# Presentation at CITES CoP19 Side Event in Panama
16 November 2022

Should be credited as
Vincent, A.C.J., S.J. Foster, S.J. Fowler. S. Lieberman, and Y.J. Sadovy. 2022. *Implementing CITES Appendix II listings for marine fishes: a novel framework and a constructive analysis.* CITES CoP19 Side Event, Panama City. 16 November 2022.

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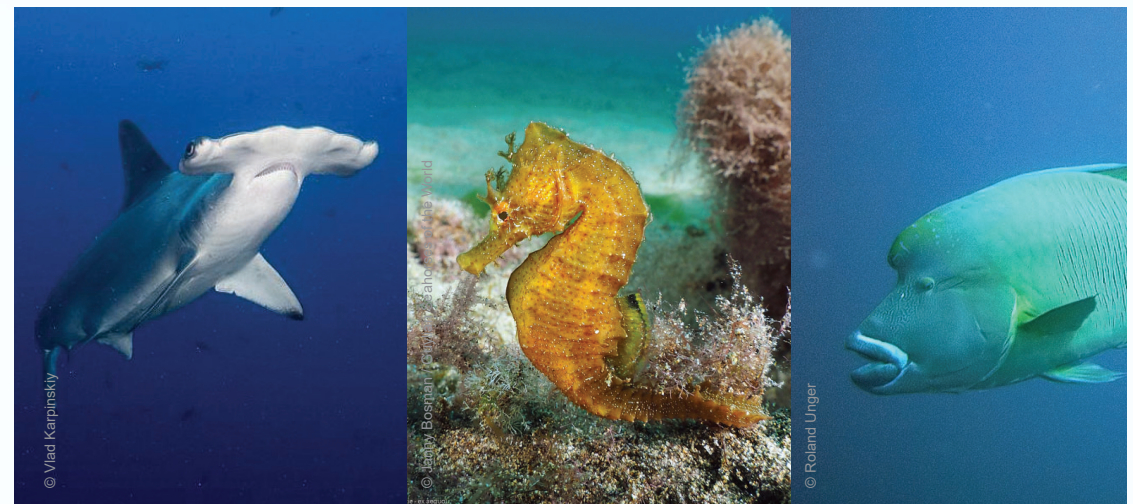
Assessing implementation of CITES Appendix II listings for marine fishes

Please join us!

Wed Nov 16
17:15 - 19:00

Caribe 6
Drinks & snacks provided

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PROJECT SEAHORSE
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Twenty years after the first marine fishes were added to CITES Appendix II, we explore progress in implementing these listings. We present a novel framework for assessing implementation of CITES obligations in general, then report specifically on progress for seahorses, sharks and rays, and humphead wrasse. We also offer suggestions for enhancing CITES implementation of Appendix II listings for marine fishes and other taxa.

Speakers

Amanda Vincent | Sarah Foster | Sarah Fowler
Yvonne Sadovy | Susan Lieberman

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Assessing implementation of CITES Appendix II listings for marine fishes
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This meeting takes place on the ancestral land of the Cueva people, later repopulated by the Kuna/Guna people.

In Canada I live, work and play on the traditional, ancestral, and unceded territory of the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish) & səlilwətaɬ (Tsleil-Watuth) Nations

Kuna/Guna flag

Introducing our novel framework for implementation

Prof. Amanda Vincent

Professor, Institute for the Oceans and Fisheries
Director, Project Seahorse
Chair, IUCN SSC Seahorse, Pipefish & Seadragon Specialist Group
Chair, IUCN SSC Marine Conservation Committee

Implementing Appendix II listings

- **Listing a taxon on CITES Appendix II is only the beginning.**

- √ For CITES, success should come when any international trade in listed species is sustainable and legal (and conducted humanely in the case of live animals)

- And thus no longer posing a threat to wild populations, throughout the species range (Res. Conf. 18.3).

- X In contrast, failure occurs when a species continues to decline due to international trade, legal or illegal, illegal trade cannot be controlled or the species qualifies to be transferred from Appendix II to I.

# Marine fishes on CITES Appendix II

- First fully marine fish species were added to Appendix II at CoP12 in 2002, with all seahorses, basking shark and whale shark (Vincent et al, 2014)

- Humphead wrasse and many more shark species followed at CoP13 and CoP14 in 2004 and 2007.

- Our analysis includes listings up to & including CoP16 (2013)

- Twenty years later, we have completed a study that seeks to support CITES by
  - developing a framework for assessing implementation and
  - using the framework to evaluate implementation for marine fishes

Vincent, A.C.J., S.J. Foster, S.J. Fowler. S. Lieberman, and Y.J. Sadovy. 2022. Implementing CITES Appendix II listings for marine fishes: a novel framework and a constructive analysis. *Fisheries Centre Research Reports* 30 (3), 189 pp.
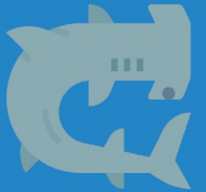
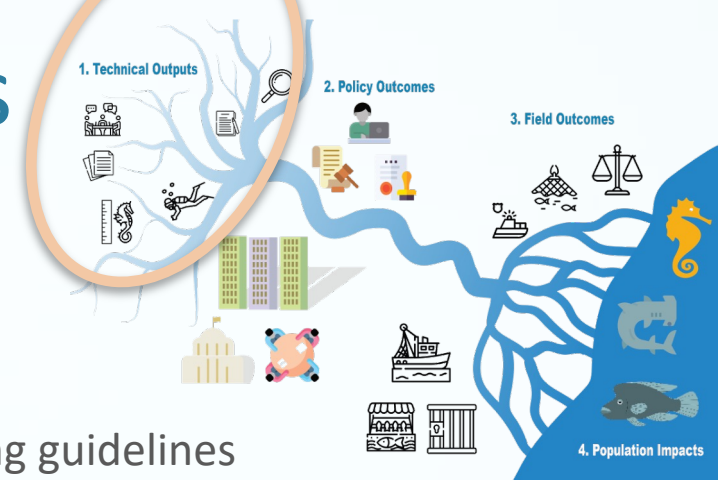1. Technical Outputs
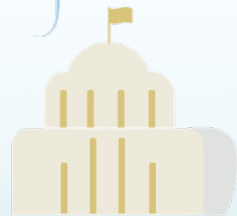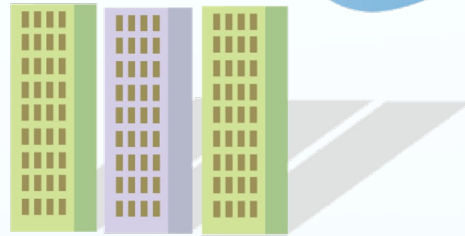
2. Policy Outcomes

3. Field Outcomes

4. Population Impacts

Framework for assessing implementation

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Level 1 – technical outputs

- Products, tools and activities

- Roles might include
  - contributing funding
  - developing and disseminating identification tools
  - generating frameworks for non-detriment findings (NDF) and legal acquisition findings (LAF)
  - providing guidance and manuals
  - creating monitoring guidelines
  - synthesizing data
  - providing technical advice
  - hosting capacity building meetings

- Developed by Intergovernmental Organizations, non-governmental organizations, government agencies, and other actors.

- The value of technical outputs lies in whether and how they are used.

- Alone, they do not directly impact wild populations.

- But these vital tools often contribute greatly to implementation.

Level 2 – policy outcomes

- Changes in policy, rules, regulations, legislation, or management protocols.

- To generate or drive compliance with… and implementation of… CITES.

- Commonly emerge from technical outputs.

- Might include
  - national CITES Scientific Authority making NDFs
  - other elements of government developing a new policy or law relating to the species
  - new framework legislation
  - new implementing rules… and much more.

- The theory of change is that these actions provide impetus for field outcomes.
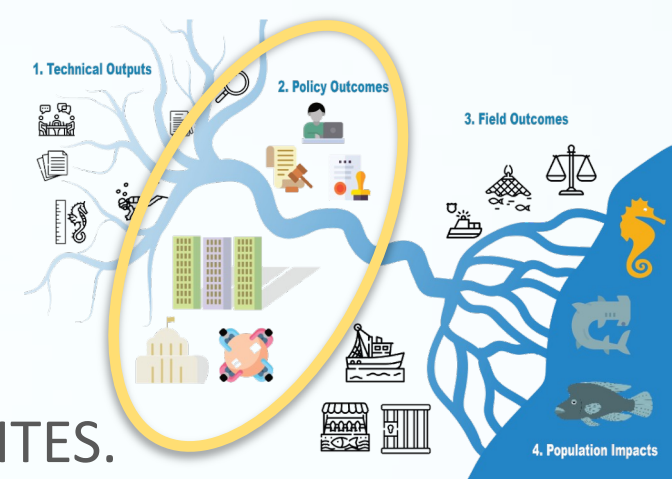
Level 3 – field outcomes

- Practical changes, translating policy or management protocols into front line action

- Move decisions from meetings / computers to places where pressures are exerted and fish are found.

- Derive from technical outputs and policy outcomes

- Reduce pressures on species, offer relief from threats, create opportunities for recovery.

  - enforcement of a new protected area
  - implementation of a quota
  - seizure of an illegal shipment
  - measurable improvement with compliance

  - clear enforcement of a rule or management measure
  - appropriate penalties given for infractions
  - active informative monitoring

- When well implemented, fish populations are directly affected.
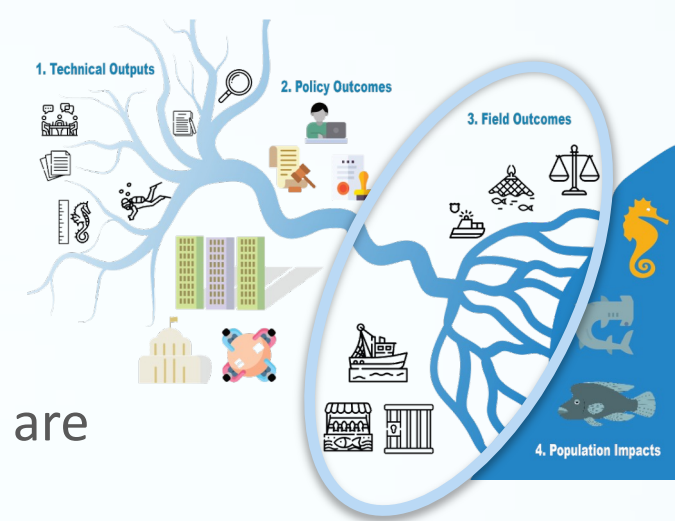
Level 4 – population impacts
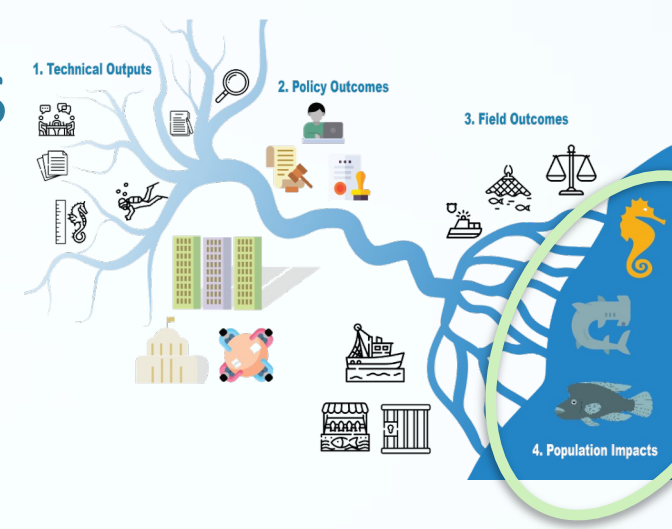
- The ultimate goal

- Might include changes
  - in the number of individuals
  - in size structure of the population
  - in other demographic index

- When population changes are positive, CITES is probably implemented effectively.

- When population changes are negative, CITES implementation needs improvements OR other threats are negating the benefits of CITES implementation.

- Critical to monitor populations across space and time.

- Sometimes, outcomes at Level 3 can be proxy measures of population impacts.

Distinction among levels	Level 1 Technical outputs	Level 2 Policy outcomes	Level 3 Field outcomes	Level 4 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	Desks and meetings	Desks, meetings, legislatures	Borders, ports, docks, processing centers, trade facilities, markets, at sea, courts	Underwater
Seeking to promote	Governance changes	Practical changes	Biological changes	

Vincent *et al*, 2022

To address CITES obligations…

- Parties need to implement an Appendix II listing on all four Levels.

- A Party that
  - produces or accesses technical outputs (Level 1)

  AND
  - makes governance changes for policy outcomes (Level 2)

  BUT
  - fails to make practical changed in field outcomes (Level 3)

  will be unlikely to…
  - achieve the required biological changes and population impacts (Level 4).

Adaptive management

- Parties that implement listings at levels 1, 2, and 3 should be able to detect biological changes (Level 4)

- … as long as they measure change through monitoring.

- Some Parties that implement listings at levels 1, 2 and 3 may still struggle to see change at Level 4 because of other pressures.

- Parties MUST act effectively at Level 3 to have any chance of seeing Level 4 biological changes.

- **True for all CITES Appendix II species**

How activities are advanced across all levels

Activity	Level 1: Technical outputs	Level 2: Policy outcomes	Level 3: Field outcomes	Level 4: Population impacts
Species Identification (ID)	Create and share ID materials	Adopt and disseminate ID materials	Use ID materials to seize illegally obtained/traded specimens	Healthier populations
Legal Acquisition Findings (LAFs)	Create LAF framework, guidelines	Require use of LAF framework; assemble information on relevant laws and regulations	Field activity to ensure specimens are obtained according to LAF, rejecting exports of illegally sourced animals	Healthier populations
Marine protected areas (MPAs)	MPAs proposed as management tool to regulate or prohibit take & trade; detailed spatial planning	Policies establish MPAs and identify their management requirements	Evidence of effective MPA management with compliance and enforcement	Healthier populations

Vincent *et al*, 2022

Speakers

Seahorses

Humphead wrasse

Sharks & rays

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Focal Point for Global Trade, IUCN SSC Seahorse, Pipefish & Seadragon Specialist Group

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Co-Chair, IUCN SCC Groupers & Wrasses Specialist Group

Sarah. L. Fowler
Scientific Advisor, Save our Seas Foundation

Member (and ex-Chair), IUCN SSC Shark Specialist Group

Susan Lieberman
Vice President, International Policy, Wildlife Conservation Society

IUCN Councillor for North America and the Caribbean

Implementation by taxon

- We analysed 20 years of CITES implementation of marine fish listings across three taxa: (i) seahorses, (ii) sharks and rays, and (iii) humphead wrasse

- Level 1 technical outputs: Rather a lot done for all taxa and such work is no longer rate limiting.

- Level 2 policy outcomes: Hopeful but very patchy, encouraging for some species and deficient for others.

- Level 3 field outcomes: Perceptible implementation dropped noticeably. Some encouraging progress but little evidence of transformative action.

- Level 4 population impacts: Little evidence of progress.

Seahorses

Assessing implementation of CITES Appendix II listing for Seahorses

Dr. Sarah J. Foster

Research Faculty, Institute for the Oceans and Fisheries
Program Leader, Project Seahorse
Focal Point for Global Trade, IUCN SSC Seahorse, Pipefish & Seadragon Specialist Group

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Summary of findings from our report

- Level 1 (technical outputs): Many and varied contributions – the tools are largely in place.

- Level 2 (policy outcomes): Seahorses were the **first marine fishes to be taken through Review of Significant Trade** which led to trade suspensions/bans for most historically important sources of dried trade (Level 2).

- Level 3 (field outcomes): Parties need to strengthen their **enforcement** of the suspensions/bans has to address the high levels of **illegal exports of** dried seahorses.

- Level 3 (field outcomes): The CITES listing triggered a **transition to captive breeding for the small live seahorse trade**, with potential relief of trade pressure on some wild populations.

- Level 4 (population impacts): The **lack of monitoring** means we cannot reach conclusions about population changes.

Background information: seahorses

- 46 species - globally distributed

- Listed at CoP12 in 2002 – implemented May 2004

- Genus level listing – all *Hippocampus* species

- 6 species met the criteria for listing on Appendix II, the rest were "look alike" species
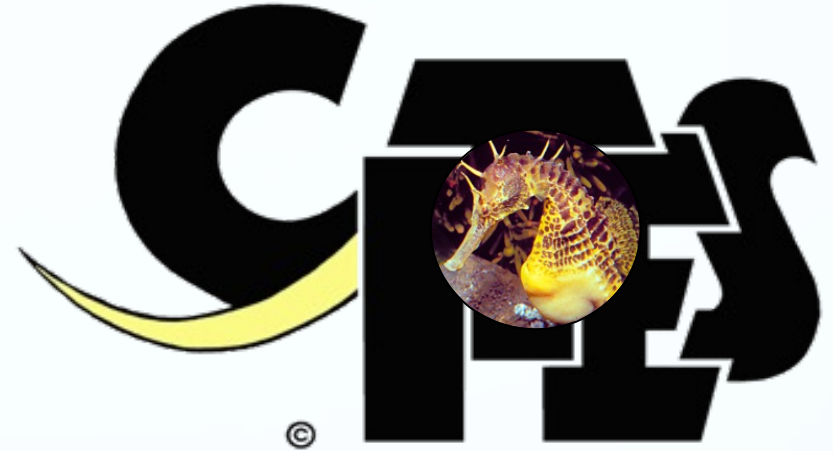
- 1/3 of seahorse species = threatened
- 1/3 = Data Deficient
- 1/3 = Least Concern

Why the seahorse story is special for CITES

- Small and iconic

- Many millions traded internationally each year for traditional medicine (dried)

- A small trade for curios (dried) and ornamental display (live)

- The first and only fully marine fishes on Appendix II to have been through the RST process
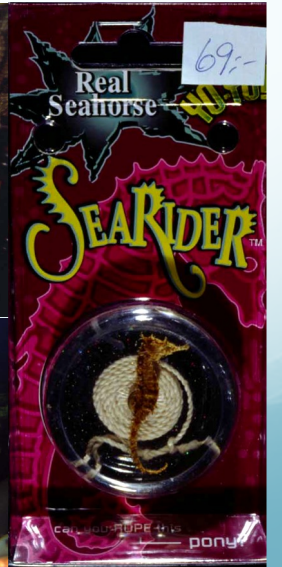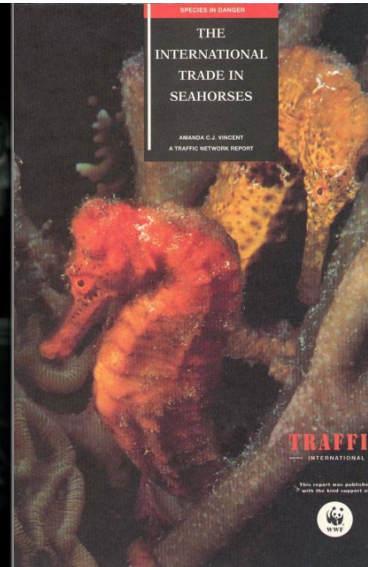
Level 1 – technical outputs

- Collaboration with Parties and the Secretariat led to the production of crucial technical outputs (Level 1):
  - identification materials in multiple languages
  - NDF framework
  - interim means of making NDFs
  - monitoring guidelines – populations, fisheries and aquaculture
  - field studies of biology, ecology, fisheries and trade
  - Party engagement in the form of briefings, workshops and discussions.

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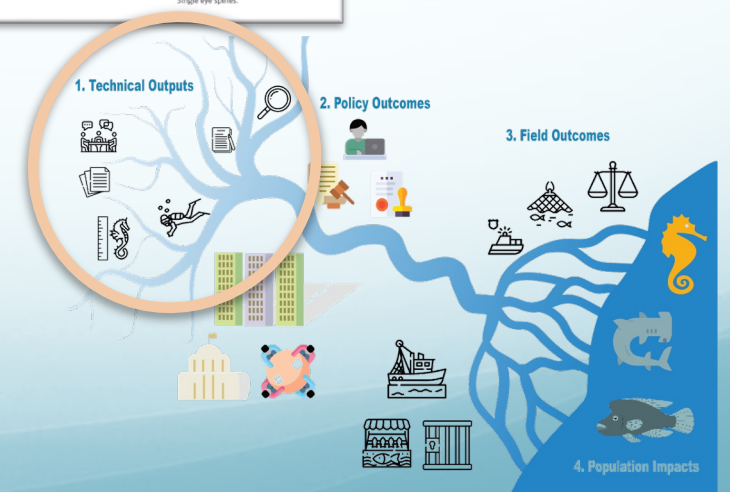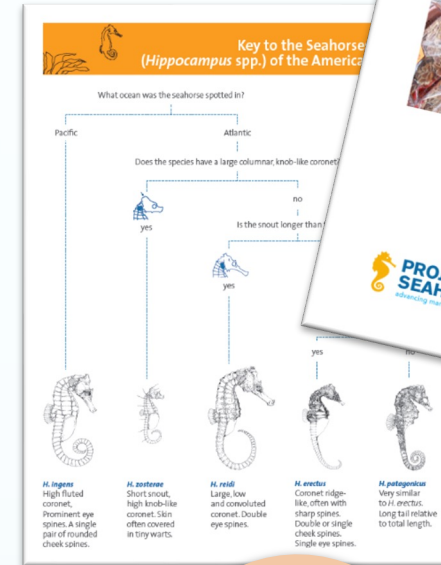
Level 2 – policy outcomes

- The most common policy action for seahorse trade has been in the form of export suspensions and bans
  - sometimes decided by a Party
  - sometimes recommended by CITES

- Instead of engaging in export regulations for sustainability.

**Trade reported by Parties and hold in the CITES trade database = legal trade**
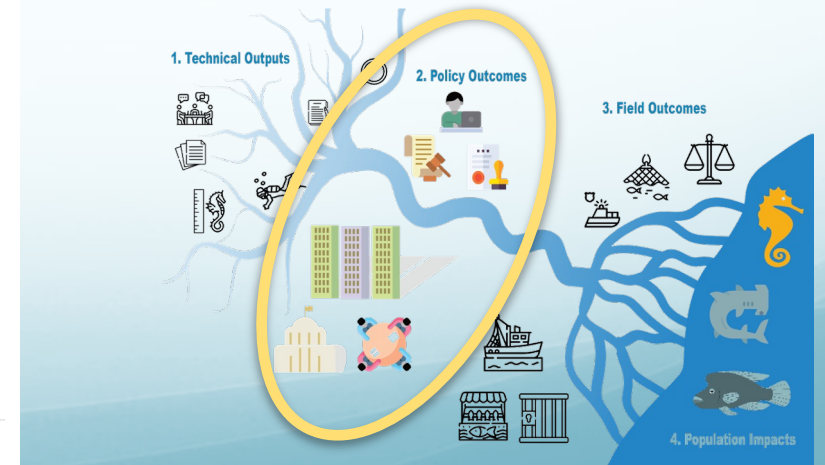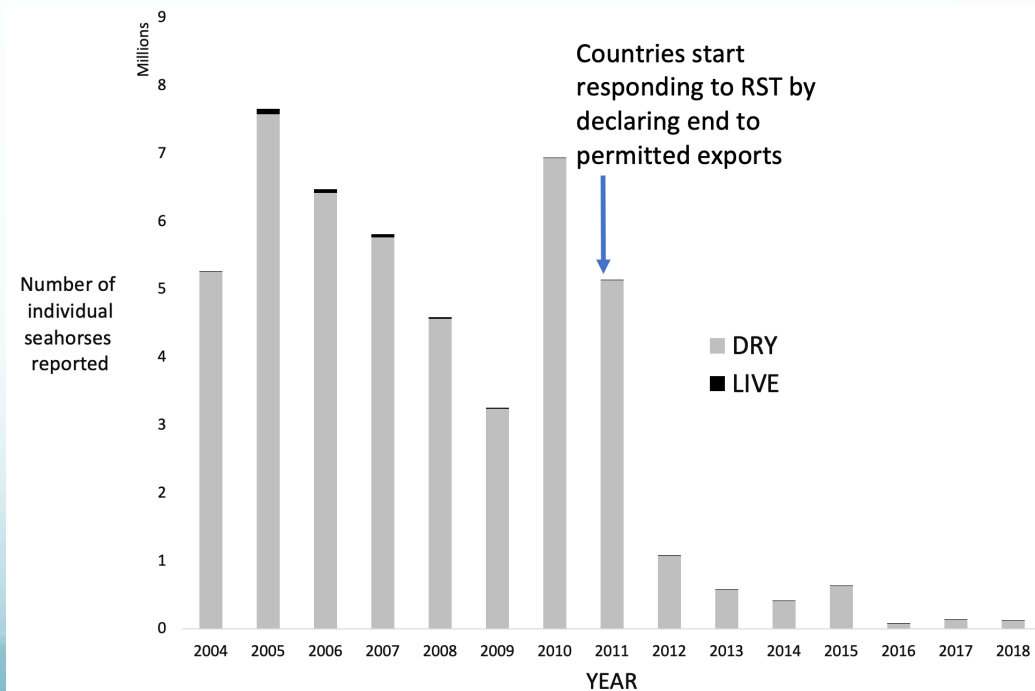
Level 3 – field outcomes

- Policy outcomes / governance change for **dried trade**
  - Need to be enforced
  - Need to be tracked

- …in order to translate into positive field outcomes / practical change

- Right now, the vast dried trade that provoked Appendix II listing continues at very high levels, mostly through smuggling.

- Field outcomes for **live trade** have occurred:
  - Reduced volumes of trade
  - Transition from wild source to captive bred (source codes W to C)
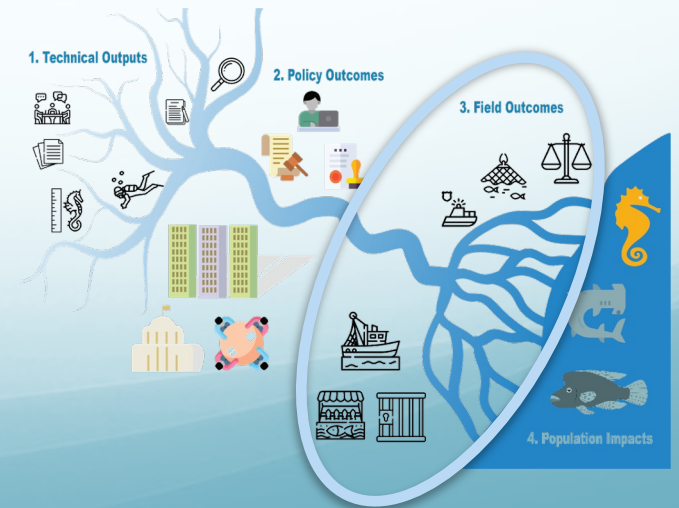
Level 4 – population impacts

- Fishers in key source countries for the **dried trade** have reported continued declines of seahorse catches per unit effort

- Seems that export trade remains at levels that are detrimental to wild populations

- Much of the export trade results from indiscriminate fishing that lands significant seahorse bycatch

- Wild populations subject only to **live trade** may have benefited from trade transitions under CITES, as markets shifted towards cultured fish

- However, few Parties are population monitoring leaves that as a supposition only.
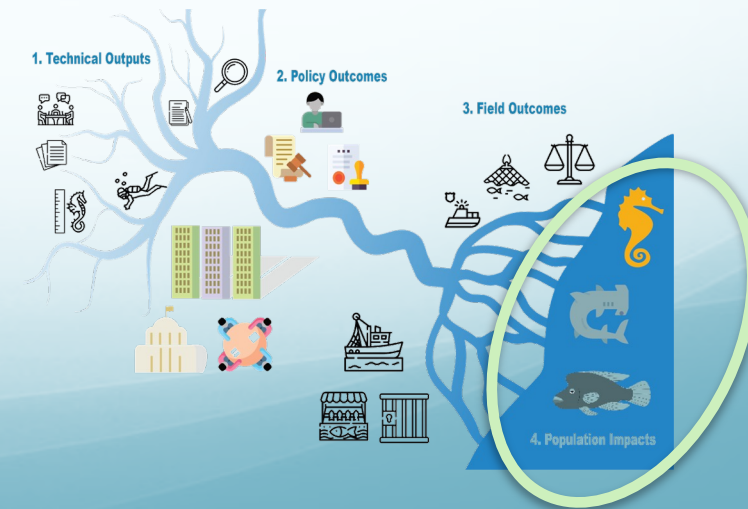
Summary of implementation for seahorses

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- Level 4 (population impacts): The **lack of monitoring** means we cannot reach conclusions about population changes.

Recommendations from seahorses

- Parties need to **tackle the challenge of indiscriminate capture** of most seahorses in nonselective fisheries if they are to see population impacts (Level 4).

- The large supply of seahorses from fisheries may be driving the dried trade, and not vice versa.

Brian Skerry

Sarah Foster / Project Seahorse

Support for implementation

www.iucn-seahorse.org/cites

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Seahorses on CITES
Next steps towards successful implementation

Join us!

**Mon Nov 21
12:15 - 14:00**

Salon 2
Lunch provided

Supported by

NOAA Fisheries, United States

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PROJECT
SEAHORSE
advancing marine conservation

Seahorses are pioneers for marine fishes on CITES. This side event will provide context for CoP19 Doc. 69.2 and its draft Decisions. We will summarize changes to the live and dried seahorse trades since listing, explore progress in CITES implementation, and raise important issues such as the substantial illegal trade.

Co-organised by the United States of America and the IUCN.

IUCN

SSC
Species Survival Commission

Seahorse
Pipefish &
Seadragon
Specialist Group

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Sharks

Assessing implementation of CITES Appendix II listings for Sharks and Rays

Sarah Fowler

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Scientific Advisor, Save our Seas Foundation
Member (and former Chair), IUCN SSC's Shark Specialist Group

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Summary of findings from our report

- Level 1 (technical outputs). Significant investment and numerous implementation products developed, from visual identification guides and genetic identification tools, to guidance and software for NDFs.

- Level 2 (policy outcomes). Substantial and widespread sharing of the above, including through national and regional implementation workshops; improved data availability; many Parties publishing NDFs, often with action plans.

- Level 3 (field outcomes). High and rising level of implementation activity; NDFs used for legal trade; seizures of illegal fisheries, exports and imports appear in national reports and the media.

- Level 4 (population impacts). Slow life history, therefore an inevitable ~20 year lag between listing and signs of population recovery.

© Basking sharks in Scotland 2013

Why this taxon is special

- Long-lived, slow-reproducing fishes that are intrinsically vulnerable to overfishing

- Low volume and often low value in domestic fisheries and markets, therefore a low priority for fisheries managers

- Low volume in international trade, but some high value products

- Top predators have a high ecological value, as keystone species

- High economic value for dive tourism, catch and release recreational fisheries

- Traded as parts or derivatives (e.g. fins and meat)

- Lookalike challenges (whole animals are easier to identify than products in trade)
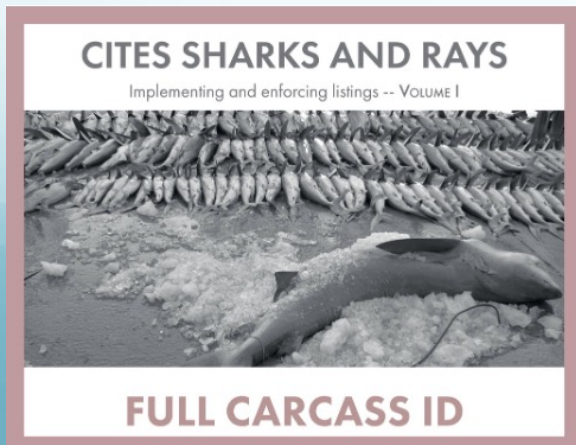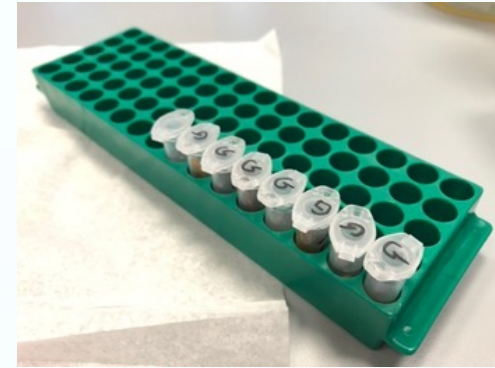

© S L Fowler 202.

Why the shark story is special for CITES

- First CITES discussions held and Shark Resolution (1994) adopted before the first listings in the Appendices (2002)

- CITES discussions and Resolution may have stimulated FAO's International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks), encouraging action by national fishery agencies

- CITES–FAO MOU ensures that the two Secretariats continue to work together on marine fish issues

- CITES' second Shark Resolution (Res. 12.6) is now 20 years old and still valid.

- Sharks are the only Appendix II marine fishes to have engaged RFBs (which now attend CITES meetings) and involved Introduction from the Sea certification

Level 1 – technical outputs

- Implementation and capacity-building efforts commenced with 2002 listings, but accelerated following listings of commercially-important species in 2013:
  - increased engagement by Parties, IGOs (IUCN, fishery bodies), and NGOs
  - substantial funding, much directed through CITES and FAO
  - implementation tools (NDF guidance, identification guides for parts and derivatives, genetic tools)
  - capacity-building in fishing countries and trading hubs
  - numerous meetings and workshops
  - outputs still being generated and refined

Workshop to review the Shark NDF Guidance
20-21st August 2014

Federal Agency for Nature Conservation
Konstantinstrasse 110
Bonn, Germany

CITES SHARKS AND RAYS
Implementing and enforcing listings -- VOLUME I

FULL CARCASS ID

eNDF   CITES NON–DETRIMENT FINDINGS (NDF)
GUIDANCE FOR ELASMOBRANCH SPECIES
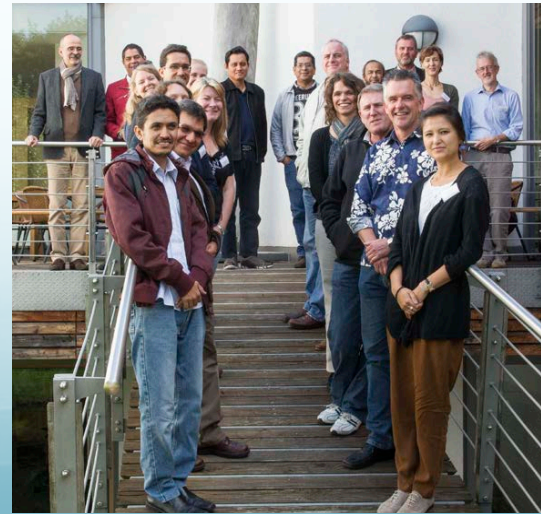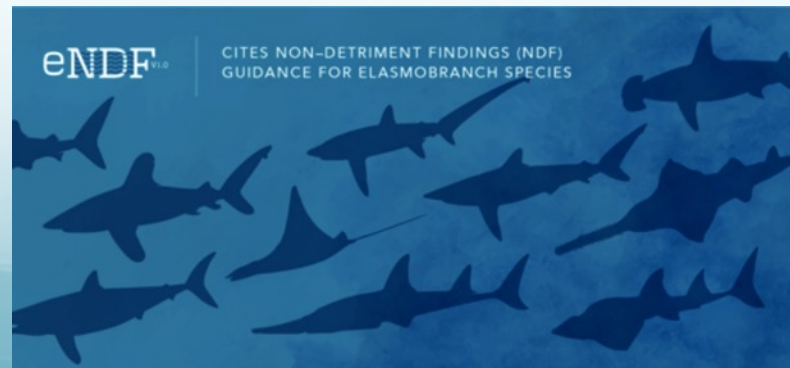
Level 2 – policy outcomes

- Technical outputs (level 1) prompted national and regional action by Parties, including through advisory and management Regional Fishery Bodies (RFABs and RFMOs)

- Capacity building activity rose steeply in some RFBs (e.g. SEAFDEC)

- Some RFB action for CITES sharks preceded listings (prohibitions, quotas and/or mitigation measures), but activity increased after the listings

- CITES LAFs and introduction from the sea (IFS) can now support RFMO management, national conservation actions (e.g. MPAs and shark sanctuaries), and CMS Appendix I shark listings

- More Parties are making and sharing NDFs for listed shark species to support exports; CITES trade records are rising

- The CITES Trade Database has, since 2020, recorded IFS for newly listed mako sharks.
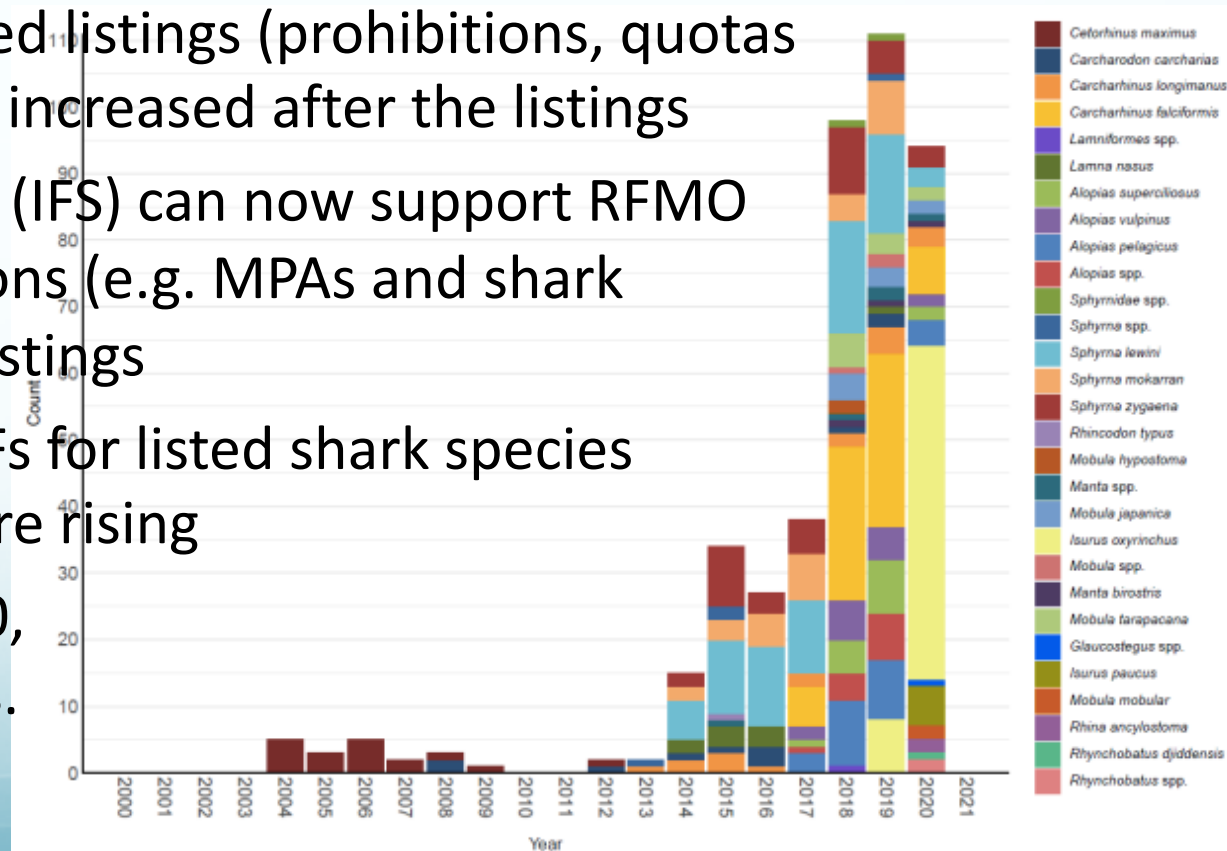
Level 3 – field outcomes

- CITES has been a major catalyst for:
  - Sector awareness promoting action
  - improved fishery and trade data collection
  - compliance enforcement for fishery and trade management measures, from vessel to dock, to points of export and import

- For field outcomes, we mostly hear about challenges, e.g.
  - zero catch quotas and trade bans
  - prosecutions for fishers and traders in breach of prohibited species rules
  - seizures of illegally-traded products – sometimes at very large scale

- Positive field outcomes aren't news-worthy (successful compliance monitoring, trade prohibitions replaced by export permits), thus difficult to quantify

- Trader and fisher awareness remains low in some Parties (particularly in large scale traditional fleets), but continues to improve, often through NGO activity.

Level 4 – population impacts

- Still too soon to measure the influence of CITES listings on shark populations

- Shark stocks can take decades to recover from depletion, due to their slow life history characteristics – CITES listings are relatively recent and have been focused on very long-lived species

- Case studies of shark stock recovery following earlier introduction of fisheries management demonstrate that declines are reversible

- Because recovery takes so long, it's essential to maintain effort and achievements at level 3.

Summary of implementation for sharks

- Level 1 (technical outputs). Significant investment and numerous implementation products developed, from visual identification guides and genetic identification tools, to guidance and software for NDFs.

- Level 2 (policy outcomes). Substantial and widespread sharing of the above, including through national and regional implementation workshops; improved data availability; many Parties publishing NDFs, often with action plans.

- Level 3 (field outcomes). High and rising level of implementation activity; NDFs used for legal trade; seizures of illegal fisheries, exports and imports appear in national reports and the media.

- Level 4 (population impacts). Slow life history, therefore an inevitable ~20 year lag between listing and signs of population recovery.

Support for implementation

CITES website

https://cites.org/eng/prog/shark

FAO website, e.g.

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

IUCN Shark Specialist Group, e.g.

www.iucnssg.org/publications-id-guide.html

Among others!
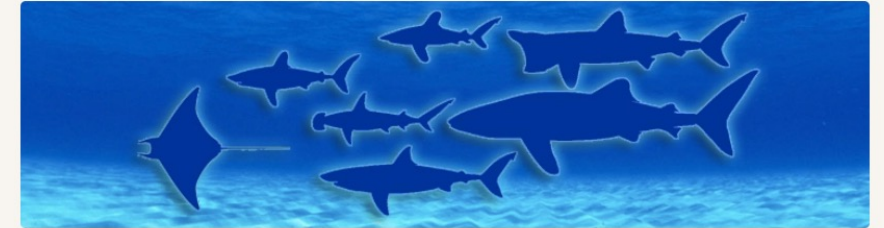
Recommendations for sharks

- Continue training in and development of NDFs with associated action plans that improve (*inter alia*) management and monitoring;

- Improve guidance for the development of Legal Acquisition Findings;

- Improve guidance for and reporting of Introduction from the Sea;

- Solve challenges of scientific sample permitting;

- Extend species-specific monitoring of fisheries;

- Extend monitoring of traded products in retail markets;

- Address challenges of secondary catch and bycatch of sharks and rays;

- Monitor populations of listed species to assess compliance and recovery.

Humphead Wrasse

Assessing implementation of CITES Appendix II listing for Humphead wrasse (HHW), *Cheilinus undulatus*
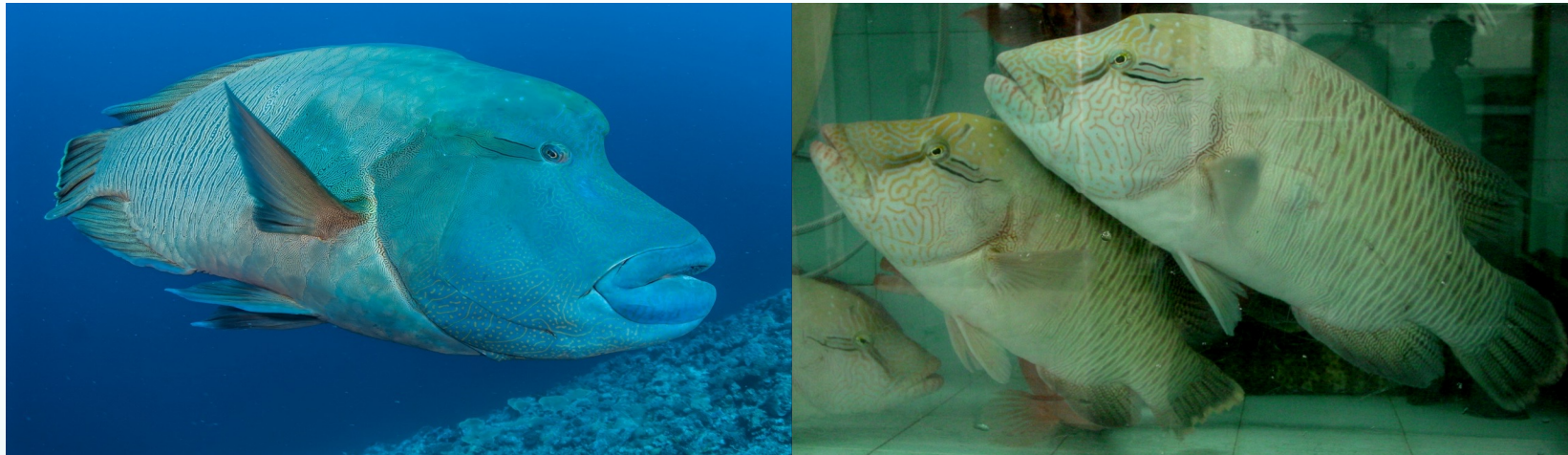
Prof. Yvonne Sadovy
University of Hong Kong (Ret.)
Co-chair IUCN Grouper & Wrasse Specialist Group

Summary of findings from our report

- 2004 listing of HHW resulted in:
  - many technical outputs (Level 1)
  - population field surveys (Levels 2/3)
  - no further population deterioration + recovery initiated where fishing reduced (Level 4)

- Actions to address IWT:
  - transport (air-only) mode controlled for W [wild source code] fish to reduce illegal (some at-sea) transport (Level 3)
  - controls in Hong Kong SAR reduced illegal trade in W fish (Level 3)

- Challenges with introduction of source code R (ranched) from 2018:
  - no evidence-based NDF for R exports despite much increased quota
  - 'R' animals all sourced from the wild beyond earliest stage of highest natural mortality
  - R and W fish cannot be distinguished - weakens enforcement capability

Why this taxon is special

- Reef fish that are

  - large
  - long-lived
  - late-maturing

  - sex-changing
  - naturally uncommon
  - widely distributed

- Currently legally traded between only two Parties and easy to identify at all life stages

- All animals sourced from wild populations

- IUCN Red List = **ENDANGERED**

| NOT EVALUATED	DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	⟨ENDANGERED⟩	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
NE	DD	LC	NT	VU	EN	CR	EW	EX

Why is species special for CITES

- First large iconic reef fish listed on CITES App II at CoP13 in 2004; species-level listing

- Primarily traded internationally, live as juveniles, top-priced in luxury seafood market

- Healthy populations bring good income to small-scale fishers (also valued in dive tourism)

- For past decade, only one Party (Indonesia) has legally exported HHW to only one Party (China)
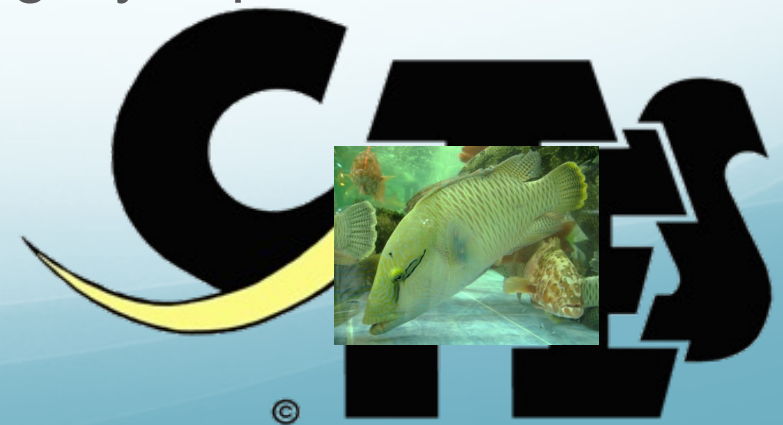
Level 1 – technical outputs

Collaboration with Parties/Secretariat and studies:

- Produced tailored NDF model
    (working closely with FAO)

- Developed methods for field surveys

- Meetings, workshops, exchanges with Parties, traders

- Studies identified illegal trade in Hong Kong SAR

- Developed/trialled facial recognition tool for tracking

- HHW identification workshops/materials
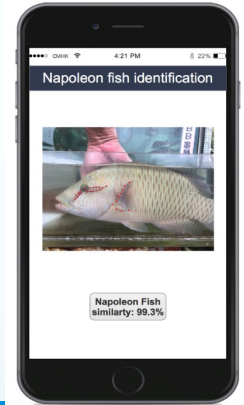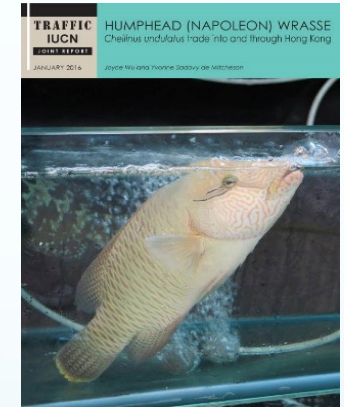
Level 2 – policy outcomes

Several policy actions trade have brought change:

- National export bans introduced by Parties

- China (mainland) recently added wild-sourced HHW to its national list of threatened species

- W (wild) trade from Indonesia;
  - until 2018 good progress with NDF
  - quotas, export size limits, transport mode control (W only by air)

- R (ranched) trade from Indonesia;
  - post 2018-large exports without science-based NDF
  - R trade only by sea
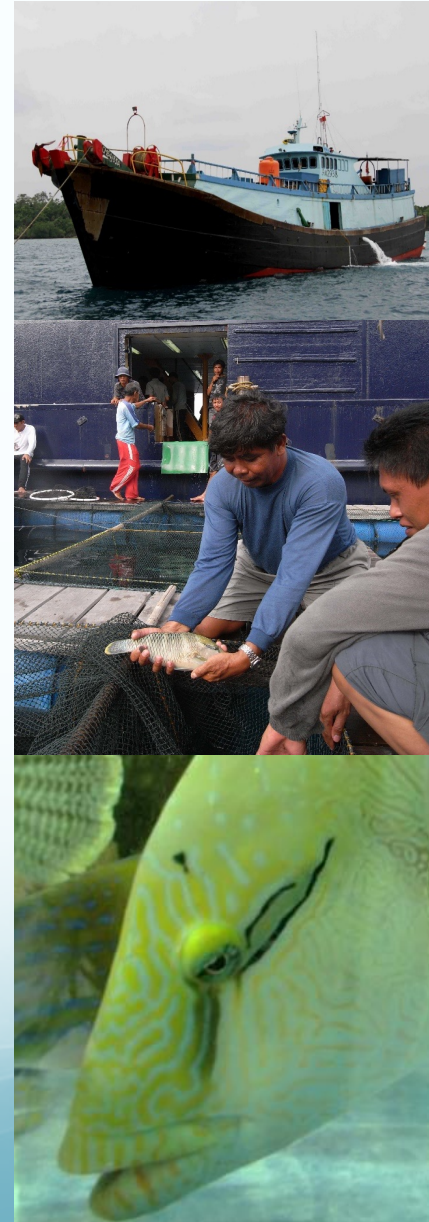
Level 3 – field outcomes

Field outcomes:

- Hong Kong SAR acted against illegal trade with confiscations, prosecutions

- Multiple field surveys conducted across Indonesia on abundance and sizes of HHW

- HK SAR re-exports into mainland China undocumented

- Introduction of R (ranched) fish undermined enforcement because
  - 'R' and 'W' fish are indistinguishable
  - many fish now undersize,
  - vessel trade hard to control

South China Morning Post

Exposed: the illegal Hong Kong trade in endangered coral reef fish
Despite more than 1,000 counted on sale, no imports of the fish took place last year according to official records, exposing extent of illegal trade
PUBLISHED : Friday, 18 March, 2016, 8:30am
UPDATED : Friday, 18 March, 2016, 10:13am

Ernest Kao
186 SHARE

Hong Kong plays a major role as an import and transshipment hub for the endangered humphead wrasse despite regulations to protect the reef fish implemented nearly a decade ago, a new report has found.

MOSTLY LEGAL, BUT NOT SUSTAINABLE
HOW AIRLINES CAN SUPPORT SUSTAINABLE TRADE IN LIVE REEF FOOD FISH

Level 4 – population impacts

- Surveys (baseline and repeated) show no further declines since listing, and evidence of some recovery 7 years after the listing

- In countries with (no-take) MPAs and/or export bans, several surveys note healthy populations that likely help replenish regional populations through egg/larval dispersal
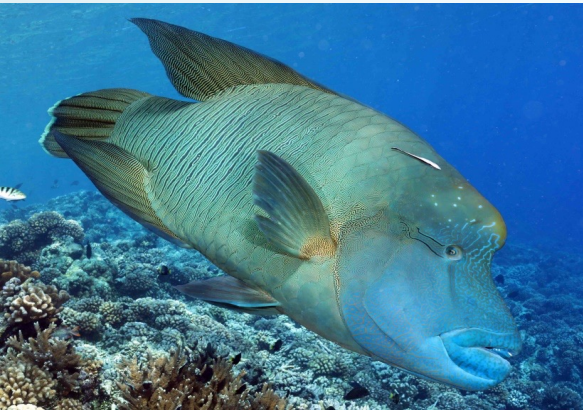
Summary of implementation for Humphead Wrassse

- NDF developed and applied in Indonesia, where field surveys also conducted

- Good early efforts by HK SAR and Indonesia in regulating trade

- Overall implementation on W has been positive; that for R fish is poor

- Challenge to distinguish W from R fish and legal from illegal imports in HK
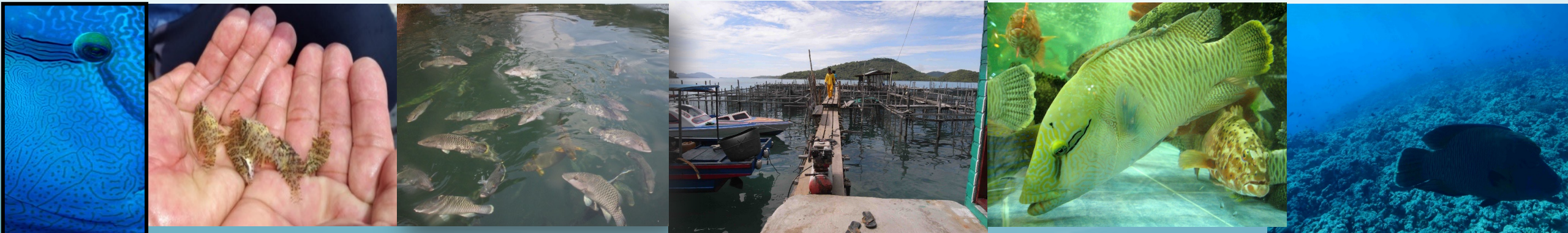
Recommendations from Humphead Wrasse

- Apply existing science-based NDF to ranched fish

- Apply results from field surveys for updating export quotas

- Use **tagging/microchip/facial recognition** to distinguish legal imports and distinguish R from W fish

- Improve oversight of HK live carrier vessels transporting live HHW

- HK SAR could support Indonesia by monitoring fish sizes imported

- Safeguard livelihoods by ensuring sustainable catch and trade

Acknowledgements

Summary and recommendations

Review and recommendations

Dr. Susan Lieberman

Vice President, International Policy, Wildlife Conservation Society

To address CITES obligations…

- Parties need to implement an Appendix II listing on all four Levels.

- A Party should:
  - produce or accesses technical outputs (Level 1)

  - make governance changes for policy outcomes, as applicable (Level 2)

  - make practical changes in field outcomes (Level 3) in order to

  - achieve the required biological changes and population impacts (Level 4).

Implementation by taxon

- We analysed 20 years of CITES implementation of marine fish Appendix listings across three taxa: (i) seahorses, (ii) sharks and rays, and (iii) humphead wrasse

- Level 1 technical outputs: Rather a lot done for all taxa and such work is no longer rate limiting.

- Level 2 policy outcomes: Hopeful but very patchy, encouraging for some species and deficient for others.

- Level 3 field outcomes: Perceptible implementation dropped noticeably. Some encouraging progress but little evidence of transformative action.

- Level 4 population impacts: Little evidence of progress.

Summaries for the three taxa

- Seahorses: Progress, particularly in the live **seahorse** trade, but far more needs to be done on the dried **seahorse** trade.

- Sharks: Encouraging progress, but it will take some time before the long-lived, slow reproducing **shark** species show signs of recovery.

- HHW: Excellent progress for the trade in **HHW** removed from the wild (source code W), but worrying issues in the trade reported to be from ranching operations (source code R)
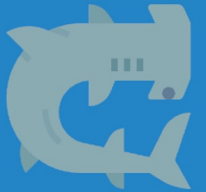
1. Technical Outputs
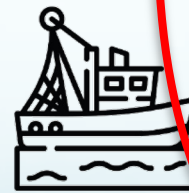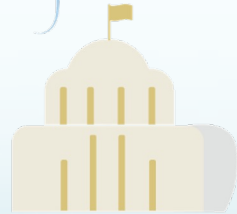
2. Policy Outcomes

3. Field Outcomes

4. Population Impacts

Framework for assessing implementation

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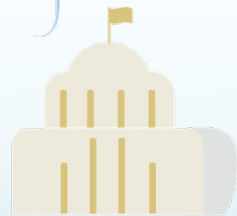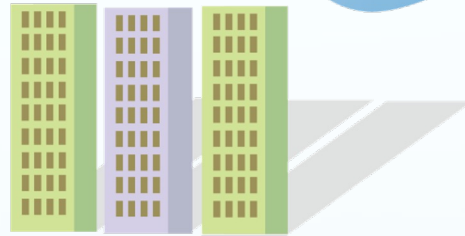
Framework for assessing implementation
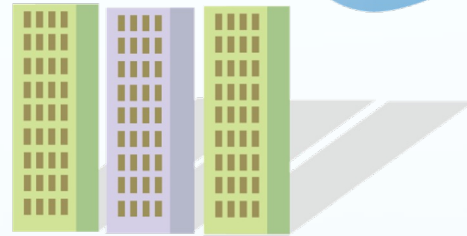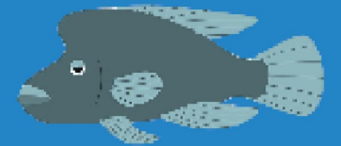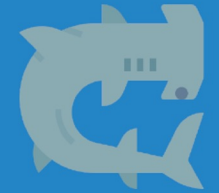
1. Technical Outputs

2. Policy Outcomes

3. Field Outcomes

4. Population Impacts

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Stages of implementation

- Soon after listing, almost every activity makes a contribution. There has been tremendous engagement by Parties and IGOs/NGOs for sharks, less for seahorses and HHW

- Then, over time….
  - technical outputs and tools increase (Level 1)
  - policy outcomes take longer, but also increase (Level 2)
  - field outcomes are building, but are hard to assess or even find
    - they may be small in scale, or perhaps not documented or reported (Level 3)
  - population impacts are challenging to assess (Level 4)
    - Fisheries-dependent data relied on too much
    - Hard to find outcomes, even if they are there
    - May not yet be assessed

Start at any Level

- Our framework does not require four sequential phases of implementation.

- It is hopefully useful for Parties in planning: must be seen in the national context

- Sometimes it makes sense to develop NDF frameworks (Level 1), then make NDFs (Level 2), then address a problematic fishery (Level 3).

- However it can also make sense to aim for a field outcome (Level 3) almost immediately.
  - E.g. if a Party knows that illegal trade is dependent on illegal fishing, it could just engage in active enforcement of fisheries laws (Level 3); and skip over developing genetic identification tools (Level 1) or long planning and policy processes (Level 2).

- Or it can be a good idea to make an informed judgment on the best level for action and then switch levels as knowledge is gained, in what amounts to adaptive management.

- Getting stuck at Level 1 is a problem if no implementation measures reach the fish.

Effective implementation

- Depends on national fisheries and ocean agencies working with CITES Authorities (MA, SA, Enforcement) to develop and implement effective adaptive management that fully implements CITES for these species, including efforts to:

  1. make positive and meaningful NDFs that are scientifically sound and then use these to establish export quotas or other meaningful management measures;

  2. ensure legal acquisition and monitoring of actual trade (not just reported/permitted trade) to facilitate adaptive management;

  3. address use and illegal trade that is taking place without permits; and

  4. monitor and evaluate impacts on target species/populations

Last word

- Parties need to implement effective front-line field management for CITES-listed species
  - enforcement of rules and regulations
  - monitoring and evaluation of populations in the wild
  - adaptive management to ensure the long-term viability and potential recovery of populations

- CITES App II only requires what all natural resource management should seek to achieve: sustainable use and legal sourcing that avoid compromising the future of the species, and even help facilitate recovery.

- CITES App II species benefit from increasing recognition that fish are wildlife and not just resources.

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Assessing implementation of CITES Appendix II listings for marine fishes
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