table: Recommendations of the Standing Committee, made in accordance with Resolution Conf. 12.8 (Rev. CoP17), to suspend trade in the affected species with the range States concerned. Includes – Guinea & Senegal for *H. algricus*, SC recommendation at SC66, Jan 2016, first notification – 15 march 2016. https://cites.org/sites/default/files/notif/E-Notif-2016-018
2018	Notification No. 2018/006	NO	Parties	Implementation of Resolution Conf. 12.8 (Rev. CoP17) (**Review of Significant Trade** in specimens of Appendix-II species): Recommendations of the Standing Committee 1. In the context of the Review of Significant Trade in specimens of Appendix-II species, the Standing Committee regularly recommends trade suspensions for countries that it has determined to have failed to implement Article IV of the Convention. The Secretariat last published the list of countries and

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Seahorses)
				species affected by these recommendations with Notification to the Parties No. 2016/018 of 15 March 2016. 2. At its 69th meeting (SC69, Geneva, November 2017), the Standing Committee, having been informed that recommendations made by the Animals Committee in accordance with paragraph 1 n) or o) of Resolution Conf. 12.8 (Rev. CoP17) had been complied with, recommended that the suspension of trade in *Hippopotamus amphibius* from Mozambique could be withdrawn. 3. The Review of Significant Trade concerning *Psittacus erithacus* was stopped following the 17th meeting of the Conference of the Parties (CoP17, Johannesburg, 2016), when the species was transferred from Appendix II to Appendix I. The suspensions of *P. erithacus* from the Central African Republic and Equatorial Guinea are consequently NO longer valid. For more information on the regulation of trade in *P. erithacus*, Parties are referred to Notification to the Parties No. 2017/063 of 26 September 2017 and any future updates. 4. Parties are reminded that the complete list of Parties subject to a recommendation to suspend trade is available on the CITES website under Documents / Trade suspensions. 5. Parties are requested to inform their enforcement and customs authorities of the availability of the list of trade suspension recommendations on the CITES website in order to avoid the inadvertent acceptance of specimens of species subject to such a recommendation. Parties that require the issuance of import permits for trade in specimens of Appendix-II species are also encouraged to consult the list when processing applications. 6. The present Notification replaces Notification to the Parties No. 2016/018 of 15 March 2016. Table: Recommendations of the Standing Committee, made in accordance with Resolution Conf. 12.8 (Rev. CoP17), to suspend trade in the affected species with the range States concerned. Includes – Guinea & Senegal for *H. algricus*, SC recommendation at SC66, Jan 2016, first notification – 15 march 2016. https://cites.org/sites/default/files/notif/E-Notif-2018-006
2019	**CoP 18**			At its 18th meeting (CoP18, Geneva, 2019), the Conference of the Parties adopted Decisions 18.228 to 18.233 on Seahorses (*Hippocampus* spp.) (Project Seahorse supported the Maldives, Monaco, Sri Lanka and the United States to submit a formal document to CITES CoP18, summarizing challenges and opportunities with CITES implementation for seahorses and proposing the CITES agenda for the years 2019-2021 in the form of Decisions; these were adopted.)
2019	Decision 18.228	YES	Secretariat	The Secretariat shall include available materials to support CITES implementation for seahorses (non-detriment findings guidance, identification materials, etc.) on the CITES website. https://cites.org/sites/default/files/eng/dec/valid18/E18-Dec
2019	Decision 18.229	YES	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

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Seahorses)
				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. https://cites.org/sites/default/files/eng/dec/valid18/E18-Dec
2019	Decision 18.230	YES	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. https://cites.org/sites/default/files/eng/dec/valid18/E18-Dec
2019	Decision 18.231	YES	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. https://cites.org/sites/default/files/eng/dec/valid18/E18-Dec
2019	Decision 18.232	YES	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. https://cites.org/sites/default/files/eng/dec/valid18/E18-Dec
2019	Decision 18.233	YES	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. https://cites.org/sites/default/files/eng/dec/valid18/E18-Dec
2019	Notification No. 2019/027	NO	Parties	Implementation of Resolution Conf. 12.8 (Rev. CoP17) on Review of Significant Trade in specimens of Appendix-II species Recommendations of the Standing Committee: 1. In the context of the Review of Significant Trade in specimens of Appendix-II species, the Standing Committee regularly recommends trade suspensions for countries that it has determined to have failed to implement Article IV of the Convention. The Secretariat last published the list of countries and species affected by these recommendations with Notification to the Parties No. 2018/006 of 15 January 2018. This Notification provides an update on the list of countries and species subject to a

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Seahorses)
				recommendation to suspend trade following the 70th meeting of the Standing Committee (SC70, Sochi, October 2018). 2. At SC70, the Standing Committee, having been informed that recommendations made by the Animals Committee in accordance with paragraph 1 g) of Resolution Conf. 12.8 (Rev. CoP17) had not been complied with, recommended the suspension of trade in *Trioceros montium* from Cameroon until that country provides sufficient information to the Secretariat and the members of the Animals Committee, through its Chair, to demonstrate compliance with Article IV, paragraphs 2 (a) and 3, for this species. 3. Following a review at SC70 of long-standing recommendations to suspend trade, the Standing Committee also agreed the withdrawal of recommendations to suspend trade for the following species/country combinations: • *Stigmochelys pardalis* / Democratic Republic of the Congo • *Phelsuma breviceps* and *P. standingi* / Madagascar • *Poicephalus fuscicollis* / Mali • ***Hippocampus kuda* / Viet Nam** 4. Subject to the publication of zero export quotas for wild specimens, which have now been confirmed by the Parties concerned and published on the CITES website, the Standing Committee agreed at SC70 the withdrawal of recommendations to suspend trade for the following species / country combinations: • *Agapornis fischeri, Malacochersus tornieri* and *Prunus africana* / United Republic of Tanzania • *Ptyas mucosus, Python reticulatus, Naja spp., Heosemys annandalii, H. grandis* and *Cuora galbinifrons* / Lao People's Democratic Republic 5. At SC70, the Standing Committee also agreed to remove the recommendation to suspend trade in *Cycadaceae, Stangeriaceae* and *Zamiaceae* for Mozambique, and replace it with a recommendation to suspend trade in *Cycas thouarsii*, a member of the Cycadaceae family, as this is the only species within the three families that occurs in Mozambique. 6. Parties are reminded that the complete list of Parties subject to a recommendation to suspend trade is available on the CITES website under Documents / Trade suspensions. 7. Parties are requested to inform their enforcement and customs authorities of the availability of the list of trade suspension recommendations on the CITES website in order to avoid the inadvertent acceptance of specimens of species subject to such a recommendation. Parties that require the issuance of import permits for trade in specimens of Appendix-II species are also encouraged to consult the list when processing applications. 8. The present Notification replaces Notification to the Parties No. 2018/006 of 15 January 2018 https://cites.org/sites/default/files/notif/E-Notif-2019-027
2020	Notification No. 2020/006	NO	Parties	Implementation of Resolution Conf. 12.8 (Rev. CoP18) on Review of Significant Trade in specimens of Appendix-II species. 1. In the context of the Review of Significant Trade (RST) in specimens of Appendix-II species, the Standing Committee regularly recommends trade suspensions for countries that it has determined to have failed to implement Article IV of the Convention. The Secretariat last published the list of countries and species affected by these recommendations with Notification to the Parties No. 2019/027 of 6 May 2019. This Notification provides an update of countries and species subject to a recommendation to suspend trade following the 18th meeting of the Conference of the Parties (CoP18, Geneva, 2019).

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Seahorses)
				2. The Review of Significant Trade process concerning *Balearica pavonina* was stopped following the transfer of this species from Appendix II to Appendix I as decided at CoP18, and whereby trade in wild specimens is now conducted under the provisions of Article III of the Convention. The RST-related suspensions of trade in *B. pavonina* from Guinea, South Sudan and Sudan are consequently NO longer in force. 3. Parties are reminded that the complete list of Parties subject to a recommendation to suspend trade is available on the CITES website under Documents / Trade suspensions. Those that are made in accordance with Resolution Conf. 12.8 (Rev. CoP18) on Review of Significant Trade in specimens of Appendix-II species are presented in the Annex to this notification. 4. Parties are requested to inform their enforcement and customs authorities of the availability of the list of trade suspension recommendations on the CITES website in order to avoid the inadvertent acceptance of specimens of species subject to such a recommendation. Parties that require the issuance of import permits for trade in specimens of Appendix-II species are also encouraged to consult the list when processing applications. 5. The present Notification replaces Notification to the Parties No. 2019/027 of 6 May 2019. Includes table with Recommendations of the Standing Committee, made in accordance with Resolution Conf. 12.8 (Rev. CoP18), to suspend trade in the affected species with the range States concerned: Includes – Guinea & Senegal for *H. algricus*, SC recommendation at SC66, Jan 2016, first notification – 15 March 2016. https://cites.org/sites/default/files/notif/E-Notif-2020-006
2020	Notification No. 2020/015	NO	Parties	Request for information on national management measures for seahorses (*Hippocampus* spp.) and their implementation and enforcement 1. At its 18th meeting (CoP18, Geneva, 2019), the Conference of the Parties adopted Decisions 18.228 to 18.233 on Seahorses (*Hippocampus* spp.). Decisions 18.229 and 18.230 read as follows: (See text above…) 2. Pursuant to these Decisions, the Secretariat hereby invites Parties to: a) submit information on any national management measures that regulate or restrict international trade in seahorses, and on how they are implementing and enforcing such measures; and b) share copies of their non-detriment findings with the Secretariat for posting on the CITES website to assist other CITES Parties. 3. In accordance with Decision 18.229, paragraph b), the Secretariat will compile the responses and communicate them to CITES Authorities through a Notification to the Parties and through the CITES website. Implementation of Decision 18.229 paragraphs a) to c) will also be reported at the 31st meeting of the Animals Committee (Geneva, July 2020) and the 73rd meeting of the Standing Committee (Geneva, October 2020, tbc). 4. Responses should be submitted by email to info@cites.org and daniel.kachelriess@cites.org NO later than 15 April 2020. https://cites.org/sites/default/files/notif/E-Notif-2020-015
2021	Notification No. 2021/062	YES	Parties	Responses to request for information on national management measures for seahorses (*Hippocampus* spp.) and their implementation and enforcement.

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Seahorses)
				1. At its 18th meeting (CoP18, Geneva, 2019), the Conference of the Parties adopted Decisions 18.228 to 18.233 on Seahorses (*Hippocampus* spp.). (text above) 2. Pursuant to Decision 18.229, paragraph a), the Secretariat issued a Notification to the Parties on 28 February 2020 (Notification No. 2020/015) requesting information on national management measures for seahorses (*Hippocampus* spp.) and their implementation and enforcement. The Notification also invited Parties to share non-detriment findings with the Secretariat for posting on the CITES website. 3. The Secretariat received responses from 14 Parties: Australia, Cambodia, Colombia, Croatia, Indonesia, Italy, Japan, Malta, Mexico, Monaco, Peru, Thailand, the United Kingdom of Great Britain and Northern Ireland, & US. These responses are compiled in document AC31 Doc. 26 Annex (Rev. 1) in the language and format in which they were received. 4. The Secretariat notes that among the responses are two non-detriment findings on *Hippocampus* spp. (from the US), which are available on the CITES website NDF database. https://cites.org/sites/default/files/notifications/E-Notif-2021-062
2022	**CoP 19**			Nov 2022

Table A1.2. Sharks – CITES Resolutions, Decisions, Notifications

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
1994	**CoP9**			The Conference of Parties debated shark conservation, management and trade; adopted first Resolution on Sharks, despite NO species being listed in the Appendices.
1994	Res Conf. 9.17 on the Status of International Trade in Shark species	NO		Resolution Conf. 9.17 noted the increase in the international trade in parts and derivatives of sharks. It expressed concern that some shark species are heavily utilized around the world for their fins, skins and meat. It noted that levels of exploitation in some cases are unsustainable and may be detrimental to the long-term survival of certain shark species, that sharks were not specifically managed or conserved by any multilateral or regional agreement for the management of marine fisheries and the ongoing initiatives to foster international cooperation in the management of fisheries resources. The Resolution expressed concern that the international trade in parts and products of sharks lacks adequate monitoring and control. It recognized that the members of the IUCN Species Survival Commission's Shark Specialist Group were reviewing the status of sharks and the global trade in their parts and derivatives in the course of developing an action plan on shark conservation and also that other intergovernmental organizations and bodies, including the Food and Agriculture Organization (FAO) of the United Nations, and the International Commission for Conservation of Atlantic Tunas (ICCAT), had undertaken efforts to collect elaborate statistical data on catches and landings of diverse marine species, including sharks. The collection of species-specific data was recognized to be a complex task, considering that there are some 100 species of sharks being exploited both commercially and for recreation, and that numerous countries utilize this marine resource. The Resolution urged the Parties to submit to the Secretariat all available information concerning the trade and biological status of sharks, including historical catch and trade data on shark fisheries. It directed the Animals Committee, with the assistance of experts as may be needed, to: a) review such information, and information made available through consultation with FAO and other international fisheries management organizations and, where appropriate, to include information made available by nongovernmental organizations; b) summarize the biological and trade status of sharks subject to international trade; and c) prepare a discussion paper on the biological and trade status of sharks, at least six months prior to the 10th meeting of the Conference of the Parties. The Conference of the Parties requested: a) FAO and other international fisheries management organizations to establish programs to further collect and assemble the necessary biological and trade data on shark species, and that such additional information be provided NO later than six months prior to the 11th meeting of the Conference of the Parties; b) all nations utilizing and trading specimens of shark species to cooperate with FAO and other international fisheries management organizations, and to assist developing States in the collection of species-specific data; and c) FAO and other international fisheries management organizations to fully inform the CITES Secretariat of progress on collection, elaboration and analyses of data. https://cites.org/sites/default/files/eng/cop/09/E9-Res.pdf, p. 74
1995	Notification No. 884	NO	Parties	Status of International Trade in Shark Species (Resolution Conf. 9.17) 1. In the operative part of Resolution Conf. 9.17, the Conference of the Parties:

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				"URGES the Parties to submit to the Secretariat all available information concerning the trade and biological status of sharks, including historical catch and trade data on shark fisheries". 2. The Animals Committee, during its 12th meeting, held in Guatemala in September 1995, endorsed a proposal made by the Secretariat to send to all Parties a Notification requesting some specific information that will help in the preparation of a discussion paper on the biological and trade status of sharks, to be considered at the 10th meeting of the Conference of the Parties (Victoria Falls, June 1997). 3. Consequently, the Secretariat requests each Party concerned to provide: a) A description of the fishery that is directed at sharks in its area and a list of the countries participating in the fishery; b) Details of total shark landings, if known, and of landings by species, if available; c) A list of the shark species known to be commercially fished by vessels under its country's flag; d) A list of all the shark species known to be landed in its country; e) Information on whether there are foreign fleets based in its country that do not report their landings; f) A list of fisheries in its region that are known to have a significant by-catch of sharks and quantitative information about this by catch; g) Details of biological status of the species, if known; h) Historical information on the international trade and its characteristics; i) Statistics on its country's imports and exports of sharks (by species if possible) including parts and derivatives (e.g., fins, oil, fresh, frozen, salted meat, etc.); and j) An indication of whether the specimens in trade come from sharks whose landing was reported. 4. The CITES Secretariat would be grateful if the Management Authorities would communicate this request to the authorities competent for shark fisheries and trade in their countries. 5. The Parties are invited to submit the above information to the Secretariat. In order to be considered, such information should be received by the Secretariat as soon as possible, but NO later than 11 December 1995. https://cites.org/sites/default/files/eng/notif/1995/884.doc
1997	**CoP10**			Proposal to list all species of the order Pristiformes (sawfish) in Appendix I was rejected.
	Res Conf. 9.17 Status of International trade in shark species still in force	NO		See above. Resolution carried forward to next CoP.
1997	Decision 10.48 biological & trade status of sharks	NO	Parties	To achieve effective implementation of Resolution Conf. 9.17: a) the Parties concerned should, in collaboration with FAO and regional fisheries organizations, improve methods to accurately identify, by species, record and report landings of sharks from directed fisheries and sharks taken as a by-catch in another fishery; b) Parties that have a shark fishery and/or trade in sharks and shark parts and derivatives should establish appropriate species-specific recording and reporting systems for all sharks that are landed as a directed catch or a bycatch;

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				c) Parties that have a shark fishery should initiate efforts to: i) collect species-specific data on landings, discards and fishing effort; ii) compile information on life history and biological parameters such as growth rate, life span, sexual maturity, fecundity and stock-recruitment relationships of sharks taken in their fisheries; iii) document the distribution of sharks by age and sex, as well as their seasonal movements and interactions between populations; and iv) reduce mortality of sharks captured incidentally in the course of other fishing activities; and d) the Parties concerned are encouraged to initiate management of shark fisheries at the national level and establish international/regional bodies to coordinate management of shark fisheries throughout the geographic range of species that are subject to exploitation, in order to ensure that international trade is not detrimental to the long-term survival of shark populations. https://cites.org/sites/default/files/eng/cop/10/E10-Decisions.pdf, p. 132
1997	Decision 10.73 biological & trade status of sharks	NO	Animals Committee	The CITES Animals Committee, together with the CITES Secretariat, shall cooperate in the expert consultation organized by the FAO Committee of Fisheries to develop and propose guidelines leading to a plan of action for the conservation and effective management of sharks, in an effort to further the implementation of Resolution Conf. 9.17. https://cites.org/sites/default/files/eng/cop/10/E10-Decisions.pdf, p. 138
1997	Decision 10.74 biological & trade status of sharks	NO	Animals Committee	The Chairman of the Animals Committee shall serve as liaison with the United Nations Food and Agriculture Organization (FAO) and with intergovernmental fisheries management and/or research organizations in relation to all activities concerning the implementation of Resolution Conf. 9.17. https://cites.org/sites/default/files/eng/cop/10/E10-Decisions.pdf, p. 138
1997	Decision 10.93 biological & trade status of sharks	NO	FAO	Decision 10.93 directed itself to the Food and Agriculture Organization of the United Nations (FAO). To achieve effective implementation of Resolution Conf. 9.17, it was suggested that FAO should: a) as a matter of urgency, initiate a work program involving: i) changing the manner in which it requests members to record and report data on shark landings; ii) continuing a consultancy, commenced in 1996, to design and undertake an inquiry into the availability of biological and trade data on sharks; iii) updating the Shark World Species Catalogue and the 1978 Shark Utilization and Marketing Monograph; and iv) finalizing and publishing the World Catalogue of Rajiformes; b) transmit the results of the consultancy to the CITES Secretariat for circulation to and comment by the Parties to the Convention; and c) encourage its member States that have a shark fishery, or a fishery that takes sharks as a by-catch, to implement the principles and practices elaborated in: i) the FAO Code of Conduct for Responsible Fisheries; ii) the FAO Precautionary Approach to Fisheries, Part 1: Guidelines on the Precautionary Approach to Capture Fisheries and Species Introductions; and iii) the FAO Code of Practice for the Full Utilization of Sharks. https://cites.org/sites/default/files/eng/cop/10/E10-Decisions.pdf, p. 143
1997	Decision 10.126	NO	Secretariat	a) in an effort to improve statistics on trade in sharks and shark parts and derivatives and in collaboration with FAO, consult the World Customs Organization to establish more specific headings

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
	biological and trade status of sharks			within the standard six-digit Customs tariff headings adopted under the Harmonized System tariff classification, to discriminate between shark meat, fins, leather, cartilage and other products; b) circulate to the Parties for comments the results transmitted to it of the consultancy mentioned in Decision 10.93, paragraph a) ii); c) together with the CITES Animals Committee, cooperate in the expert consultation organized by the FAO Committee of Fisheries to develop and propose guidelines leading to a plan of action for the conservation and effective management of sharks; and d) communicate the relevant recommendations to FAO and other intergovernmental fisheries management and/or research organizations and establish liaison with them to monitor implementation of these recommendations. https://cites.org/sites/default/files/eng/cop/10/E10-Decisions.pdf, p. 148
2000	**CoP11**			Proposals rejected to list three species (whale shark *Rhincodon typus,* white shark *Carcharodon carcharias*, basking shark *Cetorhinus maximus*) in Appendix II. United Kingdom listed basking shark in Appendix III.
	NO shark Res in force			Resolution. Conf. 9.17 Status of international trade in shark species was repealed.
2000	Decision 11.94 Biological and trade status of sharks	NO	Chairman of the Animals Committee	The Chairman of the Animals Committee was directed to maintain liaison with the Secretary of the Committee on Fisheries of the United Nations Food and Agriculture Organization to monitor the implementation of the International Plan of Action for the Conservation and Management of Sharks, and report at the 12th meeting of the Conference of the Parties on progress made with this. The 18th meeting of the Animals Committee (2002) noted that CITES should continue to contribute to international efforts to address shark conservation and trade concerns. https://cites.org/sites/default/files/eng/cop/11/other/Decisions.pdf, p. 29
2000	Decision 11.151 Trade in shark specimens	NO	Secretariat	The Secretariat shall continue to liaise with the World Customs Organization to promote the establishment and use of specific headings within the standard tariff classifications of the Harmonized System to discriminate between shark meat, fins, leather, cartilage and other products. https://cites.org/sites/default/files/eng/cop/11/other/Decisions.pdf, p. 44
2002	**CoP12**			Proposals to list two shark species in Appendix II (basking shark and whale shark) adopted.
2002	Res. Conf. 12.6 on the conservation and management of sharks	As Rev. CoP18		Adopted Resolution Conf. 12.6 on the conservation and management of sharks. (see Res. Conf.12.6 (Rev. Cop18)) (Refers inter alia to the implementation of the FAO IPOA–Sharks.) https://cites.org/sites/default/files/document/E-Res-12-06-R18.pdf
2002	Decision 11.151(Rev Cop12) Sharks	NO	Secretariat	The Secretariat shall continue to liaise with the World Customs Organization to promote the establishment and use of specific headings within the standard tariff classifications of the Harmonized System to discriminate between shark meat, fins, leather, cartilage and other products. https://cites.org/sites/default/files/eng/dec/valid13/E12-Dec.pdf, p. 15
2002	Decision 12.47 Sharks	NO	Chairman of the Animals Committee	The Chairman of the Animals Committee shall maintain the liaison established with the Secretary of the Committee on Fisheries of the United Nations Food and Agriculture Organization, to monitor the implementation of the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks). The Chairman of the Animals Committee shall report on progress with the implementation of IPOA-Sharks at the 13th meeting of the Conference of the Parties. https://cites.org/sites/default/files/eng/dec/valid13/E12-Dec.pdf, p. 15

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
2002	Decision 12.48 Sharks	NO	Secretariat	The Secretariat shall transmit to FAO the concerns of the Conference of the Parties regarding the lack of progress in implementing the IPOA-Sharks and urge FAO to take steps to encourage the implementation of the IPOA-Sharks by States and regional fisheries management organizations. https://cites.org/sites/default/files/eng/dec/valid13/E12-Dec.pdf, p. 15
2002	Decision 12.49 Sharks	NO	Secretariat	The Secretariat shall encourage CITES Authorities of Parties to obtain information on IPOA-Sharks implementation from their national fisheries departments and report on progress at future meetings of the Animals Committee. https://cites.org/sites/default/files/eng/dec/valid13/E12-Dec.pdf, p. 15
2003	Notification No. 2003/051	NO	Parties	Conservation and management of sharks 1. At its 12th meeting, the Conference of the Parties adopted Decision 12.49, which directs the Secretariat to encourage CITES Authorities of Parties to obtain information from their national fisheries departments on the implementation of the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks), prepared by the Food and Agriculture Organization of the United Nations (FAO), and to report on progress at future meetings of the Animals Committee. 2. A similar encouragement for Parties to obtain information from their fisheries departments on the implementation of IPOA-Sharks, and to report directly on progress to the CITES Secretariat and at future meetings of the Animals Committee, is contained in Resolution Conf. 12.6 on the Conservation and management of sharks. 3. Documents AC18 Doc. 19.2, CoP12 Doc. 41.1 and CoP12 Doc. 41.2, available from the CITES website, and the report of the 25th session of the FAO Committee on Fisheries available from the FAO website (http://www.fao.org), provide further information on this subject. 4. The Management Authorities of the Parties are hereby invited to seek information from their fisheries departments on the implementation of IPOA-Sharks, particularly with regard to the establishment of National Plans of Action, and to submit this information to the Secretariat by 30 September 2003. 5. The Secretariat is aware that certain Parties have provided or are planning to provide to FAO the information indicated in paragraph 4. To avoid dual reporting, the Secretariat encourages these Parties to copy such information to the Secretariat, rather than producing a separate report. https://cites.org/sites/default/files/eng/notif/2003/051.shtml
2003	Notification No. 2003/068	NO	Parties	Biological and trade status of sharks 1. In Notification to the Parties No. 2003/051 of 15 August 2003, the Secretariat invited Parties to obtain from their national fisheries departments, information on the implementation of the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) and on the establishment of National Plans of Action for conservation and management of shark stocks (Shark Plans). The Secretariat also invited the Parties to report such information to the Secretariat by 30 September 2003. The Secretariat is grateful to the Parties that submitted information before the deadline. 2. The Animals Committee discussed the biological and trade status of sharks at its 19th meeting (Geneva, August 2003; see documents AC19 Doc. 18.1, Doc. 18.2 and Doc. 18.3, and AC19 WG12 Doc. 1). 3. To assist Parties that have not yet provided the information referred to in paragraph 1 above, the Animals Committee developed a questionnaire which is provided in the Annex to this Notification. The Management Authorities of these Parties are encouraged to bring this Notification to the attention of

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				relevant national bodies, to complete the questionnaire in the Annex and to submit the information to the Secretariat by 15 December 2003. 4. The information shall be made available to the Animals Committee in the context of the implementation of Resolution Conf. 12.6 on the conservation and management of sharks. Questionnaire: https://cites.org/sites/default/files/eng/notif/2003/068.shtml
2004	**CoP 13**			Proposal to list the white shark *Carcharodon carcharias* in Appendix II adopted.
	Res. Conf. 12.6 still in force	As Rev. CoP18		See above. Resolution carried forward to next CoP.
2004	Decision 13.18 Introduction from the sea	NO	Standing Committee IFS	The Standing Committee shall: a) contingent on the availability of external funding obtained in accordance with Decision 13.19, convene a workshop on introduction from the sea to consider implementation and technical issues, taking into account the two Expert Consultations of the Food and Agriculture Organization of the United Nations (FAO) on implementation and legal issues[1], and documents and discussions that occurred at the 11th and 13th meetings of the Conference of the Parties on these issues; b) invite the following participants to the workshop: three representatives from each CITES region to represent a Management Authority, a Scientific Authority, and a fisheries expert; two representatives from FAO; a representative from WCO; and two representatives of NGOs or IGOs with CITES and fisheries expertise; c) through its clearing-house mechanism, decide on the appropriate way to handle the logistics, agenda and reporting for the workshop and set timelines for the work to be done; d) ask the Secretariat to provide the report and recommendations from the workshop to the Parties through a notification and to FAO for consideration and comment. https://cites.org/sites/default/files/eng/dec/valid13/E13-Dec.pdf, p. 4
2004	Decision 13.19 Introduction from the sea	NO	Secretariat IFS	The Secretariat shall: a) as a matter of high priority, assist in obtaining funds from interested Parties, intergovernmental and non-governmental organizations, and other funding sources to support a workshop on introduction from the sea under the terms of reference set out in Decision 13.18; b) assist the Standing Committee in preparing for the workshop; and c) welcome the consultations convened by FAO and approach the FAO Secretariat concerning further collaboration on introduction from the sea. https://cites.org/sites/default/files/eng/dec/valid13/E13-Dec.pdf, p. 5
2004	Decision 13.42 Sharks	NO	Parties	Parties: a) should request, through their delegations to the 26th meeting of the Committee on Fisheries (COFI) of the Food and Agriculture Organization of the United Nations (FAO) that FAO consider convening a workshop or consultation on the conservation and management of sharks, in time for output to be considered at the 14th meeting of the Conference of the Parties, inter alia to: i) consider and review progress with the implementation of the IPOA-Sharks; and ii) assess the effectiveness and efficiency of current conservation and management measures for sharks and identify any improvements needed; b) are encouraged to improve their data collection and reporting to FAO of catches and landings of and trade in sharks, at the species level where possible, recognizing that inter alia this may be a first step towards the development and implementation of Shark Assessment Reports and National Plans of Action or other relevant national instruments;

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				c) that require assistance to build capacity to manage their shark fisheries are encouraged to seek such assistance from FAO or other appropriate organizations; and d) should take note of the species-specific recommendations in document CoP13 Doc. 35 Annex 2 with a view to ensuring that international trade is not detrimental to the status of these species. https://cites.org/sites/default/files/eng/dec/valid13/E13-Dec.pdf, p. 11
2004	Decision 13.43 Sharks	NO	Animals Committee	Directed the Animals Committee, taking account of the work of the Food and Agriculture Organization of the United Nations (FAO) on the conservation and management of sharks and on CITES implementation issues relating to listed marine species, to: a) review implementation issues related to sharks listed in the CITES Appendices with a view inter alia to sharing experiences that may have arisen and solutions that may have been found; b) identify specific cases where trade is having an adverse impact on sharks, in particular those key shark species threatened in this way; c) prepare a report on trade-related measures adopted and implemented by Parties that are aimed at improving the conservation status of sharks; and d) report on the above at the 14th meeting of the Conference of Parties. https://cites.org/sites/default/files/eng/dec/valid13/E13-Dec.pdf, p. 11
2005	Notification No. 2005/044	NO	Parties	Management of and trade in sharks 1. Resolution Conf. 12.6 on Conservation and management of sharks directs the Animals Committee to: examine information provided by range States in shark assessment reports and other available relevant documents, with a view to identifying key species and examining these for consideration and possible listing under CITES; and to make species-specific recommendations at the 13th meeting and subsequent meetings of the Conference of the Parties if necessary on improving the conservation status of sharks and the regulation of international trade in these species. 2. At its 13th meeting (Bangkok, 2004), the Conference of Parties to CITES agreed on continued work in fulfilment of the Resolution by adopting Decision 13.42, directed to Parties, and Decision 13.43, directed to the Animals Committee, which states: The Animals Committee, taking account of the work of the Food and Agriculture Organization of the United Nations (FAO) on the conservation and management of sharks and on CITES implementation issues relating to listed marine species, shall: a) review implementation issues related to sharks listed in the CITES Appendices with a view inter alia to sharing experiences that may have arisen and solutions that may have been found; b) identify specific cases where trade is having an adverse impact on sharks, in particular those key shark species threatened in this way; c) prepare a report on trade-related measures adopted and implemented by Parties that are aimed at improving the conservation status of sharks; and d) report on the above at the 14th meeting of the Conference of Parties. 3. At its 21st meeting (Geneva, May 2005), the Animals Committee agreed that it would be necessary to collect information from the Parties to enable it to fulfil some of its obligations under Decision 13.43, and developed a questionnaire to this effect. 4. At the request of the Animals Committee, Parties are hereby requested to complete the questionnaire attached as an Annex to this Notification, and to return it to the Secretariat by 31 December 2005 at the latest. The Animals Committee recognizes that this places an additional reporting burden upon CITES authorities, but hopes that the questionnaire is

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				structured so as to minimize the time needed to respond to its seven questions. https://cites.org/sites/default/files/eng/notif/2005/044
2007	**CoP 14**			Proposal to list family Pristidae, sawfishes, in Appendix I adopted with exception of *Pristis microdon*, listed in Appendix II with an annotation to permit live trade. Proposals to list porbeagle shark *Lamna nasus* and spiny dogfish *Squalus acanthias* in Appendix II rejected.
2007	Res. Conf. 12.6 still in force	As Rev. CoP18		See above. Resolution carried forward to next CoP.
2007	Resolution Conf 14.6	As Rev. CoP16		Introduction from the sea (revised at Cop16), see below for text https://cites.org/sites/default/files//eng/res/all/14/E14-06.pdf
2007	Decision 14.101 Implementation and effectiveness	NO	Parties	When considering or developing proposals to include shark species in the CITES Appendices, consider factors affecting implementation and effectiveness, including those identified in Resolution Conf. 9.24 (Rev. CoP14) Annex 6; in particular: a) non-detriment findings for commercially-traded marine species, including situations involving target and bycatch fisheries, and for shared stocks, migratory species and introductions from the sea; b) monitoring and enforcement practicalities, given that sharks are generally traded in parts (meat, fins, cartilage, etc.); and c) the likely effectiveness of listing, particularly when bycatch fisheries or non-fishery anthropogenic issues are involved. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.102 Implementation and effectiveness	NO	Parties	Encouraged Parties to continue developing manuals and guides for the identification of sharks and shark products in international trade and to make these available to other Parties and the Food and Agriculture Organization of the United Nations (FAO) through the CITES Secretariat before the 15th meeting of the Conference of Parties to CITES. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.103 Implementation and effectiveness	NO	Secretariat	Instructed the Secretariat to distribute a Notification to the Parties on implementation of listings for shark species. It shall focus specifically on obtaining from Parties' Scientific and Fishery Authorities case studies on the development of non-detriment findings for shark species and shall collate and summarize these for provision to the international expert workshop on non-detriment findings to be held in Mexico. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.104 Commodity codes	NO	Parties	Encouraged Parties to: a) use their commodity codes, where they exist, for traded fish products in order to differentiate between fresh/chilled, frozen and dried, processed and unprocessed, shark meat, oil, skin, cartilage and fin products, imports, exports and re-exports, for both CITES- listed and non-listed species; and b) report progress at the 23rd and 24th meetings of the Animals Committee on implementation of Resolution Conf. 12.6, under RECOMMENDS. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.105 Commodity codes	NO	Parties	Encouraged Parties to use the existing species-specific FAO catch data recording fields for the reporting of shark catches and discards, and to work within FAO to amend these, if required, so as to achieve a more accurate picture of shark mortality through fishing. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.106 Commodity codes	NO	Secretariat	Instructed the Secretariat to distribute a Notification to the Parties requesting them to provide details of their commodity codes for fish products (e.g. fresh/chilled, frozen and dried, processed and

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				unprocessed, meat, oil, skin, cartilage and fins), imports, exports and re-exports, for both CITES-listed and non-listed species, collate the responses and report at the 23rd meeting of the Animals Committee. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.107 Species-specific reviews and recommendations	NO	Animals Committee	Instructed the Animals Committee to continue activities specified under Resolution Conf. 12.6, including refinement of the list of shark species of concern, in collaboration with FAO, taking account of those referenced in Annex 3 to document CoP14 Doc. 59.1, and shall report on these activities at the 15th meeting of the Conference of the Parties. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.108 Species-specific reviews and recommendations	NO	Parties	Parties landing and exporting products from shark species of concern identified by the Animals Committee are encouraged to: a) improve liaison between their CITES and fisheries authorities; b) ensure that levels of international trade are not detrimental to the status of these species; and c) report at the 24th and 25th meetings of the Animals Committee on the fisheries, environmental and international trade management measures adopted, levels of landings and exports, and the status of these stocks and fisheries. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.111 Capacity-building	NO	Scientific Authorities	Encouraged Scientific Authorities, when making non-detriment findings for CITES-listed shark species, to seek advice from relevant scientific, research and management bodies. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.112 Capacity-building	NO	Parties	Encouraged Parties, through their delegations to the FAO Committee on Fisheries, to call on FAO to facilitate greater support for countries whose capacity to assess and manage their shark fisheries is limited, and to provide the resources necessary for FAO to undertake this work. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.113 Capacity-building	NO	Secretariat	Instructed the Secretariat, in consultation with the Steering Committee of the international expert workshop on non-detriment findings to be held in Mexico, to seek to ensure that this workshop considers the development of non-detriment findings for sharks, including transboundary, migratory, straddling and high seas stocks. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.114 Capacity-building	NO	Secretariat	Instructed the Secretariat to liaise with FAO and regional fishery bodies to explore the organization of and seek external funding for a capacity-building workshop on the conservation and management of sharks. This workshop should: a) consider the outputs of the Mexican international expert workshop on non-detriment findings; b) use *Galeorhinus galeus* as a case study for stock assessment and management measures for internationally-traded transboundary migratory coastal shark stocks, and develop recommendations for improving the monitoring, regulation and management of international trade in this and other shark species; c) consider tools and approaches for the development of assessments and non-detriment findings for shark species and for the monitoring and regulation of international trade in these species; d) consider tools and approaches to determine whether specimens are of legal origin; and e) develop recommendations for consideration at the 23rd or 24th meeting of the Animals Committee. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.115	NO	Shark fishing and	Strongly encouraged shark fishing and trading entities, particularly the major fishing or trading entities, to identify opportunities to:

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
	International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks)		trading entities, particularly the major fishing or trading entities	a) improve, in cooperation with FAO and relevant fishery management bodies, the monitoring and reporting of catch, bycatch, discards, market and international trade data, at the species level where possible; b) establish systems to provide verification of catch information; c) report on their progress at the 23rd and 24th meetings of the Animals Committee; and d) implement the FAO IPOA-Sharks as a matter of priority, where they have not done so. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.116 International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks	NO	Parties	Strongly encouraged Parties that are members of a regional fishery management organization to request through FAO and regional fishing management organizations where appropriate that these organizations develop and implement regional shark plans and associated measures to assist in species identification and monitoring, as called for in the IPOA-Sharks, by mid-2009 in order to report at the 15th meeting of the Conference of Parties. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.117 Illegal, unregulated and unreported (IUU) fishing	NO	Animals Committee ?	Directed the Animals Committee, in consultation with FAO, to examine and report on linkages between the international trade in shark fins and meat and IUU shark fishing activities, including where possible: a) the main species of sharks taken by IUU fishing; and b) the relative importance of fins compared to meat in international trade arising from IUU fishing. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 27
2007	Decision 14.48 (Introduction from the sea)	NO	Standing Committee IFS	The Standing Committee shall: a) at its 57th meeting (SC57), establish a working group on Introduction from the Sea, which shall work primarily through electronic means, to consider a definition for 'transportation into a State', clarification of the term 'State of introduction' and the process for issuing a certificate of introduction from the sea as well as other issues identified for further consideration in the final report of the CITES Workshop on Introduction from the Sea Issues (Geneva, 30 November – 2 December 2005); b) include in the working group representatives of CITES authorities and fishery authorities from each of the six CITES regions and request the participation of the United Nations Division for Ocean Affairs and the Law of the Sea, the Food and Agriculture Organization of the United Nations, two regional fishery bodies, the fishing industry, and intergovernmental organizations and non-governmental organizations with CITES and fishery expertise; c) contingent on the availability of external funding, convene a meeting of the working group between SC57 and SC58; and d) ask the working group to prepare a discussion paper and draft revised resolution for consideration by the Standing Committee at SC58 and for consideration at the 15th meeting of the Conference of the Parties. https://cites.org/sites/default/files/eng/dec/valid14/E14-Dec.pdf, p. 13
2007	Notification No. 2007/042	NO		Identification of sharks 1. At its 13th meeting (Bangkok, 2004), the Conference of the Parties adopted a proposal by Australia and Madagascar to include *Carcharodon carcharias* (great white shark) in Appendix II. The listing entered into force on 12 January 2005. 2. In accordance with the provisions of Resolution Conf. 11.19, Australia, in cooperation with India, the Philippines and the United Kingdom of Great Britain and Northern Ireland, has prepared identification

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				sheets for *Carcharodon carcharias* and for two other Appendix -II shark species: *Rhincodon typus* (whale shark) and *Cetorhinus maximus* (basking shark). 3. The identification sheets in English, French and Spanish, as well as in Cantonese, Indonesian and Mandarin will be available shortly through the CITES Identification Manual on the CITES website. https://cites.org/sites/default/files/eng/notif/2007/E042.pdf
2008	Notification No. 2008/044	NO	Parties	Non-detriment findings for shark species 1. At its 14th meeting (The Hague, 2007), the Conference of the Parties had adopted Decision 14.103 on the implementation of listings of shark species. 2. The Decision instructs the Secretariat to: distribute a Notification to the Parties on implementation of listings for shark species. [The Secretariat] shall focus specifically on obtaining from Parties' Scientific and Fishery Authorities case studies on the development of non-detriment findings for shark species, and shall collate and summarize these for provision to the international expert workshop on non-detriment findings to be held in Mexico. 3. The Secretariat sought guidance from the organizers of the workshop concerning the sort of information that they would like to receive in response to this Notification. They suggested that, before responding to this Notification, Parties: examine the publication FAO Marine Resources Service, (2000), Fisheries management. 1. Conservation and management of sharks. FAO Technical Guidelines for Responsible Fisheries. No. 4, Suppl. 1, [which can be downloaded from the following Internet address: ftp://ftp.fao.org/docrep/fao/003/x8692e/x8692e00]. Section 7.4 and Sections A, B and selected bullet points of Section C being particularly pertinent. The selected bullet points of Section C should be re-crafted in terms of non-detriment findings rather than a management plan to answer questions such as: • Which fishing vessels and fleets catch the species under consideration (both directed and bycatch) and is access of those vessels and fleets to the relevant fisheries under adequate control? • Is total fishing effort (and thereby mortality) on the shark species at or below a level which can be sustained by the shark species (or stock) without threat to its conservation status? • Are efforts, catches and landings of the species (stock) well-monitored (some guidance on how 'well' is sufficient would need to be provided) and the data stored and regularly analysed? 4. In order to ensure that the information can be considered at the international expert workshop on non-detriment findings, Parties are requested to reply by 4 August 2008. https://cites.org/sites/default/files/eng/notif/2008/E044.pdf
2010	**CoP 15**			Proposals to list the following shark species in Appendix II rejected: *Sphyma lewini, S. mokarran, S. zygaena, Carcharhinus longimanus, Lamna nasus* and *Squalus acanthias*. Proposals for *Carcharhinus plumbeus* and *C. obscurus* were withdrawn in Committee I.
2010	Resolution Conf. 12.6 (Rev. 15)	As Rev. CoP18		The 15th meeting of the Conference of the Parties **revised Resolution Conf. 12.6 on the Conservation and management of sharks.** Resolution carried forward to next CoP.
2010	Decision 14.48 (Rev. CoP15) Introduction from the sea	NO	Standing Committee IFS	The Standing Committee shall: a) extend operation of the Working Group on Introduction from the Sea, established at SC57, with the understanding that it shall continue to work primarily through electronic means, to consider a definition for 'transportation into a State', clarification of the term 'State of introduction' and the process for issuing a certificate of introduction from the sea as well as other issues identified for further consideration in the final report of the CITES Workshop on Introduction from the Sea Issues (Geneva,

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				30 November – 2 December 2005) and the final report of the meeting of the working group held in Geneva from 14 to 16 September 2009; b) include in the working group representatives of CITES authorities and fishery authorities from each of the six CITES regions and request the participation of and input from the United Nations Division for Ocean Affairs and the Law of the Sea, the Food and Agriculture Organization of the United Nations, regional fishery bodies, the fishing industry, and intergovernmental organizations and non-governmental organizations with CITES and fishery expertise; and c) ask the working group to prepare a discussion paper and draft revised resolution for consideration by the Standing Committee at its 62nd meeting and for consideration at the 16th meeting of the Conference of the Parties. https://cites.org/sites/default/files/eng/dec/valid15/E15-Dec.pdf, p. 14
2010	Decision 15.50 Introduction from the sea	NO	Secretariat IFS	The Secretariat shall, contingent on the availability of external funding, convene two meetings of the working group before the 62nd meeting of the Standing Committee. https://cites.org/sites/default/files/eng/dec/valid15/E15-Dec.pdf, p. 14
2013	**CoP 16**			Proposals adopted to include Oceanic whitetip *Carcharhinus longimanus;* Hammerheads *Sphyma lewini, S. mokarran, S. zygaena;* Porbeagle *Lamna nasus*; Manta rays *Manta birostis* and *M. alfredi* in Appendix II, and uplist freshwater sawfish *Pristis microdon* to Appendix I (this species later synonymised with *Pristis pristis*). The entry into effect was delayed by 18 months, i.e. until 14 September 2014. Costa Rica listed S*phyma lewini* in Appendix III until that date.
	Res. Conf. 12.6 (Rev. 15)	As Rev. CoP18		Resolution Conf. 12.6 on the Conservation and management of sharks carried forward to next CoP.
2013	Res, Conf. 14.6 (Rev. CoP16) revised and carried forward to next CoP	As Rev. CoP 16		**Introduction from the sea** TAKING INTO ACCOUNT the CITES Workshop on Introduction from the Sea Issues (Geneva, 30 November – 2 December 2005) held pursuant to Decision 13.18 of the Conference of the Parties the meeting of the Standing Committee Working Group on Introduction from the Sea (Geneva, 14-16 September 2009) held pursuant to Decision 14.48 of the Conference of the Parties, and the meetings of the Standing Committee Working Group on Introduction from the sea (Bergen, 24-26 May 2011, and Shepherdstown, 24-26 April 2012), held pursuant to Decision 14.48 (Rev. CoP15); RECALLING that 'introduction from the sea' is defined in Article I, paragraph e), of the Convention as "transportation into a State of specimens of any species which were taken in the marine environment not under the jurisdiction of any State"; RECALLING ALSO that Article III, paragraph 5, and Article IV, paragraphs 6 and 7, of the Convention, provide a framework to regulate the introduction from the sea of specimens of species included in Appendices I and II, respectively; NOTING that 'State of introduction' is not defined in the Convention and that Article III, paragraph 5, Article IV, paragraph 6, and Article XIV, paragraph 5, place certain obligations on the State of introduction; DESIRING that States cooperate in a manner that supports and complies with the provisions of the Convention with respect to specimens taken in the marine environment not under the jurisdiction of any State; RECOGNIZING the need for States to consult and cooperate with relevant Regional Fisheries Management Organizations and Arrangements (RFMO/A) when issuing certificates of introduction

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				from the sea and export and import permits for specimens taken in the marine environment not under the jurisdiction of any State; NOTING the progress made through the Food and Agriculture Organization of the United Nations (FAO) on measures to promote responsible fisheries, including through the 2001 FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, and the adoption of the 2009 Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing; RECOGNIZING the need for a common understanding of the provisions of the Convention relating to specimens taken in the marine environment not under the jurisdiction of any State, in order to facilitate the standard implementation of trade controls for such specimens and improve the accuracy of CITES trade data; RECOGNIZING FURTHER that "introduction from the sea" is unique to the Convention and affirming that the present Resolution applies only in relation to the implementation of the Convention for specimens taken in the marine environment not under the jurisdiction of any State and does not affect the rights or duties of Parties outside this context; THE CONFERENCE OF THE PARTIES TO THE CONVENTION 1. AGREES that 'the marine environment not under the jurisdiction of any State' means those marine areas beyond the areas subject to the sovereignty or sovereign rights of a State consistent with international law, as reflected in the United Nations Convention on the Law of the Sea; 2. FURTHER AGREES that, a) whenever any specimen of a species included in Appendix I or II is taken in the marine environment not under the jurisdiction of any State by a vessel registered in one State and is transported into that same State, the provisions of Article III, paragraph 5, or Article IV, paragraphs 6 and 7, respectively, should be applied; with that State being the State of introduction; b) whenever any specimen of a species included in Appendix I or II is taken in the marine environment not under the jurisdiction of any State by a vessel registered in one State and is transported into a different State, the provisions of Article III, paragraphs 2 and 3, or Article IV, paragraphs 2, 3 and 4, respectively, should be applied, with the State in which the vessel that took the specimen is registered being the State of export and the State into which the specimen is transported being the State of import; and c) In the case of chartering operations, under the conditions that: i) The operation is under a written arrangement between the State where the vessel is registered and the chartering State, consistent with the framework on chartering operations of a relevant RFMO/A; and that ii) The CITES Secretariat has been informed of this arrangement in advance of its entry into effect and that the CITES Secretariat makes this arrangement available to all Parties and to any relevant RFMO/A; Whenever any specimen of a species included in Appendix I or II is taken in the marine environment not under the jurisdiction of any State by a vessel registered in one State and chartered by another State and transported into that chartering State, the provisions of Article III, paragraph 5, or Article IV, paragraphs 6 and 7, or the provisions of Article III, paragraphs 2 and 3, or Article IV, paragraphs 2, 3 and 4, respectively, may be applied. In such cases, the State in which the vessel is registered should be the State of export or the chartering State should be the State of Introduction, as mutually agreed in the written arrangement;

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				Whenever any specimen of a species included in Appendix II is taken in the marine environment not under the jurisdiction of any State by a vessel registered in one State and chartered by another State, and transported into a third State, the provisions of Article IV, paragraphs 2, 3 and 4 should be applied. In this case, the State in which the vessel is registered should be considered as the State of export and the issuance by this State of the export permit would be conditional upon prior consultation with and agreement by the chartering State. Subject to the authorization by the State in which the vessel is registered and provided that such an authorization is clearly specified in the written arrangement referred to above in paragraph (i), the chartering State may be the State of export; 3. RECOMMENDS that, in the case of specimens of species included in Appendix I or II taken in the marine environment not under the jurisdiction of any State, in satisfying itself that the provisions of the Convention are met: a) the State of introduction, prior to issuing a certificate of introduction from the sea; b) the State of export, prior to issuing an export permit; and c) the State of import, prior to issuing an import permit, or when presented with an export permit: take into account whether or not the specimen was or will be acquired and landed: i) in a manner consistent with applicable measures under international law for the conservation and management of living marine resources, including those of any other treaty, convention or agreement with conservation and management measures for the marine species in question; and ii) through any illegal, unreported or unregulated (IUU) fishing activity; 4. FURTHER RECOMMENDS that, in the case of an export of Appendix-II specimens, the Scientific Authority of the State of export, in making its non-detriment finding, consult with other national scientific authorities or, when appropriate, international scientific authorities; and 5. RECOMMENDS that Parties respond in a timely manner to a request for information necessary for issuing a certificate of introduction from the sea or an export permit for specimens of any species taken in the marine environment outside the jurisdiction of any State, or for verifying the authenticity and validity of such a certificate or permit. https://cites.org/sites/default/files/document/E-Res-14-06-R16 (incl Annex)
2013	Decision 16.128 Sharks and stingrays	NO	Secretariat	The Secretariat shall: a) issue a Notification to Parties requesting that they provide to the Secretariat a summary of their domestic laws and regulations that prohibit or regulate the landing of sharks or trade in shark specimens, together with copies of or links to these instruments in order for the Secretariat to make this information available on the CITES website; and b) collaborate with the FAO Secretariat in the development of a single, regularly updated, source summarizing current Regional Fisheries Management Organization measures for shark conservation and management, with information on species, fisheries, Members and Contracting Parties, and the geographical areas covered and excluded. https://cites.org/sites/default/files/eng/dec/valid16/E16-Dec.pdf, p. 31
2013	Decision 16.129 Sharks and stingrays	NO	Parties	Parties are encouraged to engage with the work of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), as appropriate, particularly for shark species listed in the relevant Appendices to CITES and CMS, recognizing that CMS Parties are required to strive towards strictly protecting species listed in Appendix I to CMS, to prohibit the taking of these species, and to implement other measures through the Memorandum of Understanding on the Conservation of Migratory Sharks. https://cites.org/sites/default/files/eng/dec/valid16/E16-Dec.pdf, p. 31

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
2013	Decision 16.48 Introduction from the sea: chartering	NO	Secretariat	The Secretariat shall report at the 65th and 66th meetings of the Standing Committee on the implementation of the Convention by the Parties concerned in relation to the provision on chartering arrangements provided for in Resolution Conf. 14.6 (Rev. CoP16). The report should focus in particular on the conditions under which non-detriment findings are made and permits and certificates are issued, as well as on the relationship between chartering States and States in which the vessel is registered, in performing those tasks. It should especially assess the capacity of chartering States and the States in which the vessels are registered to control compliance with the provisions of the CITES Convention. In that regard, the report should pay special attention to the implementation of the provisions of the Resolution pertaining to the legality of the acquisition and landing of the specimens concerned. The report shall also include any cases where Parties have been unable to take advantage of this provision, including in situations where at least one of the States involved is not party to a relevant Regional Fishery Management Organization/Arrangement (RFMO/A). Between now and the 17th meeting of the Conference of the Parties (CoP17), the Secretariat shall further communicate with the Secretariat of the relevant RFMO/A and other relevant international organizations, in particular regarding the implementation of the relevant obligations resulting from these RFMO/As or other international organizations, and share information provided with Parties on a timely basis. https://cites.org/sites/default/files/eng/dec/valid16/E16-Dec.pdf, p. 12
2013	Decision 16.49 Introduction from the sea: chartering	NO	Parties	Parties taking advantage of the provision on chartering arrangements provided for in Resolution Conf. 14.6 (Rev. CoP16) should provide in a timely manner all information that might be requested from them by the Secretariat in view of the establishment of its report on this issue at the 65th and 66th meetings of the Standing Committee. https://cites.org/sites/default/files/eng/dec/valid16/E16-Dec.pdf, p. 12
2013	Decision 16.50 Introduction from the sea: chartering	NO	Standing Committee	The Standing Committee shall assess the findings of the report of the Secretariat on the implementation of the Convention by the Parties concerned in relation to the provision on chartering arrangements provided for in Resolution Conf. 14.6 (Rev. CoP16). On the basis of this report and any other information available, the Standing Committee shall provide an assessment on the implementation of this provision and, where relevant, propose amendments to this provision at CoP17. https://cites.org/sites/default/files/eng/dec/valid16/E16-Dec.pdf, p. 12
2013	Decision 16.51 Introduction from the sea: chartering	NO	Parties	On the basis of the assessment of the Standing Committee and any other relevant information, the Parties should review at CoP17 the provisions on chartering provided for in Resolution Conf. 14.6 (Rev. CoP16). https://cites.org/sites/default/files/eng/dec/valid16/E16-Dec.pdf, p. 12
2013	Decision 16.52 Introduction from the sea: capacity building & special requirements of developing States	NO	Secretariat	The Secretariat shall develop capacity-building tools and materials for use by Parties (e.g. a module in the CITES Virtual College) related to the implementation of the Convention for specimens taken from the marine environment not under the jurisdiction of any State. https://cites.org/sites/default/files/eng/dec/valid16/E16-Dec.pdf, p. 13
2013	Notification No. 2013/023	NO	Parties	Request for information on planned and ongoing capacity-building activities on CITES-listed shark species 1. At its 16th meeting (CoP16, Bangkok, 2013), the Conference of the Parties adopted amendments to Appendices I and II that the Secretariat communicated to the Parties through Notification No. 2013/012 of 19 April 2013.

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				2. The Conference of the Parties decided to delay by 18 months the entry into effect of the inclusion in Appendix II of six taxa of sharks and manta rays, to enable Parties to resolve related technical and administrative issues. *Carcharhinus longimanus, Sphyrna lewini, Sphyrna mokarran, Sphyrna zygaena, Lamna nasus* and *Manta* spp. will thus be included in Appendix II on 14 September 2014. 3. The Secretariat has become aware of a number of activities undertaken by Parties and by intergovernmental and non-governmental organizations to help resolve these issues. These activities include providing technical and financial support at the national and international levels and building capacity for the implementation of the CITES listings of marine species in general, and of these taxa in particular. 4. As announced at CoP16, the European Union is providing substantial external funding to the Secretariat for such activities. In order to ensure the coherent and effective use of available resources, enhance the opportunity for cooperation among partners and maximize the impact of such capacity-building work, the Secretariat would appreciate receiving information on planned or ongoing activities of this type. 5. Parties are invited to send this information to the Secretariat NO later than 30 August 2013, so that it may share it among Parties and other interested partners in a timely manner. To facilitate the submission of information, the Secretariat has prepared a sample format which is annexed to this Notification. https://cites.org/sites/default/files/eng/notif/2013/E-Notif-2013-023.pdf
2015	Notification No. 2015/027	NO	Parties	Request for new information on fishery management measures for sharks 1. At its 16th meeting (CoP16, Bangkok, 2013), the Conference of the Parties agreed to include several shark species and all manta rays (*Carcharhinus longimanus, Lamna nasus, Sphyrna lewini, S. mokarran, S. zygaena*, and *Manta* spp.) in Appendix II. The listing into Appendix II entered into force on 14 September 2014, as communicated through Notification to the Parties No. 2014/042 of 12 September 2014. Several shark species had been included in the CITES Appendices prior to CoP16 (*Pristidae* spp. in Appendix I; *Carcharodon carcharias, Cetorhinus maximus* and *Rhincodon typus* in Appendix II). 2. Resolution Conf. 12.6 (Rev. CoP16) on Conservation and management of sharks directs the Animals Committee to examine new information provided by range States on trade and other available relevant data and information, and report their analyses at meetings of the Conference of the Parties. It furthermore encourages Parties to obtain information on implementation of national or regional plans of actions for the conservation and management of shark stocks, and to report directly on progress to the CITES Secretariat and at future meetings of the Animals Committee. 3. The Animals Committee discussed its mandate concerning sharks at its 27th meeting (Veracruz, April 2014), agreeing that the Secretariat should write a request to Parties for relevant new information that it could consider at its next meeting. 4. On behalf of the Animals Committee, the Secretariat hereby invites Parties to submit new information on shark fishery management measures, with particular emphasis on information pertaining to the shark species and manta rays that were included in Appendix II at CoP16, and the implementation of CITES provisions for trade in these species since 12 September 2014. Of special importance would be: a. available scientific data, such as stock assessment results; b. methodologies providing guidance for the making of non-detriment findings; c. challenges faced by Parties in implementing the new listings;

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				d. progress made to address such challenges; e. progress towards the adoption and implementation of National Plans of Action for Sharks, or other new information on trade in sharks and related matters; and f. new legislation concerning the conservation and management of sharks and rays. 5. The Secretariat would appreciate receiving any such information by email at info@cites.org by 1 July 2015 so that it can be made available to the Parties at the 28th meeting of the Animals Committee (Tel Aviv, 30 August – 3 September 2015). https://cites.org/sites/default/files/notif/E-Notif-2015-027.pdf
2016	**CoP17**			Proposals adopted to list Silky shark (*Carcharhinus falciformis*), all species of Thresher shark (*Alopias* spp.) and all species of Mobula rays (*Mobula* spp.) in Appendix II. To allow time for Parties to resolve the related technical and administrative issues, the entry into force of these listings was delayed by six months for Mobula rays (i.e., on 4 April 2017), and by 12 months for the newly added shark species (i.e. on 4 October 2017).
2016	Res. Conf. 12.6	As Rev. CoP18		Res. Conf. 12.6 on the Conservation and management of sharks revised and carried forward to next CoP.
2016	Resolution Conf. 12.6 (Rev. CoP17)	YES		Resolution Conf. 12.6 (Rev. CoP17) on conservation and management of sharks reads as follows: RECOGNIZING that sharks are particularly vulnerable to overexploitation owing to their late maturity, longevity and low fecundity; RECOGNIZING that there is a significant international trade in sharks and their products; RECOGNIZING that unregulated and unreported trade is contributing to unsustainable fishing of a number of shark species; RECOGNIZING the duty of all States to cooperate, either directly or through appropriate sub-regional or regional organizations in the conservation and management of fisheries resources; NOTING that IUCN's Red List of Threatened Species (2009.2) lists 181 shark taxa; RECOGNIZING that the International Plan of Action on the Conservation and Management of Sharks (IPOA-sharks) was prepared by the Food and Agriculture Organization of the United Nations (FAO) in 1999 and that all States whose vessels conduct directed fisheries or regularly take sharks in nondirected fisheries are encouraged by FAO's Committee on Fisheries (COFI) to adopt a National Plan of Action for the Conservation and Management of Shark Stocks (NPOA-Sharks); NOTING the contents of: Report of the technical workshop on the status, limitations and opportunities for improving the monitoring of shark fisheries and trade. Rome, 3-6 November 2008. FAO Fisheries and Aquaculture Report No. 897 (an advanced copy of which was circulated as document AC24 Inf. 6) and FAO (2009) Responsible fish trade. FAO Technical Guidelines for Responsible Fisheries. No. 11. Rome, FAO; NOTING that, through the adoption of Resolution Conf. 9.17 and Decisions 10.48, 10.73, 10.74, 10.93, 10.126, 11.94 11.151, 12.47-12.49, 13.42, 13.43 and 14.101-14.117, Parties to CITES have previously recognized the conservation threat that international trade poses to sharks; WELCOMING the report adopted at the 18th meeting of the Animals Committee that noted that CITES should continue to contribute to international efforts to address shark conservation and trade concerns; NOTING that States were encouraged by FAO to have prepared NPOAs for sharks by the COFI 24th session held in 2001;

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				NOTING that there is a significant lack of progress with the development and implementation of NPOAs; CONCERNED that insufficient progress has been made in achieving shark management through the implementation of IPOA-Sharks except in States where comprehensive shark assessment reports and NPOA-Sharks have been developed; and CONCERNED that the continued significant trade in sharks and their products is not sustainable; THE CONFERENCE OF THE PARTIES TO THE CONVENTION 1. INSTRUCTS the CITES Secretariat to inform FAO of the concerns of the CITES Parties regarding the significant lack of progress in implementing the IPOA-Sharks, and to urge FAO to take steps to encourage actively relevant States to develop NPOA-Sharks; 2. DIRECTS the Animals Committee to examine new information provided by range States on trade and other available relevant data and information, and report their analyses at meetings of the Conference of the Parties; 3. ENCOURAGES Parties to obtain information on implementation of NPOA-Sharks or regional plans, and to report directly on progress to the CITES Secretariat and at future meetings of the Animals Committee; 4. URGES FAO's COFI and Regional Fisheries Management Organizations (RFMOs) to strengthen their efforts to undertake the research, training, data collection, data analysis and shark management plan development outlined by FAO as necessary to implement the IPOA-Sharks; 5. ENCOURAGES Parties to assist in building financial and technical capacity in developing countries for shark and ray activities under CITES, and for the implementation of the IPOA- Sharks; 6. URGES Parties that are shark fishing States but that have not yet implemented an NPOA-Sharks, to develop their own NPOAs at the earliest opportunity and take steps to improve research and data collection on both fisheries and trade as a first step towards their Shark Plans, particularly the necessity to improve the collection of catch and trade data at the lowest taxonomic level possible (ideally by species); 7. FURTHER URGES Parties to discuss CITES activities within the appropriate RFMOs of which they are members; 8. ENCOURAGES Parties to improve data collection, management and conservation measures for shark species, implementing, enhancing and enforcing these actions through domestic, bilateral, RFMOs or other international measures; 9. DIRECTS the Animals Committee to make species-specific recommendations at meetings of the Conference of the Parties, if necessary, on improving the conservation status of sharks; 10. REQUESTS Management Authorities to collaborate with their national Customs authorities to expand their current classification system to allow for the collection of de-tailed data on shark trade including, where possible, separate categories for processed and unprocessed products, for meat, cartilage, skin and fins, and to distinguish imports, exports and re-exports and between shark fin products that are dried, wet, processed and unprocessed fins. Wherever possible, these data should be species-specific; 11. INSTRUCTS the Secretariat to monitor discussions within the World Customs Organization regarding the development of a Customs data model, and the inclusion therein of a data field to report trade in sharks at species level, and to issue Notifications to the Parties concerning any significant developments;

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				12. ENCOURAGES Parties, in close cooperation with FAO and RFMOs, to undertake or facilitate continued research to improve understanding of the nature of illegal, unreported and unregulated (IUU) fishing concerning sharks, identify the linkages between international trade in shark fins and meat, and IUU fishing; 13. ENCOURAGES Parties, intergovernmental and non-governmental bodies to undertake studies of trade in shark meat, including prices in major fish markets in order to better identify the shark products that are driving IUU fishing; and 14. DIRECTS the Animals Committee to report progress on shark and ray activities at the meetings of the Conference of the Parties. 15. ENCOURAGES range States of species in the family Potamotrygonidae to: a) note the findings and conclusions of the freshwater stingray workshop (document AC24 Doc. 14.2), and increase their efforts to improve data collection on the scale and impact of the threats facing stingray species and populations from collection for ornamental trade, commercial fisheries for food and habitat damage; b) consider implementing or reinforcing national regulations regarding the management and reporting of capture of and international trade in freshwater stingrays for all purposes, including commercial fishing for food and ornamental trade, and standardizing these measures across the region, for example through existing South American intergovernmental bodies; and c) consider the listing of endemic and threatened species of freshwater stingrays (Potamotrygonidae) in CITES Appendix III as needing the cooperation of other Parties in the control of trade. https://cites.org/sites/default/files/document/E-Res-12-06-R18.pdf
2016	Resolution Conf. 14.6	As Rev. CoP 16		Res. Conf. 14.6 on Introduction from the sea carried forward to next CoP. https://cites.org/sites/default/files/document/E-Res-14-06-R16.pdf
2016	Decision 17.181 (Introduction from the sea)	NO	Secretariat	The Secretariat shall report to the Standing Committee, as appropriate, on the results of the negotiations on the development of an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ). https://cites.org/sites/default/files/eng/cop/17/Source_docs/New%20Decisions%20adopted%20at%20the%2017th%20meeting%20of%20the%20Conference%20of%20the%20Parties.pdf
2016	Decision 17.215	NO	Parties that are also Parties to CMS and /or CMS Sharks MoU	Parties that are also Parties to the Convention on Migratory Species (CMS) and/or the Memorandum of Understanding on the Conservation of Migratory Sharks (CMS Sharks MoU) are urged to work through the mechanisms of CMS and the Sharks MoU to develop and improve methods for conservation of sharks and rays. https://cites.org/sites/default/files/eng/cop/17/Source_docs/New%20Decisions%20adopted%20at%20the%2017th%20meeting%20of%20the%20Conference%20of%20the%20Parties.pdf
2016	Decision 17.216	NO	Standing Committee	On the basis of information provided by the Secretariat and the Animals Committee, the Standing Committee shall consider issues concerning the conservation and management of sharks and rays, and provide guidance as appropriate, pertaining to: a) legislative matters that might arise in exporting, transit or consumer countries, and those relating to legality of acquisition and introduction from the sea;

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				b) identification and traceability, taking into consideration requirements that have been developed for the trade in specimens of other Appendix-II species, and their applicability to specimens of CITES-listed sharks and rays in trade; c) conservation and management measures for sharks and rays taken by Regional Fisheries Management Organisations; and d) coherence of CITES provisions concerning sharks and rays with conservation and management measures of other relevant multilateral environmental agreements; The Standing Committee shall report on the implementation of this decision, with recommendations as appropriate, at the 18th meeting of the Conference of the Parties. https://cites.org/sites/default/files/eng/cop/17/Source_docs/New%20Decisions%20adopted%20at%20the%2017th%20meeting%20of%20the%20Conference%20of%20the%20Parties.pdf
2017	Notification No. 2017/031	NO		Request for new information on shark and ray conservation and management activities, including legislation 1. At its 17th meeting (CoP17, Johannesburg, 2016), the Conference of the Parties agreed to include Silky shark (*Carcharhinus falciformis*), all species of Thresher shark (*Alopias* spp.) and all species of Mobula rays (*Mobula* spp.) in Appendix II. To allow time for Parties to resolve the related technical and administrative issues, the entry into force of these listings was delayed by six months for Mobula rays (i.e., on 4 April 2017), and by 12 months for the newly added shark species (i.e. on 4 October 2017). 2. Resolution Conf. 12.6 (Rev. CoP17) on Conservation and management of sharks directs the Animals Committee to examine new information provided by range States on trade and other available relevant data and information, and report their analyses at meetings of the Conference of the Parties. It furthermore encourages Parties to obtain information on implementation of National Plans of Actions for Sharks or regional plans, and to report directly on progress to the CITES Secretariat and at future meetings of the Animals Committee. 3. Furthermore, the Parties adopted Decisions 17.209 to 17.216 on Sharks and rays (Elasmobranchii spp.) at CoP17. Decision 17.211 directs the Secretariat to: a) issue a notification, requesting Parties to provide new information on their shark and ray conservation and management activities, including legislation, and make the responses available to the Animals Committee for its consideration; and b) provide a summary of information in the CITES trade database on trade in CITES-listed sharks and rays since 2000 for consideration by the Animals Committee. 4. On behalf of the Animals Committee, the Secretariat hereby invites the Parties to submit any new information on shark and ray conservation and management activities. Information of special importance to include in the submission could include the following: a) scientific information concerning sharks and rays, such as the results of stock assessments, management and conservation efforts, and research activities; b) examples of non-detriment findings; information and methods providing guidance for the making of national or regional non-detriment findings; c) challenges faced by Parties in implementing the new listings; d) progress made to address such challenges; e) status of the development, adoption or implementation of National Plans of Action for Sharks, and information on national or regional regulatory measures concerning the management or conservation of sharks and rays;

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				f) information on trade in sharks and rays, and other available relevant data and information; and g) legislation concerning the conservation and management of sharks and rays. 5. Parties are requested to submit the information, by 19 May 2017 at the latest so that it can be made available at the 29th meeting of the Animals Committee (Geneva, 18-22 July 2017). https://cites.org/sites/default/files/notif/E-Notif-2017-031.pdf
2019	**CoP18**			Proposals adopted to list shortfin mako shark (*Isurus oxyrinchus)* with longfin mako (*I. paucus*) as a lookalike species, all six species of giant guitarfishes genus *Glaucostegus*, (four as lookalikes) and all species of wedgefishes family Rhinidae (eight species, including six lookalikes) in Appendix II.
2019	Res. Conf. 12.6	As Rev. CoP18		Res. Conf. 12.6 on the Conservation and management of sharks revised and carried forward to next CoP.
2019	Resolution Conf. 14.6	As Rev. CoP 16		Res. Conf. 14.6 on Introduction from the sea carried forward to next CoP.
2019	Decision 18.157 (Introduction from the sea)	YES	Secretariat	The Secretariat shall continue to monitor the implementation of Resolution 14.6 (Rev. CoP16) on Introduction from the sea, including the provisions on chartering, and report as appropriate to the Standing Committee. https://cites.org/eng/dec/index.php/42065
2019	Decision 18.158 (Introduction from the sea)	YES	Standing Committee	The Standing Committee shall, as appropriate, review the information provided by the Secretariat as requested in Decisions 18.157 and 17.181 and, if necessary, propose measures for consideration at the 19th meeting of the Conference of the Parties, which may include amendments to Resolution Conf. 14.6 (Rev. CoP16). https://cites.org/eng/dec/index.php/42065
2019	Decision 18.218	YES	Parties	Parties are encouraged to: a) provide information to the Secretariat in support of the study called for in Decision 18.221 paragraph a), in particular on any national management measures that prohibit commercial take or trade, and in response to the Notification called for in Decision 18.220; b) in accordance with their national legislation, provide a report to the Secretariat about the assessment of stockpiles of shark parts and derivatives for CITES-listed species stored and obtained before the entry into force of the inclusion in CITES in order to control and monitor their trade, if applicable; c) inspect, to the extent possible under their national legislation, shipments of shark parts and derivatives in transit or being transhipped, to verify presence of CITES-listed species and verify the presence of a valid CITES permit or certificate as required under the Convention or to obtain satisfactory proof of its existence; and d) continue to support the implementation of the Convention for sharks, including by providing funding for the implementation of Decisions 18.219, 18.221 and 18.222, and considering seconding staff members with expertise in fisheries and the sustainable management of aquatic resources to the Secretariat. https://cites.org/eng/dec/index.php/42086
2019	Decision 18.219	YES	Secretariat	Subject to external funding, the Secretariat shall continue to provide capacity-building assistance for implementing Appendix-II shark and ray listings to Parties upon request. https://cites.org/eng/dec/index.php/42086
2019	Decision 18.220	YES	Secretariat	The Secretariat shall: a) issue a Notification to the Parties, inviting Parties to:

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				i) provide concise summaries of new information on their shark and ray conservation and management activities, in particular: A. the making of non-detriment findings; B. the making of legal acquisition findings; C. the identification of CITES-listed shark-products in trade; and D. recording stockpiles of commercial and/or pre-Convention shark parts and derivatives for CITES Appendix-II elasmobranch species and controlling the entry of these stocks into trade; and ii) highlight any questions, concerns or difficulties Parties are having in writing or submitting documentation on authorized trade for the CITES Trade Database; b) provide information from the CITES Trade Database on commercial trade in CITES-listed sharks and rays since 2000, sorted by species and, if possible, by product; c) disseminate existing guidance identified, or newly developed, guidance on the control and monitoring of stockpiles of shark parts and derivatives pursuant to Decision 18.224, paragraph b) by the Standing Committee; and d) collate this information for the consideration of the Animals Committee and the Standing Committee. https://cites.org/eng/dec/index.php/42086
2019	Decision 18.221	YES	Secretariat	The Secretariat shall, subject to external funding, and in collaboration with relevant organizations and experts: a) conduct a study to investigate the apparent mismatch between the trade in products of CITES-listed sharks recorded in the CITES Trade Database and what would be expected against the information available on catches of listed species; and b) bring the results of the study in paragraph a) to the attention of the Animals Committee or Standing Committee, as appropriate. https://cites.org/eng/dec/index.php/42086
2019	Decision 18.222	YES	Secretariat	The Secretariat, subject to external funding, is requested to collaborate closely with the Food and Agriculture Organization of the United Nations (FAO) to: a) verify that information about Parties' shark management measures is correctly reflected in the shark measures database developed by FAO (http://www.fao.org/ipoa-sharks/database-of-measures/en/) and, if not, support FAO in correcting the information; b) compile clear imagery of wet and dried unprocessed shark fins (particularly, but not exclusively, those from CITES-listed species) along with related species level taxonomic information to facilitate refinement of iSharkFin software developed by FAO; c) conduct a study analysing the trade in non-fin shark products of CITES-listed species, including the level of species mixing in trade products and recommendations on how to address any implementation challenges arising from the mixing that may be identified; and d) bring the results of activities in paragraphs a) to c) to the attention of the Animals Committee or Standing Committee, as appropriate. https://cites.org/eng/dec/index.php/42086
2019	Decision 18.223	YES	Animals Committee	The Animals Committee, in collaboration with relevant organisations and experts, shall: a) continue to develop guidance to support the making of non-detriment findings (NDFs), in particular in data-poor, multi-species, small-scale/artisanal, and non-target (bycatch) situations, for CITES-listed shark species; and

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				b) report the outcomes of its work under Decision 18.223, paragraph a) to the 19th meeting of the Conference of the Parties. https://cites.org/eng/dec/index.php/42086
2019	Decision 18.224	YES	Standing Committee	The Standing Committee shall: a) develop guidance on the making of legal acquisition findings, and related assessments for introductions from the sea for CITES-listed shark species in the context of the implementation of Resolution Conf. 18.7 on Legal acquisition findings; b) develop new guidance or identify existing guidance on the control and monitoring of stockpiles of shark parts and derivatives, in particular for specimens caught prior to the inclusion of the species in Appendix II; and c) report its findings under Decision 18.224, paragraphs a) and b) to the 19th meeting of the Conference of the Parties. https://cites.org/eng/dec/index.php/42086
2019	Decision 18.225	YES	Standing Committee, Animals Committee	The Animals Committee and Standing Committee shall analyse and review the results of any of the activities under Decisions 18.221 and 18.222 brought to their attention by the Secretariat, and with the support of the Secretariat prepare a joint report for the 19th meeting of the Conference of the Parties on the implementation of these Decisions. https://cites.org/eng/dec/index.php/42086
2019	Decision 18.39 (Capacity building)	YES	Parties	Parties are invited to: a) provide information to the Secretariat regarding capacity-building materials and efforts that could be shared among Parties; b) utilize the CITES Virtual College to support capacity-building activities and provide the Secretariat with inputs and financial support to update and improve its services, including translation of the contents into national languages; c) use the CITES implementation reports, as well as direct expression of interest, to inform the Secretariat about their capacity needs; d) support the capacity-building efforts of other Parties by providing scholarships for in- person training or training opportunities, and by translating materials into non- working languages of the Convention; and e) share ideas, experiences, and information related to the development of a capacity building framework in response to the Notification to Parties issued by the Secretariat under Decision 18.46, paragraph a). https://cites.org/eng/dec/index.php/42030
2019	Decision 18.40 (Capacity building)	YES	Animals Committee Plants Committee	The Animals and Plants Committees shall review the report of the Secretariat called for in Decision 18.46, paragraph c), and provide input and make recommendations to the Standing Committee. https://cites.org/eng/dec/index.php/42030
2019	Decision 18.41 (Capacity building)	YES	Standing Committee	The Standing Committee shall establish a working group on capacity-building to advise the Standing Committee on the actions outlined in Decisions 18.42 and 18.43 for the development of an integrated capacity-building framework to improve implementation of the Convention. The working group shall include, but not be limited to, participation of: members of the Standing Committee, the Animals and Plants Committees, the Budget and Finance Sub- Committee, and the

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				Secretariat. The working group shall also include a balanced representation of Parties from each region, as well as Parties that are donors and Parties that are recipients of capacity support. https://cites.org/eng/dec/index.php/42030
2019	Decision 18.42 (Capacity building)	YES	Standing Committee	The Standing Committee shall provide guidance to the Secretariat to refine and consolidate the areas of capacity-building efforts, taking into account the discussions on the Compliance Assistance Programme and Country-wide Significant Trade Reviews, as well as the discussion on the development of an integrated capacity building framework outlined in Decision 18.41.* * *The Secretariat believes that the intention was to refer to Decision 18.41 and not 18.43.* https://cites.org/eng/dec/index.php/42030
2019	Decision 18.43 (Capacity building)	YES	Standing Committee	The Standing Committee shall undertake the following: a) review Resolution Conf. 3.4 on Technical cooperation with the view to incorporating capacity-building needs; b) consider the inputs and recommendations of the Animals and Plants Committees pursuant to Decision 18.40; and c) make recommendations, including a possible new or revised draft resolution as well as models, tools and guiding documents on capacity building, as appropriate, based on the outcome of the work in Decision 18.46 as well as documents CoP18 Doc. 21.2 and Doc. 21.3, for consideration by the Conference of the Parties at its 19th meeting. https://cites.org/eng/dec/index.php/42030
2019	Decision 18.44 (Capacity building)	YES	Secretariat	The Secretariat shall: a) collect information on capacity-building materials and efforts from Parties and others, and make them available to Parties through the CITES website; b) subject to the availability of external funding, undertake the revision and enhancement of the CITES website and of the CITES Virtual College, including selected online courses, to update the content and to improve their effectiveness in providing access to capacity-building resources to Parties; c) subject to the availability of external funding, provide compliance-related and other general capacity-building support to Parties; d) inform the Standing, Animals and Plants Committees when needs arise for their review or inputs on capacity-building materials; and e) subject to the availability of external funding, further cooperate with institutions and organizations to provide Parties with joint capacity-building assistance of relevance to CITES, and provide scholarships for in-person training or training opportunities, and translate materials into non-working languages of the Convention, for example through: the Food and Agriculture Organization of the United Nations (FAO), the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the International Consortium on Combating Wildlife Crime (ICCWC) (including each of its partners), the International Trade Centre (ITC), the International Tropical Timber Organization (ITTO), the International University of Andalusia (UNIA), the United Nations Conference on Trade and Development (UNCTAD), the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), the World Organisation for Animal Health (OIE); and the World Trade Organization (WTO). https://cites.org/eng/dec/index.php/42030

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
2019	Decision 18.45 (Capacity building)	YES	Secretariat	In carrying out capacity-building activities, the Secretariat shall pay particular attention to the needs of Parties identified through compliance procedures, recently acceded Parties, developing country Parties, and Small Island Developing States. https://cites.org/eng/dec/index.php/42030
2019	Decision 18.46 (Capacity building)	YES	Secretariat	The Secretariat shall: a) based on document CoP18 Doc. 21.3 Annex 5 and in consultation with the Standing Committee, develop a questionnaire and issue a Notification to Parties transmitting the questionnaire to gather input to inform the development of an integrated capacity-building framework; b) liaise with other Multilateral Environmental Agreements to collect information regarding how their capacity-building efforts are targeted, accomplished, and tracked; c) prepare a report summarizing the outcomes of its implementation of Decision 18.46, paragraphs a) and b), the outcomes of the needs assessment working group summarized in document SC66 Doc. 20.2 (Rev.1), and the information on capacity- building needs provided by Parties through their implementation reports, for consideration by the Animals and Plants Committees; and d) subject to the availability of external funding and in consultation with the Standing Committee, Animals and Plants Committees, and the Budget and Finance Sub- Committee, organize a workshop that would facilitate the Standing Committee's tasks set out in Decisions 18.42 and 18.43. https://cites.org/eng/dec/index.php/42030
2019	Conf. 12.6 (Rev. CoP18) [Amended at the 15th, 16th, 17th and 18th meetings of the Conference of the Parties.] *For the purposes of this Resolution, the term "shark" is taken to include all species of sharks, skates, rays and chimaeras, in alignment with the Food and Agriculture Organization (FAO) International Plan of Action for the Conservation*	YES		Conservation and management of sharks: RECOGNIZING that many sharks are particularly vulnerable to overexploitation owing to their late maturity, longevity and low fecundity; RECOGNIZING that there is a significant international trade in sharks and their products; RECOGNIZING that unregulated and unreported trade is contributing to unsustainable fishing of a number of shark species; RECOGNIZING the duty of all States to cooperate, either directly or through appropriate sub-regional or regional organizations in the conservation and management of fisheries resources; RECALLING that a number of shark species are included in Appendices I and II; NOTING the complexity of the implementation of CITES trade controls for shark trade, but also the notable successes in the implementation of the shark and ray listings; RECALLING that in accordance with the relevant provisions of the Convention, international trade in CITES-listed sharks and their parts and derivatives shall only take place if it is legally acquired, non-detrimental to the survival of the species in the wild and properly reported; CONCERNED that outstanding implementation challenges need to be addressed to ensure that international trade in CITES-listed sharks and their parts and derivatives is conducted and managed in accordance with the provisions of the Convention; WELCOMING the availability of several guidelines and examples for the making of non-detriment findings (NDFs) for trade in CITES-listed sharks; RECOGNIZING that the International Plan of Action on the Conservation and Management of Sharks (IPOA-sharks) was prepared by the Food and Agriculture Organization of the United Nations (FAO) in 1999 and that all States whose vessels conduct directed fisheries or regularly take sharks in non-directed fisheries are encouraged by FAO's Committee on Fisheries (COFI) to adopt a National Plan of Action for the Conservation and Management of Shark Stocks (NPOA-Sharks);

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
	and Management of Sharks (IPOA-Sharks)			NOTING that there has been slow progress with the development and implementation of NPOAs; CONCERNED that insufficient progress has been made in achieving shark management through the implementation of IPOA-Sharks except in States where comprehensive shark assessment reports and NPOA-Sharks have been developed; and WELCOMING the entry into force of the FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing in 2016 and recognizing the value it offers to improve compliance with CITES provisions for listed shark and ray species; THE CONFERENCE OF THE PARTIES TO THE CONVENTION 1. INSTRUCTS the Secretariat to maintain close collaboration with FAO, Regional Fisheries Management Organizations (RFMOs) and Regional Fisheries Bodies (RFBs), the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and other relevant international organizations to improve coordination and synergies in the implementation of CITES provisions for CITES-listed shark species; 2. ENCOURAGES the Secretariat and Parties to continue to assist in building financial and technical capacity in developing countries for shark and ray activities under CITES; 3. ENCOURAGES Parties to improve data collection and reporting (where possible by species and gear type), adopt management and conservation measures for shark species, and enhance implementation and enforcement of these actions through domestic, bilateral, RFMOs or other international measures; 4. URGES Parties that are shark fishing States, that have not yet done so, to develop NDFs, as well as an NPOA, at the earliest opportunity or, when insufficient information is available, take steps to improve research and data collection at the species level on both fisheries and trade as a first step towards developing an NPOA Sharks and making NDFs, with a view to establishing long-term data collection on the status of shark and ray stocks; 5. INVITES Parties that engage in directed or non-directed shark fishing activities of shared stocks to collect and share, on a regional basis such as through RFMOs, RFBs or other regional collaborations, where they exist, data on effort, catches, live releases, discards, landings and trade (to species level and by gear type where possible), and make this information available to assist Scientific Authorities in the making of NDFs of such shared stocks; 6. ENCOURAGES Parties that are members of or Parties to other relevant international instruments, such as RFMOs, RFBs or CMS, to improve coordination between the respective national focal points, where appropriate, and work through the respective mechanisms of these instruments to strengthen research, training and data collection and improve coordination with activities under CITES; 7. FURTHER ENCOURAGES Parties to share information about stricter domestic measures pertaining to shark fisheries and trade, in particular zero export quotas or trade bans; 8. REQUESTS Management Authorities to collaborate with their national customs authorities to expand their current classification system to allow for the collection and reporting of detailed data on shark trade including, where possible, separate categories for processed and unprocessed products, for meat, cartilage, skin and fins, and to distinguish imports, exports and re-exports and between shark fin products that are dried, wet, processed and unprocessed fins. Wherever possible, these data should be species-specific; 9. INSTRUCTS the Secretariat to monitor discussions within the World Customs Organization regarding the development of a customs data model, and the inclusion therein of a data field to report trade in sharks at species level, and to issue Notifications to the Parties concerning any

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				significant developments; 10. ENCOURAGES Parties, in close cooperation with FAO, RFBs and RFMOs, to undertake or facilitate continued research to improve understanding of the nature of illegal, unreported and unregulated (IUU) fishing concerning sharks, identify the linkages between international trade in shark fins and meat, and IUU fishing; 11. FURTHER ENCOURAGES Parties, intergovernmental and non-governmental bodies to develop robust, low-cost tools and systems, where not already existing, to ensure that shark species, in particular CITES-listed species, are identified accurately at the first point of capture/landing, and undertake studies of trade in all shark products; 12. INVITES Parties to share through the Secretariat their experiences in implementing CITES provisions for listed shark species, in particular NDFs, legal acquisition findings and traceability systems; 13. DIRECTS the Animals Committee to periodically examine new information provided by range States on the implementation of the shark listings and other available relevant data and information; 14. DIRECTS the Animals Committee to make species-specific recommendations, if necessary, on improving the conservation status of sharks and implementation of shark and ray listings; 15. DIRECTS the Standing Committee to provide guidance on regulatory matters in connection to the implementation of the shark listings, including but not limited to the determination of legal acquisition, traceability and enforcement issues, as appropriate; and 16. DIRECTS the Animals Committee and Standing Committee to report progress on shark and ray activities at the meetings of the Conference of the Parties, as appropriate. https://cites.org/sites/default/files/document/E-Res-12-06-R18
2020	Notification No. 2020/016			Request for new information on shark and ray conservation and management activities, including legislation title 1. At its 18th meeting (CoP18, Geneva, 2019), the Conference of the Parties adopted Decisions 18.218 to 18.225 on Sharks and rays (Elasmobranchii spp.). Decision 18.220 directs the Secretariat to: a) issue a Notification to the Parties, inviting Parties to: i) provide concise summaries of new information on their shark and ray conservation and management activities, in particular: A. the making of non-detriment findings; B. the making of legal acquisition findings; C. the identification of CITES-listed shark-products in trade; and D. recording stockpiles of commercial and/or pre-Convention shark parts and derivatives for CITES Appendix-II elasmobranch species and controlling the entry of these stocks into trade; and ii) highlight any questions, concerns or difficulties Parties are having in writing or submitting documentation on authorized trade for the CITES Trade Database; b) provide information from the CITES Trade Database on commercial trade in CITES listed sharks and rays since 2000, sorted by species and, if possible, by product; c) disseminate existing guidance identified, or newly developed, guidance on the control and monitoring of stockpiles of shark parts and derivatives pursuant to Decision18.224, paragraph b) by the Standing Committee; and d) collate this information for the consideration of the Animals Committee and the Standing Committee.

Year	Resolution / Decision / Notification	Still valid?	Directed to:	Content of Resolution / Decision / Notification (Sharks)
				2. The Secretariat hereby invites Parties to submit concise summaries of any new information on shark and ray conservation and management activities, particularly under the four subheadings contained in paragraph a) i) of Decision 18.220. 3. Pursuant to paragraph a) ii) of Decision 18.220, the Secretariat further invites Parties to highlight any questions, concerns or difficulties they are having in writing or submitting documentation on authorized trade for the CITES Trade Database. 4. In accordance with Decision 18.220, paragraph d), the Secretariat will collate this information for consideration at the 31st meeting of the Animals Committee (Geneva, July 2020) and the 73rd meeting of the Standing Committee (Geneva, October 2020, tbc). 5. Responses should be submitted by email to info@cites.org and daniel.kachelriess@cites.org NO later than 15 April 2020. https://cites.org/sites/default/files/notif/E-Notif-2020-016.pdf

Table A1.3. Humphead wrasse – CITES Resolutions, Decisions, Notifications

Year	Resolution / Decision / Notification	Still valid?	Directed to	Content of Resolution / Decision / Notification (Humphead wrasse)
2010	**CoP 15**			
2010	Decision 15.86 (Suspended after CoP 16, merged in 16.139)	No	Parties	All Parties are urged to: a) consider adopting appropriate stricter domestic measures under the remit of the legislation of the Party, including limiting the international trade in Humphead wrasse to be conducted by air only, to strengthen the control and enforcement of the Appendix-II listing for the species; b) improve monitoring of trade in Humphead wrasse, especially through inspections of boxes of mixed live reef fish by exporting, re-exporting and importing countries; c) exchange law enforcement information of relevance to Humphead wrasse with other relevant Parties, and regularly compile and forward to the Secretariat for distribution a comprehensive summary of Convention violations for the species; d) increase awareness of the CITES listing for Humphead wrasse, including by improving identification capacity among law enforcement officers through the use of training and educational materials; e) facilitate discussion on practicable and acceptable options for action to be taken in case of illegally imported/confiscated live fish; and f) provide information to the Secretariat on actions taken to implement this Decision, in order to inform the work of the Humphead wrasse Working Group to be established by the Standing Committee pursuant to Decision 15.87. https://cites.org/sites/default/files/eng/dec/valid15/E15-Dec.pdf, p. 27
2010	Decision 15.87 (deleted at CoP18)	No	Standing Committee	The Standing Committee shall, contingent on the availability of external funding, establish a Humphead wrasse Working Group, which is to: a) review the actions taken by relevant Parties to implement this decision; b) develop and recommend to the Standing Committee further options for improving control and enforcement in relation to the international trade in Humphead wrasse, and ensuring the effectiveness of the Appendix-II listing of the species; and c) report back and recommend appropriate follow-up actions at the 16th meeting of the Conference of the Parties to support this initiative. https://cites.org/sites/default/files/eng/dec/valid15/E15-Dec.pdf, p. 27
2010	Decision 15.88 (Suspended after CoP 16)	No	CITES Secretariat	The Secretariat is requested: a) to assist Parties in the capacity-building activities outlined in paragraph d) of Decision 15.86; and b) where necessary, to provide assistance or advice to Parties to address the handling of confiscated live Humphead wrasse. https://cites.org/sites/default/files/eng/dec/valid15/E15-Dec.pdf, p. 27
2011	Notification No. 2011/015	NO	Parties	Informing Parties of Decisions from CoP17 https://cites.org/sites/default/files/eng/notif/2011/E015
2013	**CoP 16**			
2013	Decision 16.139 (Rev.CoP17) (deleted at CoP18)	No	Parties	To implement effectively the Appendix-II listing of the Humphead wrasse, Parties should: a) use existing documents listed in *paragraph 13 of document CoP16 Doc. 62 (Rev. 1) in their implementation of the Appendix-II listing of the Humphead wrasse; and b) investigate reported violations of the Convention and of related national laws in relation to trade in the Humphead wrasse, and take appropriate enforcement actions in accordance with their national legislation. In addition, range States and importing Parties should strengthen bilateral and regional cooperation, including intelligence exchange and enforcement actions.

Year	Resolution / Decision / Notification	Still valid?	Directed to	Content of Resolution / Decision / Notification (Humphead wrasse)
				https://cites.org/sites/default/files/eng/dec/valid16/E16-Dec.pdf, p. 33 *Paragraph 13 of document CoP16 Doc. 62 (Rev. 1) a) Development of fisheries management tools for trade in Humphead wrasse, *Cheilinus undulatus*, in compliance with Article IV of CITES (AC22 Inf. 5); b) Humphead Wrasse, additional management measures needed to combat IUU fishing (CoP15 Doc. 51); c) Decision 15.86; d) Workshop Report on the Trade of *Cheilinus undulatus* (Humphead wrasse / Napoleon Wrasse) & CITES implementation (Annex to SC61 Doc. 49); e) Monitoring and management of the Humphead wrasse, *Cheilinus undulatus* (FAO Fisheries and Aquaculture Circular No. 1048); f) Final Report of the Western Pacific Workshop on Policy, Enforcement and Sustainable Trade for the CITES Appendix II – listed Humphead/Napoleon Wrasse, *Cheilinus undulatus* (5 - 7 June 2006) published by TRAFFIC; g) FAO Code of Conduct for Responsible Fisheries; and h) Disposal of confiscated live specimens of species included in the Appendices [Resolution Conf. 10.7 (Rev. CoP15)].
2013	Decision 16.140 (Rev.CoP17) (deleted at CoP18)	No	IUCN	The International Union for Conservation of Nature (IUCN) Groupers and Wrasses Specialist Group continue its support to Parties in achieving sustainable fishing of the Humphead wrasse and in making non-detriment findings in compliance with CITES. https://cites.org/sites/default/files/eng/dec/valid16/E16-Dec.pdf, p. 33
2016	**CoP 17**			
2016	Decision 17.201 (deleted at CoP18)	No	CITES Secretariat	Subject to external funds, the Secretariat shall collaborate with the Food and Agriculture Organization of the United Nations (FAO) in undertaking an FAO project to support Indonesia in achieving sustainable management of, and trade in Humphead wrasse, and shall cooperate with FAO to report on the progress and outcomes of this project to the Standing Committee. https://cites.org/sites/default/files/eng/cop/17/Source_docs/New%20Decisions%20adopted%20at%20the%2017th%20meeting%20of%20the%20Conference%20of%20the%20Parties.pdf
2016	Decision 17.202 (deleted at CoP18)	No	CITES Secretariat	The Secretariat shall report on the implementation of the decisions on Humphead wrasse (*Cheilinus undulatus*) at the 69th or 70th meeting of the Standing Committee https://cites.org/sites/default/files/eng/cop/17/Source_docs/New%20Decisions%20adopted%20at%20the%2017th%20meeting%20of%20the%20Conference%20of%20the%20Parties.pdf
2018	Notification No. 2018/022	YES	Parties	Transportation mode of Napoleon Fish (*Cheilinus undulatus*) export from Indonesia 1. This Notification is being published at the request of Indonesia. 2. The Indonesian Authority has allowed export of Napoleon Fish (*Cheilinus undulatus*) by sea transportation with the following requirements: a) Vessels must have a valid license (Farmed Fish Carrier License) from the Ministry of Marine Affairs and Fisheries, Republic of Indonesia to transport Napoleon Fish specimen (listed on the license document). b) The specimens of Napoleon Fish being exported are produced from sea-ranching activities (source code R) with specified size of 1000 grams to 3000 grams. c) All specimens of Napoleon Fish must be accompanied by the required CITES export permit. 3. Shipments fulfilling the above requirements are not subject to the voluntary annual export quota submitted by Indonesia for Napoleon Fish from wild harvest (source code W). Transport of specimens of Napoleon Fish from wild harvest (source code W) continues to be allowed only by air. 4. Indonesia kindly asks the CITES Management Authority of the destination country to check the validity of the shipment upon its arrival to ensure only legal specimens are traded. 5. This notification is valid until further notice.

Year	Resolution / Decision / Notification	Still valid?	Directed to	Content of Resolution / Decision / Notification (Humphead wrasse)
				6. For further information on this export of Napoleon Fish, please contact the CITES Management Authority of Indonesia at macites@menlhk.go.id, copy to subditkonvensi.kkh@gmail.com. https://cites.org/sites/default/files/notif/E-Notif-2018-022.pdf
2018	Notification No. 2018/066	No	Parties	At its 17th meeting (CoP17, Johannesburg, 2016), the Conference of the Parties adopted and renewed several Decisions on Humphead wrasse (*Cheilinus undulatus*), including the following: 15.87 (Rev. CoP17), 16.139 (Rev. CoP17) and 17.202 https://cites.org/sites/default/files/notif/E-Notif-2018-066
2019	**CoP 18**			
2019	Decision 18.209	Yes	CITES Secretariat	The Secretariat, subject to external funding, shall invite the Food and Agriculture Organisation of the United Nations (FAO) and the International Union for Conservation of Nature (IUCN) Groupers and Wrasses Specialist Group to assist it in supporting major exporting and importing countries of *Cheilinus undulatus*, upon request, to address remaining CITES implementation challenges and ensure well-regulated, sustainable management of, and trade in, the species. https://cites.org/eng/dec/index.php/42084

Annex 2. Reports submitted to CITES CoP, SC and AC

Table A2.1. Seahorses - CITES AC, SC, CoP reports

Year	Meeting	Title	Origin	Author	Link to seahorse reports (pdfs)
2000 April	CoP11	Trade in seahorses and other members of the family Syngnathidae	US & Australia		CoP11 Doc.36
2000 April	CoP11	Draft decision of the Conference of the Parties: Conservation of seahorses and other members of the family Syngnathidae	Working Group of Committee I		CoP11 Com.11, CoP11 Com 11.6. (page 17 of this doc)
2001 Aug	AC17	Conservation of seahorses and other members of the family Syngnathidae (Decision 11.97): Report of the working group	Working Group	Chair of the working group on Syngnathids	AC17 Doc.18.1
2002 April	AC18	Conservation of seahorses and other members of the family Syngnathidae (Decisions 11.97 and 11.153): Report of the working group	Working Group	Chair of the working group on Syngnathids	AC18 Doc. 18.18
2002 Nov	CoP12	Inclusion of all species seahorses in the genus *Hippocampus* on Appendix II of CITES (US)	US		CoP12 Inf.22
2002 Nov	CoP12	Conservation of seahorses and other members of the family Syngnathidae	Animals Committee		CoP12 Doc. 12.43
2003 Aug	AC19	Conservation of seahorses and other members of the family Syngnathidae (Decision 12.54): Implementation of the Appendix-II listing for *Hippocampus* spp.	US		AC19 Doc. 16.1
2003 Aug	AC19	Conservation of Seahorses and other members of the family Syngnathidae (Decision 12.54): universal minimum size limit for seahorses	Chair of the working group on Syngnathids		AC19 Doc. 16.2
2004 Mar	AC20	Seahorse conservation and trade (workshop in Mazatlán, Mexico)	US & Mexico		AC20 Inf. 24 (Rev.)
2004 Mar	AC20	Seahorses and other members of the family Syngnathidae (Decision 12.54) - Report of the working group			AC20 Doc. 20
2008 April	AC23	Review of Significant Trade in specimens of Appendix-II species, Selection of Species for Trade Reviews following CoP14	Secretariat		AC23 Doc. 8.5
2008 April	AC23	Ornamental Fish International (OFI) report from CITES – 23rd meeting of the Animals Committee			Available from authors on request
2008 April	AC23	Review of Significant Trade in Specimens of Appendix-II Species (Agenda Items 8.4 and 8.5)	AC		AC23 WG1 Doc. 1
2008 April	AC23	OFI report from CITES – 23rd meeting of the Animals Committee			**
2009 April	AC24	Review of Significant Trade in specimens of Appendix-II species, Selection of Species following CoP14	Secretariat		AC24 Doc. 7.4 (Rev. 1)
2009 April	AC24	Review of Significant Trade in Specimens of Appendix-II Species (Agenda Item 7)	AC		AC24 WG1 Doc. 1
2009 April	AC24	Executive Summary (Section 7.4)			AC24 Sum. 4
2011 July	AC25	Review of Significant Trade in specimens of Appendix-II species, Species selected at AC24 (summarises which range States asked and which replied)	Secretariat		AC25 Doc. 9.5

Year	Meeting	Title	Origin	Author	Link to seahorse reports (pdfs)
2011 July	AC25	Contains range State replies			AC25 Doc. 9.5 Addendum
2011 July	AC25	Review of Significant Trade in specimens of Appendix-II species, Selection of species for trade reviews following CoP15	Secretariat		AC25 Doc. 9.6
2011 July	AC25	Review of Significant Trade in Specimens of Appendix-II Species (Agenda Items 9.2, 9.3, 9.4, 9.5, 9.6 and 9.7) (which retained/eliminated)	Secretariat		AC25 WG1 Doc.1
2011 July	AC25	AC25 Summary Record			AC25 Summary
2012 Mar	AC26	Review of Significant Trade in specimens of Appendix-II species, Overview of the Species-Based Review of Significant Trade	Secretariat		AC26 Doc. 12.2
2012 Mar	AC26	Review of Significant Trade: Species selected by the CITES Animals Committee following CoP14 and retained in the review following AC25		UNEP-WCMC	AC26 Doc. 12.2 Annex
2012 Mar	AC26	Review of Significant Trade in specimens of Appendix-II species: Species selected following CoP15 (summarises which range States asked and which replied) and Replies-from-range-states (not available on-line)	Secretariat		AC26 Doc. 12.3
2012 Mar	AC26	Review of Significant Trade in specimens of Appendix-II species (Agenda item 12) (Party designations and recommendations)			AC26 WG7 Doc. 1 (Rev. 1)
2012 Mar	AC26	AC26 Summary Record			AC26 Summary
2013 Mar	SC63	Review of Significant Trade (Secretariat and Chair of AC determination)			SC63 Doc. 14
2013 Mar	SC63	SC63 summary record (Records SC decisions)			SC63 Summary
2013 Mar	**CoP16**	Standard nomenclature for *Hippocampus* species (Switzerland)	Switzerland		CoP16 Doc. 43.2
2014 May	AC27	Review of Significant Trade in specimens of Appendix-II species [Resolution Conf. 12.8 (Rev. CoP13)], Species selected following CoP15	Secretariat		AC27 Doc. 12.4 (Rev. 1)
2014 May	AC27	Comments from range States that had been received by the Secretariat at the time of writing AC27 Doc. 12.4 (Rev. 1), February 2014).			AC27 Doc. 12.4 (Rev.1) Annexes 2-10
2014 May	AC27	Selection of species for trade reviews following CoP16	Secretariat		AC27 Doc. 12.5
2014 May	AC27	Review of Significant Trade in specimens of Appendix-II species [Resolution Conf.12.8 (Rev. CoP13)] (Agenda items 12.3, 12.4 and 12.5)	AC		AC27 WG1 Doc. 1
2014 May	AC27	Building in-country capacity to undertake non-detriment findings with regard to *Hippocampus* species in Indonesia, Thailand and Viet Nam (Submitted by the Secretariat)	Secretariat	Project Seahorse (Vincent, Foster & Wiswedel)	AC27 Inf. 9
2014 May	AC27	Building in-country capacity to undertake NDF with regard to *Hippocampus* species in Indonesia, Thailand and Viet Nam (submitted by the Secretariat)	Secretariat	Project Seahorse (acting as the IUCN SSC SPSS SG)	AC27 Inf. 20
2014 July	SC65	Review of Significant Trade in specimens of Appendix-II species	Secretariat		SC65 Doc. 26.1
2014 July	SC65	SC65 Summary Record (Records SC decisions)			SC65 Summary
2015 Sept	AC28	Review of Significant Trade in specimens of Appendix-II species, Species selected following CoP16 (which range States replied, which did not)	Secretariat		AC28 Doc.9.4 (Rev. 2)

Year	Meeting	Title	Origin	Author	Link to seahorse reports (pdfs)
2015 Sept	AC28	AC28 Review of Significant Trade in specimens of Appendix-II species, Taxa included in the Review of Significant Trade following CoP16 – Replies received (range State replies – not available online)			
2015 Sept	AC28	Review of Significant Trade in specimens of Appendix-II species [Resolution Conf.12.8 (Rev. CoP13)] (Agenda items 9.3 and 9.4)			AC28 Com. 8
2015 Sept	AC28	Annex 1: Response from IUCN SSC Seahorse, Pipefish and Stickleback Specialist Group regarding AC27 Doc 25.1: Report of the specialist on zoological nomenclature with respect to item 2: *Hippocampus* taxonomy (English only)	IUCN SSC SPS SG		AC28 Doc. 21.1 Annex 1
2015 Sept	AC28	Annex 2: Requested changes to Australian *Hippocampus* nomenclature in CITES (English only)	Australia		AC28 Doc. 21.1 Annex 2
2015 Sept	AC28	Annex 10**:** Meristic data for Australian species of *Hippocampus* 24 June 2015 (English only)			AC28 Doc. 21.1 Annex 10
2016 Jan	SC66	Implementation of recommendations of the Animals and Plants Committees	Secretariat		SC66 Doc. 31.1
2016 Jan	SC66	Report on Thailand's actions addressing problems of Hippocampus spp.	Thailand		SC66 Doc. 31.1 Annex 3
2016 Jan	SC66	Review of Standing Committee recommendations to suspend trade made more than two years ago	Secretariat		SC66 Doc. 31.2
2016 Jan	SC66	Annex 2 Report on Standing Committee recommendations to suspend trade that were made more than two years ago through the Review of Significant Trade	UNEP-WCMC		SC66 Doc. 31.2 Annex 2
2016 Jan	SC66	SC66 Summary Record (Records SC decisions)			SC66 Summary
2016 Sept	SC67	Review of Significant Trade in specimens of Appendix-II species: Implementation of recommendations of the Animals and Plants Committees	Secretariat		SC67 Doc. 15
2016 Sept	SC67	Annex 2: Information submitted by Thailand on *Hippocampus kelloggi, H. kuda* and *H. spinosissimus* (English only)	Thailand		SC67 Doc. 15 Annex 2
2016 Oct	**CoP17**	Standard nomenclature for *Hippocampus* spp.	Australia		CoP17 Doc. 81.2 (Rev. 1)
2016 Oct	CoP17	Assisting Parties to meet their commitments: CITES Review of Significant Trade for Seahorses (*Hippocampus* ssp.), a taxon traded in high volumes (submitted by the Secretariat)	Secretariat	Vincent & Foster	CoP17 Inf. 53 (Rev. 1)
2017 July	AC29	A global taxonomic revision of the seahorses *Hippocampus* spp. (submitted by IUCN)	IUCN	Lourie et al	AC29 Inf. 22
2017 Dec	SC69	Review of Significant Trade in specimens of Appendix-II species	Secretariat		SC69 Doc. 30
2017 Dec	SC69	Summary record			SC69 Summary
2018 Oct	SC70	Review of Significant Trade in specimens of Appendix-II species: Implementation of recommendations of the Animals and Plants Committees	Secretariat		SC70 Doc. 29.1
2018 Oct	SC70	Review of recommendations to suspend trade made more than two years ago	Secretariat		SC70 Doc. 29.
2018 Oct	SC70	Report on Standing Committee recommendations to suspend trade that were made more than two years ago through the Review of Significant Trade: update since SC66 (Viet Nam / *H. kuda*)	UNEP-WCMC		SC70 Doc. 29.2 Annex 2

Year	Meeting	Title	Origin	Author	Link to seahorse reports (pdfs)
2018 Oct	SC70	Seahorse exploitation and trade in Viet Nam (submitted by the Secretariat)	Secretariat	IUCN	SC70 Inf. 29
2019 Aug	SC71	Review of Significant Trade in specimens of Appendix-II species	Secretariat		SC71 Doc. 12
2019 Aug	**CoP18**	Seahorses (*Hippocampus* spp.) on CITES – a roadmap to success	Maldives, Monaco, Sri Lanka & US	Foster & Vincent	CoP18 Doc. 72
2021 June	AC31	Species specific matters: seahorses (*Hippocampus* spp.)	Secretariat		AC31 Doc. 26
2021 June	AC31	Species specific matters: addendum to seahorses (*Hippocampus* spp.)	Secretariat		AC31 Doc. 26 Addendum
2021 June	AC31	Responses to Notification to the Parties No. 2020/015	Parties		AC31 Doc. 26 Annex (Rev. 1)
2022 Mar	SC74	Seahorses (*Hippocampus* spp.): Report of the Secretariat	Secretariat	Foster et al; Foster & Vincent	SC74 Doc. 70.1, includes Annex 1 & 2
2022 Mar	SC74	Seahorses (*Hippocampus* spp.): Report of the Animals Committee	Animals Committee		SC74 Doc. 70.2

Table A2.2. Sharks - CITES AC, SC, CoP reports

Year	Meeting	Title	Origin	Author	Link to shark reports
1995 Mar	SC35	Summary Record of SC35 - section 15 on sharks	Panama report from FAO COFI		SC35 Summary
1995 Sept	AC12	Summary Record of AC12 – section 5 on sharks. Impl of Res. Conf. 9.17.	Panama AC12.4, USA AC12.4.3, TRAFFIC 12.4.2, IUCN SSG AC12.4.4		AC12 Summary
1996 Jan	SC36	Summary Record of SC36 - section 20 refers to on sharks: Implementation of Resolution Conf. 9.17 on sharks	Panama SC36.20.2 became SC36.20 Inf.14.		SC36 Summary
1996 Sept	AC13	Summary Records of AC13, includes a summary from the WORKING GROUP ON SHARKS: Implementation of Resolution Conf. 9.17 on the Status of International Trade in Shark Species (section 6 on sharks).			AC13 Summary
1996 Dec	SC37	NO shark reports – summary report mentions that WG had been established to produce a document on the status of sharks			SC37 Summary
1997 June	COP 10	Conference of Parties. Res. Conf. 9.17 rev. CoP10			
1998 May	AC 14	Summary Record of AC14 - section 20 on sharks			AC14 Summary
1999 July	AC15	Proceeding of AC15- section 7 on sharks			AC15 Proceedings
2000 Dec	AC16	Proceedings of AC16 – section 20 on sharks			AC16 Proceedings
2001 Aug	AC17	Summary Record of AC17 - section 19 on sharks			AC17 Summary
2002 April	AC18	Report on Implementation of the International Plan of Action for Sharks	SSG & TRAFFIC	SSG & TRAFFIC	AC18 Doc. 19.2
2002 April	AC18	Summary Record of AC17 - section 19 on sharks			AC18 Summary
2002 June	AC18	The role of CITES in the conservation and management of sharks. Update of AC18 Doc.19.2.	Shark SG (SSG) & TRAFFIC	SSG & TRAFFIC	AC18 Doc.19.2 (Rev)
2002 Nov	CoP12	Conservation and management of sharks (Australia)	Australia		CoP12 Doc. 41.1
2002 Nov	CoP12	Conservation of and trade in sharks (Ecuador)	Ecuador		CoP12 Doc.41.2
2002 Nov	CoP12	Conservation of and trade in sharks (Australia and Ecuador)	Australia and Ecuador		CoP12 Doc. 41.2 Addendum
2002 Nov	CoP12	Sharks" and COP12 – A Case for Caution	China	China MA	CoP12 Inf. 30
2003 Aug	AC19	Progress made by the United States of America in developing and implementing the IPOA-sharks	USA	National Marine Fisheries Service	AC19 Doc. 18.1
2003 Aug	AC19	Implementation of Resolution Conf. 12.6 and Decision 12.47	Secretariat	Secretariat	AC19 Doc. 18.2
2003 Aug	AC19	Progress made by Japan in developing and implementing the IPOA-sharks	Japan	Japan	AC19 Doc. 18.3 AC19 Doc. 18.3 Annex 1

Year	Meeting	Title	Origin	Author	Link to shark reports
2003 Aug	AC19	Progress made by the IUCN species survival commission's shark specialist group in assessing the threatened status of sharks and related taxa	SSG	SSG	AC19 Inf. 7
2003 Aug	AC19	Summary Record of AC19 - section 18 on sharks			AC19 Summary
2004 Mar	AC20	Biological and trade status of sharks: report of the Working Group	Shark WG & SSG	Shark WG & SSG	AC20 Doc. 19
2004 Mar	AC20	Biological and trade status of sharks: report of the Working Group	Shark WG	Shark WG	AC20 WG8 Doc. 1
2004 Mar	AC20	White Shark *Carcharodon carcharias*: status and management challenges	Wildlife Conservation Society	Wildlife Conservation Society	AC20 Inf. 1
2004 Mar	AC20	Outline of harmonized codes for shark products	**	**	AC20 Inf. 2
2004 Mar	AC20	How to supplement the harmonized code to include shark products: template	**	**	AC20 Inf. 3
2004 Mar	AC20	How to supplement the harmonized code to include shark products: All codes	**	**	AC20 Inf. 4
2004 Mar	AC20	Report of the analysis of questionnaire responses on National Plans of Action (Report on the implementation of the UN FAO international plan of action for sharks (IPOA–Sharks))	SSG	Co-chair of SSG	AC20 Inf. 5
2004 Mar	AC20	Proposal by Germany to list *Lamna nasus* in Appendix II, plus Annex	EU	Germany	AC20 Inf. 6 AC20 Inf. 6 Annex
2004 Mar	AC20	Proposal by Germany to list *Squalus acanthias* in Appendix II, plus Annex	EU	Germany	AC20 Inf. 7 AC20 Inf. 7 Annex
2004 Mar	AC20	Great white shark (GWS), CITES Appendix I Nomination			NO electronic version
2004 Mar	AC20	Conservation and management status of spiny dogfish sharks, IUCN/SSG	SSG		NO electronic version
2004 Mar	AC20	Update on progress made by IUCN/SSG in assessing the threatened status of sharks and related taxa	SSG		AC20 Inf. 21
2004 Mar	AC20	Conservation and management status of spiny dogfish sharks (*Squalus acanthias*)	SSG	Sonja Fordham, SSG	AC20 Inf. 22
2004 Mar	AC20	Proposal by Australia to include *Carcharodon carcharia* in Appendix I	Australia	Australia	AC20 Inf. 23
2004 Mar	AC20	Provisional list of key shark species (identified in Resolution Conf. 12.6)			AC20 Inf. 28
2004 Mar	AC20	Summary record of AC 20 – section 19 on sharks			AC20 Summary
2004 Mar	SC50	NO shark reports			
2004 July		Report of the First FAO Ad Hoc Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-exploited Aquatic Species	FAO	FAO	
2005 May	AC21	Summary record of AC 21 – section 18 on sharks			AC21 Summary
2006 July	AC22	Report of the intersessional working group (Annex posted on 16 June 2006)	Secretariat	Secretariat	AC22 Doc. 17.1
2006 July	AC22	Implementation of CITES shark listings	Shark WG	Shark WG	AC22 Doc. 17.2
2006 July	AC22	Trade-related threats to sharks	Shark WG	Shark WG	AC22 Doc. 17.3
2006 July	AC22	Species affected by trade	Shark WG	Shark WG	AC22 Doc. 17.4

Year	Meeting	Title	Origin	Author	Link to shark reports
2006 July	AC22	Minutes of the technical workshop on the Conservation and management of sharks	Shark WG	Shark WG	AC22 Inf. 3
2006 July	AC22	Conservation genetics of basking sharks – Final project report	UK, DEFRA	Noble et al (2006)	AC22 Inf. 9
2006 July	AC22	Summary record of AC 22 – section 17 on sharks			AC22 Summary
2007 Mar		Second FAO Ad Hoc Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-exploited Aquatic Species	FAO	FAO	FAO Fisheries Report 0429-9337
2007 June	CoP14	Interpretation and implementation of the Convention Species trade and conservation issues: Sharks: Report of the Animals Committee		AC	CoP14 Doc. 59.1
2008 April	AC23	Reports from Parties on commodity codes, opportunities to improve monitoring, verification and reporting of catch, bycatch and discards, market and international trade data	Secretariat	Secretariat	AC23 Doc. 15.1 AC23 Doc. 15.1 Addendum
2008 April	AC23	Identification of shark species of concern that require consideration for inclusion in the Appendices if their management and conservation status does not improve	Secretariat	Secretariat	AC23 Doc. 15.2
2008 April	AC23	Linkages between international trade in shark fins and meat and illegal, unreported and unregulated fishing	Secretariat	Secretariat	AC23 Doc. 15.3
2008 April	AC23	Recommendations on the refinement of the list of shark species of concern (document AC23 Doc. 15.2): an example using the requiem shark group	USA	USA MA	AC23 Inf. 6
2008 April	AC23	Conservation and management of sharks (agenda items 15.1, 15.2 and 15.3)	Shark WG	Shark WG	AC23 WG6 Doc. 1
2008 April	AC23	Summary record of AC 23 – section 15 on sharks			AC23 Summary
2009 April	AC24	Activities concerning shark species of concern (Decision 14.107)	USA	USA	AC24 Doc. 14.1
2009 April	AC24	Linkages between international trade in shark fins and meat, and illegal, unreported and unregulated fishing	Australia	Australia MA	AC24 Doc. 14.3
2009 April	AC24	Other Animals Committee's tasks related to conservation and management of sharks	Secretariat	Secretariat	AC24 Doc. 14.4
2009 April	AC24	Illegal, unreported and unregulated shark catch: A review of current knowledge and action	Australia SA	Lack & Sant (2008)	AC24 Inf. 2
2009 April	AC24	Sharks: conservation, fishing and international trade	Spain	García Núñez (2008)	AC24 Inf. 5
2009 April	AC24	Technical workshop on the status, limitations and opportunities for improving the monitoring of shark fisheries and trade. (FAO list of primary species for monitoring of fisheries and trade)	FAO	FAO	AC24 Inf. 6
2009 April	AC24	Conservation and management of sharks and stingrays	Shark WG	Shark WG	AC24 WG5 Doc. 1
2009 Dec		Third FAO Ad Hoc Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-exploited Aquatic Species	FAO	FAO	
2010 Mar	CoP15	Conservation and management of sharks and stingrays	AC	AC	CoP15 Doc. 53
2011 July	AC25	Conservation and management of sharks – Report on the implementation of NPOA-Sharks and regional plans, and on relevant information from the range States	Secretariat	Secretariat	AC25 Doc. 17

Year	Meeting	Title	Origin	Author	Link to shark reports
2011 July	AC25	12 reports from parties: https://cites.org/eng/com/ac/25/index.php			
2011 July	AC25	The Future of Sharks: A Review of Action and Inaction	Secretariat	Pew Enviro. Group & TRAFFIC	AC25 Inf. 6
2011 July	AC25	Deep-sea Shark Species for Consideration of a CITES Listing	Secretariat	Pew Enviro. Group	AC25 Inf. 7
2011 July	AC25	Conservation and management of sharks – Report on the implementation of NPOA-Sharks and regional plans, and on relevant information from the range States (agenda item 17)	Shark WG	Shark WG	AC25 WG6 Doc. 1
2011 July	AC25	Summary record of AC 25 – section 17 on sharks			AC25 Summary
2012 Mar	AC26	Implementation of Resolution Conf. 12.6 (Rev. CoP15) on Conservation and management of sharks (Class Chondrichthyes): Report of the working group	AC	AC	AC26 Doc. 16.1
2012 Mar	AC26	Reports from Parties	Secretariat	Secretariat	AC26 Doc. 16.2
2012 Mar	AC26	14 reports from parties as Annexes: https://cites.org/eng/com/ac/26/index.php			
2012 Mar	AC26	Implementation of Resolution Conf. 12.6 (Rev. CoP15) on *Conservation and management of sharks (Class Chondrichthyes)* (agenda item 16) and Draft proposal to include *Lamna nasus* in Appendix II (agenda item 26.2)			AC26 WG4 Doc. 1
2012 Mar	AC26	Summary record of AC 26 – section 16 on sharks			AC26 Summary
2012 Dec		Fourth FAO Ad Hoc Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-exploited Aquatic Species	FAO	FAO	
2014 May	AC27	Conservation and management of sharks: Implementation of Resolution Conf. 12.6 (Rev. CoP16)	Secretariat	Secretariat	AC27 Doc. 22.1
2014 May	AC27	Non-detriment Findings for CITES-listed sharks and manta rays	Germany	European Commission	AC27 Doc. 22.2
2014 May	AC27	Guidance for making Non-detriment findings for CITES-listed sharks	Germany	Germany	AC27 Doc. 22.3
2014 May	AC27	Report on the development of a rapid management-risk assessment method for fish species through its application to sharks	UK	Lack et al (2014)	AC27 Doc. 22.4
2014 May	AC27	CITES Non-detriment Findings Guidance for Shark Species (submitted by Germany)	Germany	Mundy-Taylor et al (2014)	AC27 Inf. 1
2014 May	AC27	Conservation and management of sharks (Agenda items 22.1, 22.2, 22.3 and 22.4)	Shark WG	Shark WG	AC27 WG7 Doc. 1
2014 May	AC27	EU-CITES Sharks project update (submitted by the Secretariat)	Secretariat	Secretariat	AC27 Inf. 5
2014 May	AC27	Development of a rapid management-risk assessment method for fish species through its application to sharks	UK	Traffic	AC27 Inf. 6
2014 May	AC27	Information on sharks and freshwater stingrays	China	China SA	AC27 Inf. 8
2014 May	AC27	Information on sharks (submitted by Colombia) [Ministry of Environment & Sustainable Development (MADS), National Authority of Aquaculture & Fisheries (AUNAP)]	Colombia	MADS & AUNAP	AC27 Inf. 11
2014 May	AC27	State of global market for shark commodities – Summary of the draft FAO technical paper (submitted by FAO)	FAO	Clarke & Dent	AC27 Inf. 14

Year	Meeting	Title	Origin	Author	Link to shark reports
2014 May	AC27	Report on Implementation of the United States National Plan of Action for the Conservation and Management of Sharks (submitted by the United States of America)	USA	USA	AC27 Inf. 19
2014 May	AC27	Summary record of AC 27 – section 22 on sharks			AC27 Summary
2014 July	SC65	Capacity building activities for implementation of the CITES listing of sharks and manta rays	Secretariat	Secretariat	SC65 Doc. 20.2
2014 July	SC65	Sharks and rays	AC	AC	SC65 Doc. 46
2014 July	SC65	EU-CITES sharks project update (submitted by the Secretariat)	Secretariat	Secretariat	SC65 Inf. 24
2014 July	SC65	Summary record of SC65 – sections 20.2 and 46 on sharks			SC65 Summary
2015 Sept	AC28	Implementation of Resolution Conf. 12.6 (Rev. CoP16): Report of the Secretariat	Secretariat	Secretariat	AC28 Doc.17.1.1
2015 Sept	AC28	10 reports from Parties Annex 1-10			
2015 Sept	AC28	Conservation and management of sharks – species of concern	Israel	Israel	AC28 Doc. 17.1.2
2015 Sept	AC28	Guidance for making non-detriment findings for CITES-listed sharks	Germany	Germany	AC28 Doc. 18
2015 Sept		NDF guidelines and examples for aquatic species	Japan	Japan	AC28 Inf. 10
2015 Sept	AC28	Respuesta a la notificación de las Partes no. 2015/027. Medidas de gestión de la pesca de tiburones.	Nicaragua	Nicaragua MA	AC28 Inf. 12
2015 Sept	AC28	Respuesta a la notificación de las Partes no. 2015/027. Medidas de gestión de la pesca de tiburones.	Panama	Panama MA	AC28 Inf. 13
2015 Sept	AC28	Response to the Notification to the Parties No. 2015/027. Request for new information on fishery management measures for sharks.	EU	EU MA	AC28 Inf. 14
2015 Sept	AC28	Respuesta a la notificación de las Partes no. 2015/027. Medidas de gestión de la pesca de tiburones.	Spain	Spain MA	AC28 Inf. 15
2015 Sept	AC28	Response to the Notification to the Parties No. 2015/027. Request for new information on fishery management measures for sharks	Colombia	Colombia MA	AC28 Inf. 21
2015 Sept	AC28	Shark group report	Colombia	Colombia	AC28 Inf.22
2015 Sept	AC28	Workshop on the assessment of productivity, susceptibility and management of Mexican Appendix-II listed sharks (Mexico City, 8-10 July 2015)	Mexico	Mexico	AC28 Inf. 27 (Rev. 1)
2015 Sept	AC28	Response to the Notification to the Parties No. 2015/027. Malaysia	Malaysia	Malaysia	AC28 Inf. 29
2015 Sept	AC28	Response to the Notification to the Parties No. 2015/027. Request for new information on fishery management measures for sharks. Information submitted by Fiji.	Fiji	Fiji	AC28 Inf. 36
2015 Sept	AC28	Conservation and management of sharks (agenda item 17)			AC28 Com.9
2015 Sept	AC28	Summary record of AC 27 – section 17 on sharks			AC28 Summary
2016 Jan	SC66	Sharks and rays: Report of the Secretariat and of the Animals Committee	Secretariat & AC	Secretariat & AC	SC66 Doc. 53.1
2016 Jan	SC66	Sharks and rays: Report of the Working Group	Shark WG	Shark WG	SC66 Doc. 53.2
2016 Jan	SC66	Traceability study in shark products (submitted by the Secretariat)	Secretariat	Hehr (2016)	SC66 Inf. 11
2016 Jan	SC66	Traceability systems in the CITES context: A review of experiences, best practices and lessons learned for the traceability of commodities of CITES-listed shark species (submitted by the Secretariat)	TRAFFIC	Mundy & Sant (2015)	SC66 Inf.12
2016 Jan	SC66	Summary record of SC66 – section 53 on sharks			SC66 Summary

Year	Meeting	Title	Origin	Author	Link to shark reports
2016 June		Fifth FAO Ad Hoc Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-exploited Aquatic Species	FAO	FAO	
2017 July	AC29	Sharks and rays (Elasmobranchii spp.) [Resolution Conf. 12.6 (Rev. CoP17) and Decision 17.211]	Secretariat	Secretariat	AC29 Doc. 23
2017 July	AC29	Annex 1 - Responses to Notification to the Parties No. 2017/031 (in the original language)	Various Parties	Complied by AC	AC29 Doc. 23 Annex 1
2017 July	AC29	Annex 2 - Summary of information in the CITES trade database on trade in CITES-listed sharks and rays since 2000 (English only)			AC29 Doc. 23 Annex 2 (EXCEL)
2017 July	AC29	Sharks (agenda item 23)			AC29 Com. 3 AC29 Com. 3 (Rev by Sec)
2017 July	AC29	Summary of Parties' responses to Notification No. 2017/031 on the Request for new information on shark and ray conservation and management activities, including legislation	Secretariat	Secretariat	AC29 Inf. 23
2017 July	AC29	Summary record of AC 29 (section 23 on sharks)			AC29 Summary
2017 Dec	SC69	Sharks and rays (Elasmobranchii spp.): Report of the Secretariat	Secretariat	Secretariat	SC69 Doc. 50
2017 Dec	SC69	Summary record of SC69 (section 50 on sharks)			SC69 Summary
2018 July	AC30	Sharks and rays (Elasmobranchii spp.) [Resolution Conf. 12.6 (Rev. CoP17) and Decision 17.211]	Secretariat	Secretariat	AC30 Doc. 20
2018 July	AC30	Sharks and rays: Annex 1: Responses to Notification to the Parties No. 2018/041 (in the original language)			AC30 Doc. 20 Annex 1
2018 July	AC30	Sharks and rays: Annex 2: Data on trade in CITES-listed sharks and rays since 2000			AC30 20-Annex2.xlsx (EXCEL)
2018 July	AC30	Sharks			AC30 Com. 8
2018 July	AC30	CITES Appendix II implementation issues for the three listed Hammerhead Sharks due to look-alike issues with the six remaining non-listed species of Sphyrnidae (submitted by the Secretariat at the request of WWF International, WWF Pacific and TRAFFIC)	WWF Int., WWF Pacific and TRAFFIC	Rigby & Simpfendorfer (2018)	AC30 Inf. 14
2018 July	AC30	Summary of Parties' responses to Notification 2018/041 on the request for new information on shark and ray conservation and management activities, including legislation (submitted by the Secretariat)	Secretariat		AC30 Inf. 21
2018 July	AC30	Summary record of AC 30 (section 20 on sharks)			AC30-Summary
2018 Oct	SC70	Sharks and rays (Elasmobranchii spp.): Report of the working group	Shark WG	Shark WG	SC70 Doc. 48.1 (Rev. 1)
2018 Oct	SC70	Report of the Secretariat	Secretariat	Secretariat	SC70Doc. 48.2
2019 Jan		Sixth FAO Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially Exploited Aquatic Species	FAO	FAO	CoP18 Doc. 105.3 Annex 1
2019 May		The FAO Expert Workshop on Implementing the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) through Fisheries Legal Frameworks	CITES-FAO collab.	FAO	FAO R1276
2021 May	SC73	Sharks and rays (submitted by Germany)	Germany	Germany	SC73 Inf. 3
2021 June	AC31	Sharks and rays (Elasmobranchii spp.) [Resolution Conf. 12.6 (Rev. CoP18); Decisions 18.223 and 18.225]	Secretariat	Secretariat	AC31 Doc. 25

Year	Meeting	Title	Origin	Author	Link to shark reports
2021 June	AC31	Annex 2: Responses to Notification to the Parties No. 2020/016 + Addendum and Annex			AC31 Doc. 25 Annex-2 AC31 Doc. 25 Addendum AC31 Doc. 25 Addendum Annex (EXCEL)
2021 June	AC31	Sharks and rays (Elasmobranchii spp.)			AC31 Com. 7
2021 June		Summary of Parties' responses to Notification No. 2020/016 on the request for new information on shark and ray conservation and management activities, including legislation (submitted by the Secretariat)	Secretariat	Secretariat	AC31 Inf. 9 (Rev. 1)
2021 June	AC31	TRAFFIC report on identification tools for CITES-listed sharks in trade (submitted by the Secretariat)	TRAFFIC	TRAFFIC	AC31 Inf. 15
2021 June	AC31	Improving synergies between regional fishery bodies and CITES Parties for the sustainable catch, trade and management of sharks (submitted by Germany)	Germany	Fowler et al. 2021- in prep	AC31 Inf. 18
2021 June	AC31	Written contributions and summary of discussions of the in-session working group on sharks and rays (submitted by the representative of Oceania)	Shark WG	Shark WG	AC31 Inf. 24
2022 Mar	SC74	Sharks and rays (Elasmobranchii spp.) (Decisions 18.224 and 225): Legal acquisition findings and control and monitoring of stockpiles of shark parts and derivatives: Report of the working group	USA (Shark WG)	Shark WG	SC74 Doc. 67.1
2022 Mar	SC74	Sharks and rays (Elasmobranchii spp.) (Decisions 18.224 and 225): Report of the Secretariat	Secretariat	Secretariat	SC74 Doc. 67.2
2022 Mar	SC74	Report of the Animals Committee	AC	AC	SC74 Doc 67.3
2022 Mar	SC74	Missing sharks: A country review of catch, trade and management recommendations for CITES-listed shark species (submitted by the Secretariat)	TRAFFIC	Okes & Sant (2022)	SC74 Inf. 24

Table A2.3. Humphead wrasse - CITES AC, SC, CoP reports

Year	Meeting	Title	Origin	Author	Link to HHW reports
2002 Nov	CoP12	Inclusion of the Humphead wrasse, *Cheilinus undulatus*, in Appendix II of CITES (US)	US		CoP12 Inf. 21
2004 Oct	CoP13	Experts' review of the proposal to list Humphead wrasse (*Cheilinus undulatus*) in Appendix II	Fiji, Ireland on behalf of the 25-member states of the EU, & US as proponents		CoP13 Inf. 63
2004 Oct	CoP13	Proposal: Inclusion of *Cheilinus undulatus* in Appendix II	Fiji, Ireland on behalf of the 25-member states of the EU, & US as proponents		CoP13 Prop. 33
2006 July	AC22	Development of fisheries management tools for trade in Humphead wrasse, *Cheilinus undulatus*, in compliance with Article IV of CITES	Secretariat		AC22 Inf. 5
2007 June	CoP14	Stock assessment approach for the Napoleon Fish, *Cheilinus undulatus*, in Indonesia (submitted by FAO) - a tool for quota-setting for data-poor fisheries under CITES Appendix ii non-detriment finding requirements	FAO	Sadovy et al, 2007	CoP14 Inf. 33
2010 Mar	CoP15	Draft decisions of the Conference of the Parties concerning Humphead wrasse	Secretariat		CoP15 Com. II. 40
2010 Mar	CoP15	Humphead wrasse: additional management measures needed to combat IUU fishing (Indonesia)	Indonesia		CoP15 Doc. 51
2011 Aug	SC61	Species trade and conservation: HUMPHEAD WRASSE	Secretariat		SC61 Doc. 49
2011 Aug	SC61	Annex: Workshop report on the trade of *Cheilinus undulatus* (Humphead Wrasse/Napoleon Wrasse) and CITES implementation (English only)	**		SC61 Doc. 49 Annex
2012 July	SC62	Species trade and conservation: Humphead wrasse	Chair of the SC Working Group on Humphead Wrasse, in consultation with Secretariat		SC62 Doc. 51
2013 Mar	CoP16	Species trade and conservation: Humphead wrasse	Chair of the SC Working Group on Humphead Wrasse (China, HKSAR) *, in consultation with Secretaria		CoP16 Doc. 62
2016 Jan	SC66	Species trade and conservation: Humphead wrasse	Secretariat		SC66 Doc. 49
2016 Jan	SC66	Meeting report from the workshop on IUU, conservation planning and NDF of Napoleon (Humphead) Wrasse, December 2015	Secretariat	Sadovy de Mitcheson, IUCN SSC GWSG	SC66 Inf. 27
2016 Oct	CoP17	Species specific matters: Humphead wrasse (*Cheilinus undulatus*)	Standing Committee		CoP17 Doc. 54
2016 Oct	CoP17	Workshop on illegal, unregulated and unmonitored trade: Conservation planning and non-detriment finding of napoleon (Humphead) wrasse, *Cheilinus undulates*. Jakarta, Indonesia, 8-10 December 2015	Secretariat	Sadovy de Mitcheson, IUCN SSC GWSG	CoP17 Inf. 43
2016 Oct	CoP17	Napoleon (Humphead) wrasse (*Cheilinus undulates*) trade into and through Hong Kong	Secretariat	TRAFFIC (Wu and Sadovy de Mitcheson)	CoP17 Inf. 44

Year	Meeting	Title	Origin	Author	Link to HHW reports
2016 Oct	CoP17	Draft decisions on Humphead wrasse (*Cheilinus undalatus*), CoP 17 Doc. 54	Secretariat		CoP17 Com.I.12
2017 Dec	SC69	Humphead wrasse (*Cheilinus undulatus*): report of the Secretariat	Secretariat		SC69 Com. 2
2017 Dec	SC69	Humphead wrasse (*Cheilinus undulatus*): report of the Secretariat	Secretariat		SC69 Doc. 48
2018 Oct	SC70	Humphead wrasse (*Cheilinus undulatus*): Report of the Secretariat (includes Annex with responses)	Secretariat		SC70 Doc. 47
2018 Oct	SC70	Update on CITES implementation for Humphead (Napoleon) Wrasse, *Cheilinus undulatus*	Secretariat	Sadovy de Mitcheson, on behalf of the IUCN SSC GWSG	SC70 Inf. 37
2019 Aug	CoP18	Species specific matters: Humphead wrasse (*Cheilinus undulatus*)	Standing Committee		CoP18 Doc. 67
2019 Aug	CoP18	Update on CITES implementation for Humphead (napoleon) wrasse, *Cheilinus undulatus*.	Secretariat	Sadovy de Mitcheson, on behalf of the IUCN SSC GWSG	CoP18 Inf. 71