

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA



Thirty-third meeting of the Animals Committee
Geneva (Switzerland), 12 – 19 July 2024

Species conservation and trade

Aquatic species

MARINE ORNAMENTAL FISHES

1. This document has been prepared by the Secretariat.
2. At its 19th meeting (CoP19; Panama City, 2022), the Conference of the Parties adopted Decisions 19.237 and 19.238 on *Marine ornamental fishes* as follows:

Directed to the Secretariat

19.237 *The Secretariat shall:*

- a) *convene a technical workshop to consider the conservation priorities and management needs related to the trade in non-CITES listed marine ornamental fishes worldwide, with a particular focus on data from importing and exporting countries;*
- b) *invite the Animals Committee, representatives from range States, exporting, and importing countries, fishery stakeholders, industry representatives and relevant intergovernmental and non-governmental organizations to participate in this workshop; and*
- c) *submit findings and recommendations of this workshop to the Animals Committee.*

Directed to the Animals Committee

19.238 *The Animals Committee shall:*

- a) *agree a terms of reference for the technical workshop; and*
- b) *consider the results of the workshop referred to in Decision 19.237 and make recommendations to the 20th meeting of the Conference of the Parties.*

Background

3. At CoP19, the Secretariat reported in document [CoP19 Doc. 80](#) that it had secured funding from the European Union, Switzerland and the United States of America to compile workshop documents on marine ornamental fishes' biology, conservation status, trade and management, and applicable trade regulations. The Secretariat appreciates the support provided in this regard. These draft studies were made available to the Parties at CoP19 in information document [CoP19 Inf. 99](#) and its [Annex](#).
4. An updated version was prepared in April 2024 to incorporate several revised datasets ahead of the CITES marine ornamental fishes workshop. This updated version is available [here](#).

5. Paragraph a) of Decision 19.238 directed the Animals Committee to agree a terms of reference for the technical workshop. The draft terms of reference and *modus operandi* were agreed at the 32nd meeting of the Animals Committee (AC32, Geneva, June 2023) and can be found in Annex 1 to the present document.
6. The objectives of the workshop, as set out in the Terms of Reference, were to, *inter alia*:
 - a) focus on international trade in live specimens of non-CITES listed marine ornamental fishes, with a particular focus on data from importing and exporting countries, specifically on coral reef fishes (fish which live amongst or in close relation to coral reefs that are found in the tropical and subtropical Western Atlantic and Indo-Pacific oceans, typically occurring between 30°N and 30°S latitudes), and on those species (including sharks and rays) that are caught and traded for display in public or private aquariums;
 - b) share information about the nature and scale of the international trade in specimens of non-CITES listed marine ornamental fishes and identify knowledge gaps;
 - c) consider the limitations of existing data;
 - d) provide a platform for the exchange of information relating to international trade in marine ornamental fishes and its potential impact on species conservation;
 - e) identify and consider examples of best practices to manage trade in marine ornamental fishes in a sustainable way, including trade originating from captive-bred sources;
 - f) consider the biology, conservation priorities and management needs related to the trade in non-CITES listed marine ornamental fishes worldwide;
 - g) consider the potential benefits of sustainable harvest on species conservation and livelihoods; and
 - h) make recommendations to ensure the conservation of marine ornamental fishes taxa that may be negatively impacted by international trade.

Technical workshop

7. Having secured additional funding from Switzerland, the United Kingdom of Great Britain and Northern Ireland and the United States' National Oceanic and Atmospheric Administration (NOAA), the Secretariat published [Notification to the Parties No. 2024/041](#) on 4 March 2024, notifying Parties that it was convening a technical workshop consider the management and conservation of marine ornamental fishes involved in international trade in accordance with Decisions 19.237 and 19.238 on *Marine ornamental fishes*. Participants were invited to submit any supplementary documentation in advance. The Secretariat is grateful to Australia for hosting the workshop and for the financial support provided by Switzerland, the United Kingdom and the US NOAA.
8. The workshop was held from 7 to 10 May 2024, in the Brisbane Convention and Exhibition Centre and had interpretation into English, French and Spanish. Online participation was available for the plenary sessions, while breakout sessions on 9 May were primarily conducted in English.
9. The workshop was attended by more than 140 participants, including Members of the Animals Committee and its Chair and vice-Chair, representatives from range, exporting, transit and consumer States, as well as fishery stakeholders, industry representatives and relevant intergovernmental and non-governmental organizations. A total of 13 Parties participated in person and an additional 17 participated online. Sponsorship to attend the meeting in person was provided to one delegate from each of the following Parties: Brazil, Fiji, Papua New Guinea, the Philippines, Sri Lanka and the United Republic of Tanzania. A sponsored delegate from Kenya was ultimately not able to travel as he did not receive his visa in time, but he did participate online.
10. The agenda for the meeting is presented in Annex 2 and demonstrates the range of topics and perspectives covered. All of the relevant documentation for the workshop was made available at a dedicated webpage on the CITES website (<https://cites.org/eng/node/139057>). The detailed report from the workshop will be presented as an information document at this meeting.

11. Two breakout groups were established to examine the documentation and data presented mindful of the mandate in the terms of reference given by the Animals Committee. Each group developed draft observations and recommendations, which were reviewed in plenary and consolidated to be presented as the workshop outcomes to the Animals Committee. The observations as agreed by the workshop are presented in Annex 3 to this document, under the following headings:
 - The nature and scale of international trade
 - Information exchange
 - Best practices
 - Biology, conservation priorities and management needs
 - Livelihoods
 - Areas for future research
 - Potential options for future monitoring
 - Miscellaneous observation
12. Based on these observations, the workshop agreed on outputs to be considered further by the Animals Committee, including a catalogue of marine ornamental fish species found in international trade and a set of recommendations.
13. The catalogue was developed from a list of marine ornamental fish species and compiled on the basis of the background document *International trade in non-CITES listed marine ornamental fish* produced by the United Nations Environment Programme – World Conservation Monitoring Centre (an update to information document CoP19 Inf. 99), supplemented with data from the Ornamental Aquatic Trade Association, Ornamental Fish International, the International Union for Conservation of Nature, Baillargeon et al. (2024), and Biondo (2024). This resulted in a catalogue of 2,192 non-CITES species that are aligned with the definition of marine ornamental fish species in document [AC31 Doc. 36](#). Where possible, the different datasets were mapped to the core nomenclature used in the updated information document CoP19 Inf. 99, in line with the nomenclature published in FishBase (version 05/2023). This core list also included metadata on species Productivity-Susceptibility Analysis (PSA) score from [Baillargeon et al \(2024\)](#), where calculated. The catalogue of species identified as being in international trade is presented in Annex 4 to the present document, while the recommendations are presented in the paragraph below.

Recommendations from the marine ornamental fishes (MOF) workshop

14. The marine ornamental fishes workshop recommends that the Animals Committee agree to:
 - a) note the outcomes of the international workshop on marine ornamental fishes, including the set of observations and recommendations;
 - b) note that the workshop has identified a catalogue of over 2,000 species in international trade based on the various background documents prepared for the workshop;
 - c) note that some background documents have presented different methods, used different datasets and identified species that may warrant further assessment related to the potential impacts of international trade;
 - d) note that from this catalogue, some species may warrant further research and assessment;
 - e) consider the catalogue of marine ornamental fish species in international trade identified by the workshop and consider any relevant vulnerability analyses of the species included in this catalogue;
 - f) encourage Parties, where possible, to record international trade data in marine ornamental fishes at the species level and include the following data:
 - Species name: genus + species
 - Common name: in any language (local names, English names, etc.)
 - Quantity: number of specimens
 - Country of origin: country of harvest
 - Country of export:
 - Country of import:
 - Source: CITES source codes (W, R, F or C)
 - Import/Export: Is it import, export or re-export?

- Date: date of shipment
- g) encourage Parties and stakeholders, where possible, to make marine ornamental fishes international trade data more accessible and consistent, and to share the trade data with researchers to help understand the scope and scale of the trade;
 - h) invite Parties to consider Appendix III listings for nationally protected species that meet the criteria set out in Resolution Conf. 9.25 (Rev. CoP18) on *Implementation of the Convention for species in Appendix III*. Proponents should consult with other range States and consider application of the proposed listing across the species' range.
 - i) invite Parties to consider using CITES and International Air Transport Association Guidelines on live animal transport for marine ornamental fishes in trade for transport nationally as well as internationally.
 - j) encourage Parties to refer to [IUCN Guidelines for Reintroductions and Other Conservation Translocations](#) when considering releasing specimens of marine ornamental fishes into the wild;
 - k) encourage Parties to consider entering into a mentoring arrangement with neighbouring Parties to develop best practices for management of and trade in marine ornamental fishes;
 - l) encourage Parties, where possible, to involve indigenous peoples and local communities and encourage engagement by these communities in the development and implementation of management plans for marine ornamental fishes. In doing so, understand better the potential benefits of sustainable trade to species conservation and hence livelihoods over time.
 - m) encourage Parties to involve all relevant stakeholders in the development and implementation of conservation and management plans for marine ornamental fishes;
 - n) encourage Parties to share best practices on documenting international trade in marine ornamental fishes, including data collection, accessibility, evaluation and reporting;
 - o) encourage Parties to share best practices on population monitoring and evaluation of management effectiveness for species of marine ornamental fishes;
 - p) encourage Parties when developing management plans for marine ornamental fishes to consider an ecosystem approach, where appropriate, and include conservation elements;
 - q) recommend that for future IUCN Red List Assessments of marine ornamental fishes, species not yet assessed and those where the assessments are older than 10 years are prioritised;
 - r) invite exporting Parties to consider making use of the methodologies and adaptive management practices outlined in the [CITES NDF guidance](#) to ensure that international trade in non-CITES listed marine ornamental fish species is not detrimental to the species in the wild;
 - s) note the following future research topics on marine ornamental fishes identified at the workshop:
 - i) The best analytical tools to support prioritisation of species (e.g. Productivity Sustainability Analysis or other vulnerability analyses, FishBase) to best direct efforts for stock assessments for those species that are highlighted as most potentially vulnerable.
 - ii) How to sustainably manage species in data poor MOF fisheries.
 - iii) Life history characteristics, including age at maturity, fecundity, pelagic larval duration, generation time of marine ornamental fishes.
 - iv) The contribution of *ex situ* husbandry and captive breeding to management and recovery of wild populations (noting that this is highly species and context dependent) including nutritional needs.
 - v) The impact of shifting production systems on livelihoods.
 - vi) The best ways government resources can be allocated to fisheries management and harvest practices.
 - vii) Supply chains and traceability (technology, tools, production systems, benefit sharing in supply chain, mortality).
 - viii) Impact of management actions on populations and livelihoods (e.g. closures and restrictions, restocking, from ranching).
 - ix) Monitoring (e.g. remote sensing and Geographic Information System).

- x) Emerging market trends, specifically East Asia.
 - xi) Age of extraction for ranching.
 - xii) Cyanide testing and the need for a tool for detection.
 - xiii) Impact of climate change.
 - xiv) Test to detect the use and understand the prevalence of destructive chemicals (e.g. cyanide, chlorine) and other chemicals used in harvest.
- t) encourage Parties to share nationally prohibited species list / domestic legislation on marine ornamental fishes to be included in existing databases such as FAOLEX, ReefLEX, CITES Lex and ECOLEX;
 - u) encourage Parties to make use of FAO's existing global fishery and aquaculture statistics databases to capture harvest and aquaculture data on marine ornamental fishes; and
 - v) encourage Parties to use the nomenclature in Eschmeyer's Catalogue of Fishes when recording international trade in non-CITES listed MOF species.
15. The workshop also noted the offer from the University of Leeds and Roger Williams University to run a Productivity Sustainability Analysis (PSA) on species from the catalogue in Annex 4, to share with the Animals Committee. If available in time, this analysis may be submitted as an information document to the present meeting.

Recommendations

16. The Animals Committee is invited to:
- a) note the observations from the international technical workshop on marine ornamental fishes presented in Annex 3;
 - b) consider the catalogue of fishes in international trade presented in Annex 4;
 - c) agree to the recommendations in paragraph 14 of the present document;
 - d) agree to submit the following draft decisions to the 20th meeting of the Conference of the Parties:

Directed to the Secretariat

20.AA *The Secretariat shall monitor the development of any methods or analytical tools to support prioritisation of species of marine ornamental fisheries (e.g. Productivity Sustainability Analysis or other vulnerability analyses, FishBase) and report relevant developments to the Animals Committee, as appropriate.*

Directed to the Animals Committee

20.BB *The Animals Committee shall review any developments brought to its attention by the Secretariat under Decision 20.AA and make recommendations to the Parties, the Standing Committee or Conference of the Parties, as appropriate.*

- e) agree that Decisions 19.237 and 19.238 have been implemented and can be deleted.

TERMS OF REFERENCE FOR THE WORKSHOP ON MARINE ORNAMENTAL FISHES
AS AGREED AT AC32

Workshop scope and activities

1. The technical workshop will, inter alia:
 - a) focus on international trade in live specimens of non-CITES listed marine ornamental fishes, with a particular focus on data from importing and exporting countries, specifically on coral reef fishes (fish which live amongst or in close relation to coral reefs that are found in the tropical and subtropical Western Atlantic and Indo-Pacific oceans, typically occurring between 30°N and 30°S latitudes), and on those species (including sharks and rays) that are caught and traded for display in public or private aquariums;
 - b) share information about the nature and scale of the international trade in specimens of non-CITES listed marine ornamental fishes and identify knowledge gaps;
 - c) consider the limitations of existing data;
 - d) provide a platform for the exchange of information relating to international trade in marine ornamental fishes and its potential impact on species conservation;
 - e) identify and consider examples of best practices to manage trade in marine ornamental fishes in a sustainable way, including trade originating from captive-bred sources;
 - f) consider the biology, conservation priorities and management needs related to the trade in non-CITES listed marine ornamental fishes worldwide;
 - g) consider the potential benefits of sustainable harvest on species conservation and livelihoods; and h) make recommendations to ensure the conservation of marine ornamental fishes taxa that may be negatively impacted by international trade.

Outcomes

2. The workshop will contribute to the following outcomes:
 - a) identification of non-CITES listed marine ornamental fish species in international trade;
 - b) an understanding of the scale and dynamics of this trade, including the degree to which data are available at a national or population scale; and evidence of captive breeding;
 - c) identification of potential options for monitoring of species trade volumes;
 - d) a better understanding of the biology, conservation status and intrinsic vulnerability to extinction for all non-CITES marine ornamental fish species identified as being in international trade;
 - e) prioritisation for further research into the potential impact of international trade on species considered to be at higher risk of extinction as a result of international trade;
 - f) improved management measures and best practices to ensure the conservation of the marine ornamental fish species identified; and
 - g) improved regulations for international trade in non-CITES listed live coral reef fishes and their enforcement

Outputs

3. The workshop will generate the following outputs:
 - a) recommendations to address the conservation priorities and management needs of non-CITES listed marine ornamental fishes; and
 - b) strategies and proposed actions to ensure that international trade in marine ornamental fishes does not threaten their survival, to be presented to the Animals Committee in accordance with Decision 19.237, paragraph c), for its consideration.

A workshop report will be prepared by the Secretariat and circulated to participants for review before submission to the Animals Committee.

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Prioritization of Parties and marine ornamental fishes taxa

4. To make the workshop as practical and constructive as possible, the Secretariat will initiate a process of prioritization to identify Parties for participation in the workshop and to determine the marine ornamental species most affected by international trade for the workshop to focus on. The prioritization of Parties will be based primarily on the results of the thematic studies prepared under paragraph c) of Decision 18.296. These thematic studies were made available at CoP19 in information document CoP19 Inf. 99 and its Annex.
5. The studies referred to in paragraph 4 above gathered information on marine ornamental fish trade, conservation status, management and legislation from a survey that was circulated via a Notification to the Parties on 30 March 2021 (Notification to the Parties No. 2021/030). Further information on marine ornamental fish species was compiled from species databases (e.g. IUCN Red List, FishBase), trade databases (e.g. US imports in LEMIS, EU imports in TRACES, TRAFFIC Wildlife Trade Portal and GMAD), expert consultation, relevant management plans and legislation in key countries of export, and the wider published literature.
6. The workshop prioritization will also make use of additional available relevant material such as the recent IUCN Red list assessments, research carried out by Species360, information document CoP19 Inf. 68, reports from FAO and any verified information from other credible data sources such as academic field research concerning marine ornamental fishes.
7. The prioritization of Parties will include:
 - a) range States of non-CITES-listed marine ornamental species identified as being most significantly affected by international trade, based on available trade data;
 - b) Parties identified as key exporters of marine ornamental fishes; and
 - c) Parties identified as key importers of marine ornamental fishes;

The Secretariat will issue a Notification to the Parties concerning this prioritization and announce the workshop dates.

8. In accordance with Decision 19.237, the workshop will be convened by the Secretariat and include representatives from the Animals Committee, representatives from range States, exporting, transit and importing countries, fishery stakeholders, industry representatives and relevant intergovernmental and non-governmental organizations.
9. To ensure that maximum benefit is derived from the workshop, Parties most affected by international trade in marine ornamental fishes and identified through the prioritization process described in paragraphs 4 to 8 above are encouraged to make every effort to participate in the expert workshop.
10. Subject to available funding, the Secretariat may be able to support the participation of at least one representative from eligible key Parties identified as affected by international trade in marine ornamental fishes who are not in the position to cover their costs. These Parties may wish to nominate additional representatives at their own expense. To ensure broad stakeholder participation, the representatives that

these Parties nominate should be from CITES authorities, wildlife and fishery agencies or be recognised experts on marine ornamental fish conservation or trade. The nominated representatives should have relevant expertise on the subject matter and be able to contribute to the activities and outputs of the technical workshop.

11. Other organizations and experts with relevant experience or knowledge, or that work actively on marine ornamental fish related matters will be identified and engaged. This could for example include organizations or individual experts that have shown a long-standing interest in marine ornamental fishes, civil society organizations, industry representatives and entities such as the Convention on Migratory Species (CMS) Secretariat, the United Nations Food and Agriculture Organization (FAO), the International Union for Conservation of Nature (IUCN), and the Ornamental Fish International (OFI). Subject to the availability of funds, the Secretariat may be able to support the participation of one representative from some of these entities, to be determined on a case-by-case basis.
12. Parties and organizations are encouraged to take into consideration gender diversity in the nomination of representatives.
13. To maximize transparency and participation, the Secretariat will endeavour to provide, if possible, means for interested Parties and stakeholders that are unable to attend the workshop in person to participate or view online.

Meeting agenda

14. The meeting agenda and summary of available documentation will be developed by the Secretariat in consultation with the Chair of the Animals Committee and the lead(s) identified in the AC workplan 2023-2025. Participants will be invited to submit any supplementary documentation in advance and documents will be made available 30 days in advance of the workshop.

Format and conduct of the workshop

15. Ideally, the technical workshop should take place in a face-to-face setting. This will however be influenced by identification of a host country and venue. The funding currently available is dependent on the workshop being held before the end of 2023. If a face-to-face meeting is not possible during this time, online meetings may have to be contemplated.



Workshop on marine ornamental fishes (MOF)

7-10 May 2024 (Brisbane Convention and Exhibition Centre, Brisbane, Australia)

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Agenda

- Interpretation available in English, French and Spanish on Days 1, 2 and 4
- Plenary sessions available via online platform link on Days 1, 2 and 4

DAY 1 Tuesday 7 May 2024

8:00 – 9:00 Registration

9:00 – 12:00 Plenary

Welcome to Country ceremony - [Representative of the Turrbal People, Traditional Owners of Brisbane.](#)

1. Welcoming remarks - [CITES Secretary-General; Australia](#)
2. Conduct of the workshop – [CITES Secretariat](#)
3. Objectives of the workshop – [CITES Secretariat](#)

The aim of the workshop is to discuss the results of the updated marine ornamental fishes (MOF) study and other information shared with participants on the dedicated workshop [webpage](#).

4. Presentation of background information, followed by a Q&A session
 - UNEP-WCMC – [Kelly Malsch \(in person\)](#)
 - IUCN – [Christi Linardich](#)
 - Extinction risk of marine bony fishes in the ornamental trade
 - Species 360 – [Andrew Rhyne \(in person\)](#)
 - OATA/OFI – [Matthew Bond \(OATA\) \(in person\)](#)
 - Developing an evidence-led species prioritisation framework

12:00 – 14:00 Lunch

14:00 – 17:00 Plenary

5. Presentations from importing Parties perspective (speakers to be confirmed), followed by a Q&A session
 - Office of Law Enforcement, United States of America – [Laura DiPrizio \(in person\)](#)
 - LEMIS and Wildlife Inspections in the U.S
 - FFW/University of Aveiro, Portugal - [Monica Biondo \(in person\)](#)
 - *Monitoring the marine ornamental fish trade to Europe with the European TRACES (TRade Control and Expert System). An updated review from 2014-2021: number of specimens, species diversity, import/export countries, value, and alert system.*
 - Singapore – [Lester Lee](#)
 - Israel – [Simon Nemtsov \(virtual\)](#)

DAY 2 Wednesday 8 May 2024

9:00 – 12:00 (Plenary)

6. Presentations from exporting Parties perspective (speakers to be confirmed), followed by a Q&A session

- Australia – [Adam Briggs/Shane Penny \(in person\)](#)
- Indonesia - [Ruby Vidia Kusumah/Tri Yuliandini Ruswana \(in person\)](#)
- Sri Lanka - [Vishmila Priyashadi \(in person\)](#)
- Kenya – [Mohamed Omar \(virtual\)](#)
- Philippines – [Johann Friedrich Tejada and Dennis de Vera \(in person\)](#)
- Brazil - [Daniel Eduardo Visciano De Carvalho \(in person\)](#)

Presentations (15 mins. max.) by workshop participants (speakers to be confirmed) followed by a Q&A session

7. Presentations from industry representatives and academia (tbc) followed by a Q&A session

- For the Fishes, Hawaii - [Inga Gibson in person, Rene Umberger virtual.](#)
 - [Mālama i ke kai a e mālama ke kai iā'oe - Marine Aquarium Trade Impacts to Hawaii's Reefs, Fishes, and People](#)
- Blue Marine Foundation, United Kingdom of Great Britain and Northern Ireland - [Dr. Elizabeth Wood \(virtual\)](#)
 - Trade in marine fish and invertebrates for home and public aquaria: UK perspective within a global context
- University of Leeds – [Gabrielle Baillargeon \(in person\)](#)
 - Evaluating Species at Risk in Data-Limited Fisheries: A Comprehensive Productivity-Susceptibility Analysis of the Most Traded Marine Aquarium Fish
- FAO/Secretariat of the Pacific Community (SPC) – [Hannah Gilchrist/Antoine Teitelbaum \(in person\)](#)
- Cefas – [Joanna Murray](#)

12:00 – 14:00 Lunch

14:00 – 17:00

6. Moderated discussion to agree on topics to be covered in breakout groups - [Rhedyn Ollerenshaw, \(Australia\) and CITES Secretariat.](#)

7. Establishment of breakout groups

DAY 3 Thursday 9 May 2024

9:00 – 12:00 Plenary

8. Breakout groups

12:00 – 14:00 Lunch

14:00 – 17:00 Plenary

8. Breakout groups contd.

DAY 4 Friday 10 May 2024

9:00 – 12:00 (Plenary)

10. Presentations from breakout groups with draft recommendations

Online participants are also invited to submit proposed draft recommendations in advance. These draft recommendations will be collated with the recommendations coming from the breakout groups. A consolidated set of draft recommendations will be produced at the end of the workshop.

11. Observations and recommendations

12:00 – 14:00 Lunch

14:00 – 17:00 (Plenary)

12. Final review of outputs

13. Next steps

14. Closure of meeting

OBSERVATIONS FROM THE MARINE ORNAMENTAL FISHES (MOF) WORKSHOP,
7 - 10 MAY 2024, BRISBANE, AUSTRALIA.

A. Concerning **the nature and scale of the international trade**, the workshop made the following observations:

- Better data are essential to understand the scale/scope of trade in marine ornamental fish and the impact of the trade on wild populations and ecosystems. Analyses are currently based on data snapshots. Trade analyses would benefit from availability of both export and import data, and species-specific data.
- There are data limitations with current datasets available, including official datasets such as TRACES, LEMIS, HS Codes, FAO capture production and global trade data.
- Some countries, including Kenya, publish export data through annual bulletins.
- Import and export data are often recorded at the species level for reporting for animal health purposes (e.g. biosecurity and quarantine).
- There is a knowledge gap on MOF trade to East Asia due to lack of availability and accessibility to export/import data, including understanding of species in trade, and size and number of specimens.
- There is a need to consider how reporting can align with existing data collection / reporting systems already in place within Parties – to avoid an additional burden on Parties. However, it was noted that such reporting is not an obligation for Parties for non-CITES listed species.
- Several approaches for prioritising species for further research/analysis were put forward at the workshop; additional assessment of these is required. Methods developed for prioritization should be specific to MOF going forwards. Data systems should be flexible to allow for situations where many species are traded at once (e.g. ~300 species in one shipment).
- Parameterization of PSA with sensitivity analysis can be applied to see different approaches depending on data; does not need to rely on trade data.
- Selection of species for trade is based on a number of factors, including availability of species, consumer demand and economic viability of the supply chain.
- Marine ornamental fishes that are traded illegally (e.g. nationally protected species, misidentification, mislabelling), unreported or unregulated may lead to an underestimation of the volume in international trade.
- Failure to keep up with nomenclature changes and other nomenclatural challenges of fish species creates problems (e.g. GBIF backbone, Catalogue of Fishes, FishBase, IUCN Red List, etc.).

B. Concerning **Information exchange**, the working group made the following observations:

- Data availability and accessibility is highly variable by country and source.
- MOF are reported by weight in higher-level systems (Harmonised System codes, etc.) which creates a challenge in comparing trade by individual (which is how they are reporting on packing lists, invoices, etc.), particularly as the weight includes water.
- Trade is reported by traders to relevant regulatory entities electronically and/or via packing list, invoices, health certificates. This information, and other industry produced information, could benefit from being shared to support trade analyses (subject to privacy/commercial sensitivities).

- Parties could consider publishing aggregated data to support understanding of high-level statistics and trends (e.g. 'top 10' approach).
- Good communications between governments (at all relevant levels) and industry (including fishers and trade associations, as appropriate) scientists and other stakeholders, is important for sustainable fisheries management and MOF trade. There may be a benefit from industry communicating trade trends to regulatory authorities, and making that information otherwise available (through publications, website, conferences, etc.).
- Regional bodies (e.g. SPC in the Pacific) can support collaboration and information exchange.
- There may be a benefit from a suitably qualified international organization providing support for consolidated data and resources on trade using existing products and tools for MOF trade (along the lines that FAO has provided on sharks and rays) [World Fish Centre?].

C. Concerning **best practices**, the working group made the following observations:

- Several possible measures to mitigate the effects of harvest were noted during the workshop including:
 - Use of non-destructive harvest techniques (such as hand nets) and elimination of destructive methods (e.g cyanide).
 - Voluntary control of harvest (e.g. closures during breeding seasons, including self regulation and community based measures).
 - Targeting of life history stages/classes with high natural mortality rates, to minimise effects of harvest.
 - Avoiding harvest of those species with poor chances of surviving in captivity and those species that Parties have determined are vulnerable in their jurisdictions.
 - Fishing to order.
 - Specific national legislation that takes either a species or ecosystem approach.
 - Spatial or temporal restrictions on collection.
 - Spreading collection effort across the reef.
 - Management plans with harvest/quota restrictions; including on use of chemicals.
 - No commercial activities and no-take zones in MPAs.
 - Transparency of operations (visibility in communities) and establishment of reporting systems.
 - Tracking of vessels to understand how effort is distributed (surveillance) e.g. VMS.
 - Other lower tech monitoring efforts (catch, areas of collection, records of divers).
 - [Fisheries observers and active verification on boats in real time].
 - Restricted issuance of licenses to boats/divers.
- There is a need for fisher training programmes on hand collection methods, diving safely etc.
- In some cases, ranching can have less impact than wild harvest and can contribute to the wild population when specimens are reared from the post larvae stage and are used for restocking, however care needs to be taken when releasing back into the wild. It should be recognised that ranching is a small percentage of the overall MOF trade - trade is predominately from wild caught specimens. Ranching is applicable in certain situations but is not an overall solution.
- Sharing of experiences and best practices with other Parties (and outside of government channels through NGOs) should be encouraged.
- Recording the offtake at species level and sharing data beyond the exporter and purchaser (encouraging data sharing).
- Specialist knowledge is needed at border inspection authorities to effectively check shipments on MOF.
- Species ecosystem function should be taken into account in fishery management.
- Supporting captive breeding in range States is preferable to captive breeding in non-range States.

- SPC has published guidelines on best practices including [Best practices for the collection, transport, holding and export of fish and corals in the aquarium trade, Saving Nemo – Reducing mortality rates of wild-caught ornamental fish](#)).

D. Concerning **biology, conservation priorities and management needs**, the workshop made the following observations:

- There is a lack of life history information for most MOF species in trade.
- Conservation and management should be context specific, taking into account ecosystems and species.
- Socio-economic factors of all relevant stakeholders should be taken into account when making management decisions.
- NDF guidance and adaptive management practices can also be applied to non-CITES listed species – Parties can be invited to make use of this for MOF and share experiences.
- Recognising the utility of FishBase, there may be scope to improve its vulnerability scores for MOF.
- Self-regulation can work in some situations, e.g small island communities where the local community feels they have ownership and are actively involved. Opportunities for trade can create incentives for local involvement in the conservation of the species. However, it does not work in all situations. Poaching can be a problem in some areas.
- Species for which Red List assessments do not exist or needs updating, particularly where there may be some concern, should be prioritised.
- Marine ornamental fish trade targets a wide range of species and they do not all need to be treated the same way based on biology; specific species need special attention within national regulation.
- Countries can set their own priorities - for example, risk assessments, management measures, trade measures.
- Management needs to be adaptive and responsive (and take into account factors such as natural disasters), informed by science-based monitoring.
- Public aquaria, industry, research organisations and keeper communities can contribute to collation of life-history data (noting that there may be differences between these characteristics for captive and wild individuals).
- MOF and Food Fisheries are both data poor and there are similar challenges - we could consult with food fishery scientists and draw from their expertise.
- Industry indicates that in many cases abundant species are selected for private aquaria trade. They tend to draw on local fisherman/divers to take them to the reefs and provide advice; there are examples in CITES where local divers have been involved in population surveys e.g *Strombus gigas*.
- It should be taken into account that coral reefs are in jeopardy - multiple threats including climate change, destructive fishing practices and other anthropogenic factors aside from trade are relevant when assessing viability to withstand harvest.
- Consideration needs to be given to newly described species that occur in trade - this is usually in small numbers as they are usually not abundant species and this is probably a rare occurrence, but MOF trade can contribute to science (in Australia these species are described by museums).
- In some situations, creation of new offshore (man-made) habitat through construction of breakwaters was found to increase habitat for coral and thus MOF. Some break-out group members did not consider the creation of artificial reefs as habitat restoration.

- There are also efforts to reclaim coral reef and clean-up programmes, with industry involvement. Such programmes aim to release reared specimens to the wild (contributing to conservation). However, it was noted that restocking does have to be done carefully under strict protocols in some countries as these practices can introduce disease, promote genetic mixing etc.
- Understaffing is a challenge at points of import and export.
- Recent research shows that the marine environment houses 78% of animal biomass but receives less than 10% of conservation research effort.

E. Concerning **Livelihoods**, the workshop made the following observations:

- Marine ornamental fisheries can benefit livelihoods / local people. These benefits can extend across communities, including as they relate to employment, economy (including through access rights, licensing fees, income), community cohesion, gender equality, supporting people to remain in their local communities, education, and wellbeing.
- Notably, marine ornamental fish fisheries can provide higher value benefits to people and communities than other extraction systems such as food-fish fisheries.
- There is also the potential for negative impacts on local communities/livelihoods. In particular, unsustainable and unsafe practices can present negative impacts for people.
- There may be different economic benefits to people and communities dependent on their place or role in the supply or value chain.
- While alternative production systems/alternate pathways can (case dependent) present options for more sustainable production/limiting impact on wild populations, they do not always translate to alternative livelihoods for people involved in wild capture fisheries. For example, people who have traditionally harvested wild fish are not always in a position to move to aquaculture practices. There is often also a significant cost to setting up alternate production systems; this may be better invested in maintaining and supporting existing wild harvest systems which have tangible livelihoods benefits.
- Fair and equitable benefit sharing obligations should be taken into consideration.
- Alternate environmental uses such as tourism can be economically important but do not always translate to better outcomes for the environment when compared to sustainable harvest fisheries for MOF. For example, poorly managed tourism can have more impact on reef ecosystems than well-managed MOF harvest.
- Lack of investment in sustainable wild fishing practices could lead to a loss of knowledge and skill in the practice, which may have knock-on effects on sustainability and livelihoods.
- Effective conservation of MOF species can provide long-term livelihood benefits.

F. Concerning **areas for future research**, the workshop made the following observations:

- There would be a benefit to conduct future research on:
 - The best tools to support prioritisation of species (e.g. PSA or other vulnerability analyses, FishBase) to best direct efforts for stock assessments for those species that are highlighted as most potentially vulnerable.
 - How to sustainably manage species in data poor MOF fisheries.
 - Life history characteristics, including age at maturity, fecundity, pelagic larval duration, generation time of MOF.
 - The contribution of *ex situ* husbandry and captive breeding to management and recovery of wild populations (noting that this is highly species and context dependent) including nutritional needs.

- The impact of shifting production systems on livelihoods.
 - The best ways government resources can be allocated to fisheries management and harvest practices.
 - Supply chains and traceability (technology, tools, production systems, benefit sharing in supply chain, mortality).
 - Impact of management actions on populations and livelihoods (e.g. closures and restrictions, restocking, from ranching).
 - Monitoring (e.g. remote sensing and GIS).
 - Emerging market trends, specifically East Asia.
 - Age of extraction for ranching.
 - Mortality rates along the supply chain to understand the impacts on harvest levels.
 - Cyanide testing and the need for a tool for detection.
 - Impact of climate change.
 - Test to detect the use and understand the prevalence of destructive chemicals (e.g. cyanide, chlorine) and other chemicals used in harvest.
- Priority should be given to collecting data for known threatened species, data deficient species, species that have not been assessed and those requiring an updated assessment.

G. Concerning **potential options for future monitoring**, the workshop made the following observations:

- CITES listing (Appendix III) could assist in the collection of trade data for species that meet the criteria in Resolution Conf. 9.25. One of the criteria is the species has to be protected by law in the country that proposes the App. III listing.
- Enhanced examination and/or digitisation of packing lists can be used to create a species list for monitoring – currently just snapshots. These tools need to be more widely accessible (perhaps through different government departments).
- It would be beneficial to understand trends or shifts in production systems, perhaps via shifts in descriptors such as source codes (W/R/F/C).
- The market is elastic; this dynamism is linked to various factors including freight costs, market demand, species availability, seasonality etc. It may be useful to monitor to see how those factors affect trade (or trade recovery) and management.

H. The workshop also made the following **miscellaneous observations**:

- MOF fisheries need different management systems than those for food fishes.
- Industry noted a general trend in some regions towards smaller private aquaria over recent years affecting the species ('nano tanks') which is linked to popularity of smaller species. Technological changes mean smaller tanks are effective. There was also an observation that keeping cultured coral is popular.
- Consumer awareness about sustainability is increasing; consumers may pay a premium for specimens sourced sustainably (but sometimes not provided accurate information at the point of sale in some countries – in others there are requirements on info passed on at sale); information on husbandry of MOF is available online.

- There may be a role for consumer education or empowerment tools, similar to those in use for food fish/seafood.
- Food fish and MOF are harvested at different sizes - MOF generally harvested when small.
- Industry aims and consistently monitors trade to minimize mortality.
- Some species do poorly in smaller tanks or when paired with other animals; a higher level of experience for keeping MOF needs to exist for best care of specimensMOF.
- 'Rare in trade' doesn't necessarily mean 'rare in the wild'.
- Trade in sharks and rays as MOF should not be overlooked even when traded in small numbers.
- The following cases were considered at the workshop:
 - Indonesia BCF – community based management
 - Fiji – community based management
(https://www.spc.int/DigitalLibrary/Doc/FAME/InfoBull/LRF/19/LRF19_03_Teitelbaum.html)
 - Maldives
 - Hawaii
 - Sri Lanka
 - Kenya
 - Australia – Queensland fisheries (harvest strategies, PSA, closed zones, etc.)
- Parties noted similarities in process under Decision 18.256 (Rev. CoP19) on *Songbird trade and conservation management* (Passeriformes spp.). There are also possible connections to work under Decision 19.186 on *Identifying information on species at risk of extinction affected by international trade* and ongoing discussions on Ranching and captive breeding, trade in stony corals.