International trade in non-CITES listed marine ornamental fish

CoP19 Inf. 99 *[Updated]*

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Context and CITES mandate

→ Decision 18.296 c)

- *'…prepare workshop documents on marine ornamental fishes'* ***biology; conservation status; trade and management; applicable trade regulations****; and* ***enforcement****, and invite workshop participants to contribute relevant information and expertise to the workshop; and'*

→ CoP19 Information Doc. 99

Context and CITES mandate

→ Decision 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;*

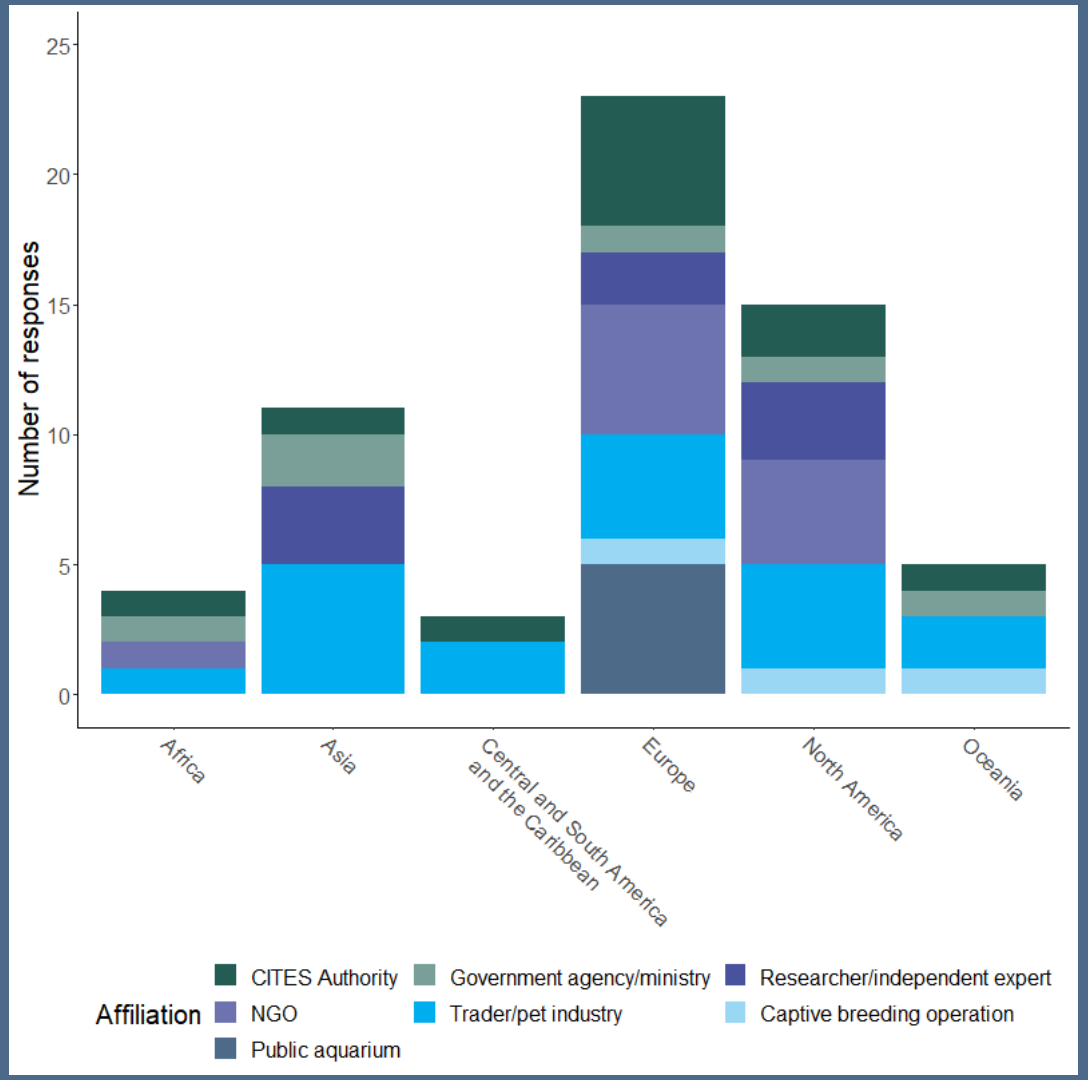
b) *[…]*

c) *submit findings and recommendations of this workshop to the Animals Committee.*

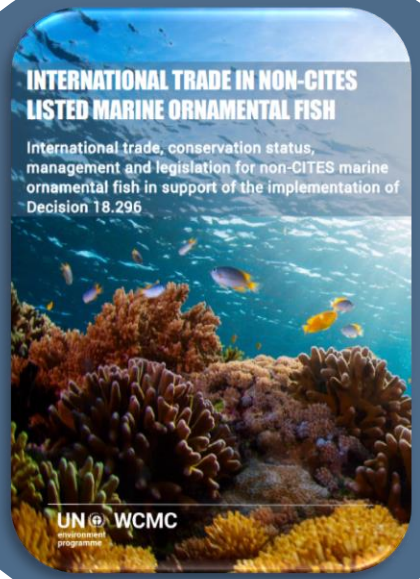
Stakeholder Survey

Survey – March 2021 (for 11 weeks)

- 62 responses from 66 respondents
- Wide range of stakeholders, including 11 CITES Authorities and 5 other government agencies
- Responses from 34 countries in 6 regions



Key data sources



1 SURVEY RESULTS & EXPERT CONSULTATION

62 survey responses from governments, trade/industry representatives, NGOs, experts, etc.
Follow-up consultation with industry experts (OATA/OFI, TMC)

2 SPECIES DATABASES

FishBase and IUCN Red List
ZIMS (Species360)

3 TRADE DATASETS

Official trade data (US (LEMIS), EU (TRACES), New Caledonia and French Polynesia), Industry data (European imports), GMAD, TRAFFIC Wildlife Trade Portal

4 PUBLISHED LITERATURE

From ~20 papers and reports

5 MANAGEMENT PLANS / LEGISLATION

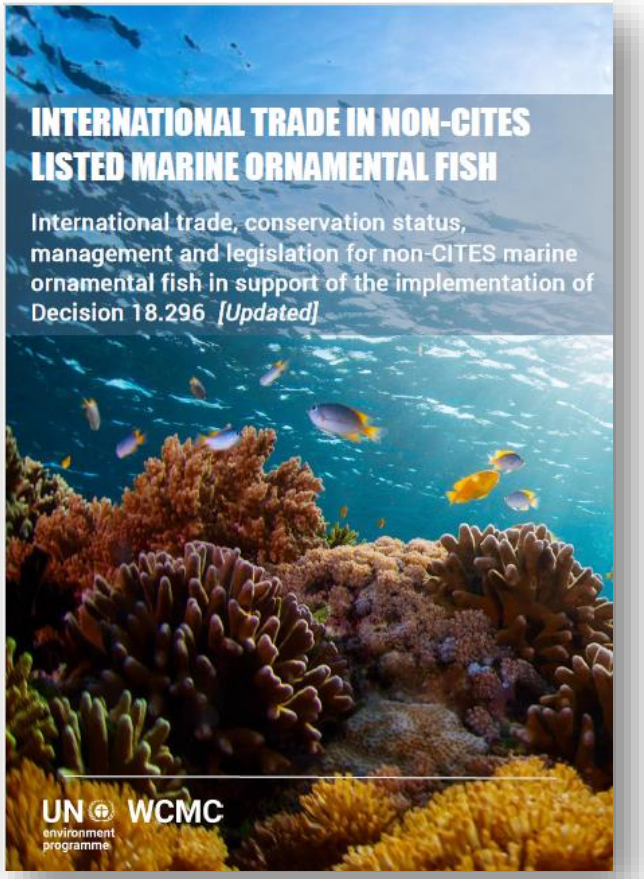
>100 national/subnational documents from 6 case study exporting countries

*** FishBase provided core taxonomy**

Updates since Inf. Doc. 99 (2022)

Key updates made to the April 2024 version

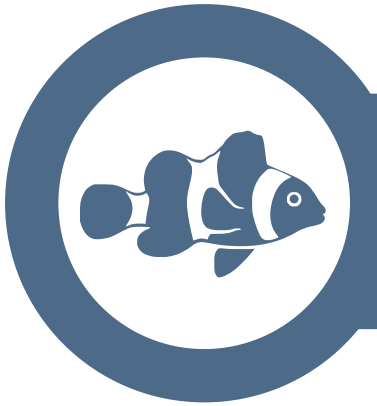
- FishBase data: Version **02/2022** → Version **05/2023**
  - Incl. updates to the taxonomy (used as the backbone for this study), vulnerability index scores and species ecology / distribution data
- IUCN Red List data: Version **2021-2** → Version **2023-1**
- EU TRACES – updated dataset (2018-2023)
  - More comprehensive dataset



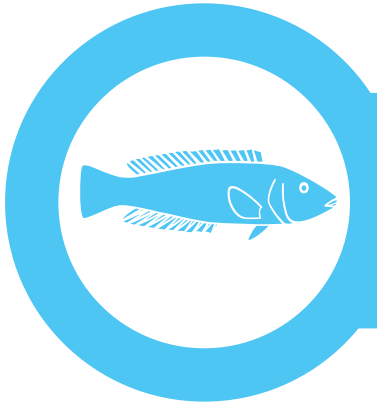
Ramifications to the Key Findings:

- More up-to-date datasets underpinning the analyses, particularly in Section 2 (Conservation status)
- 80 “Higher Risk” species → 71 “Higher Risk” species

Report Structure



Thematic study 1 | Species in international trade



Thematic study 2 | Conservation status

Thematic studies 3 & 4 | Management measures and legislation (Case studies)

1 Identifying marine ornamental fish in international trade

Aim: Identify non-CITES marine ornamental fish **species in international trade** and, where data are available, explore patterns in this trade including evidence of captive breeding.

CITES Definition

Marine ornamental fish = '*fish (including sharks and rays) living amongst, or in close relation, to* ***coral reefs*** *in the* ***tropical/subtropical*** *Western Atlantic and Indo-Pacific oceans (typically between 30°N and 30°S latitudes), which are caught for* ***public or private*** *aquariums*'

(AC31 Doc. 36).

Marine ornamental fish

1. Native to tropical/subtropical marine coral reefs *(FishBase)*

2. Evidence of use for aquaria / display *(FishBase, IUCN Red List, GMAD, zoo display, published literature, stakeholder survey responses, industry consultation)*

1 Identifying marine ornamental fish in international trade

Marine ornamental fish

1. Native to tropical / subtropical marine coral reefs

2. Evidence of use for aquaria / display

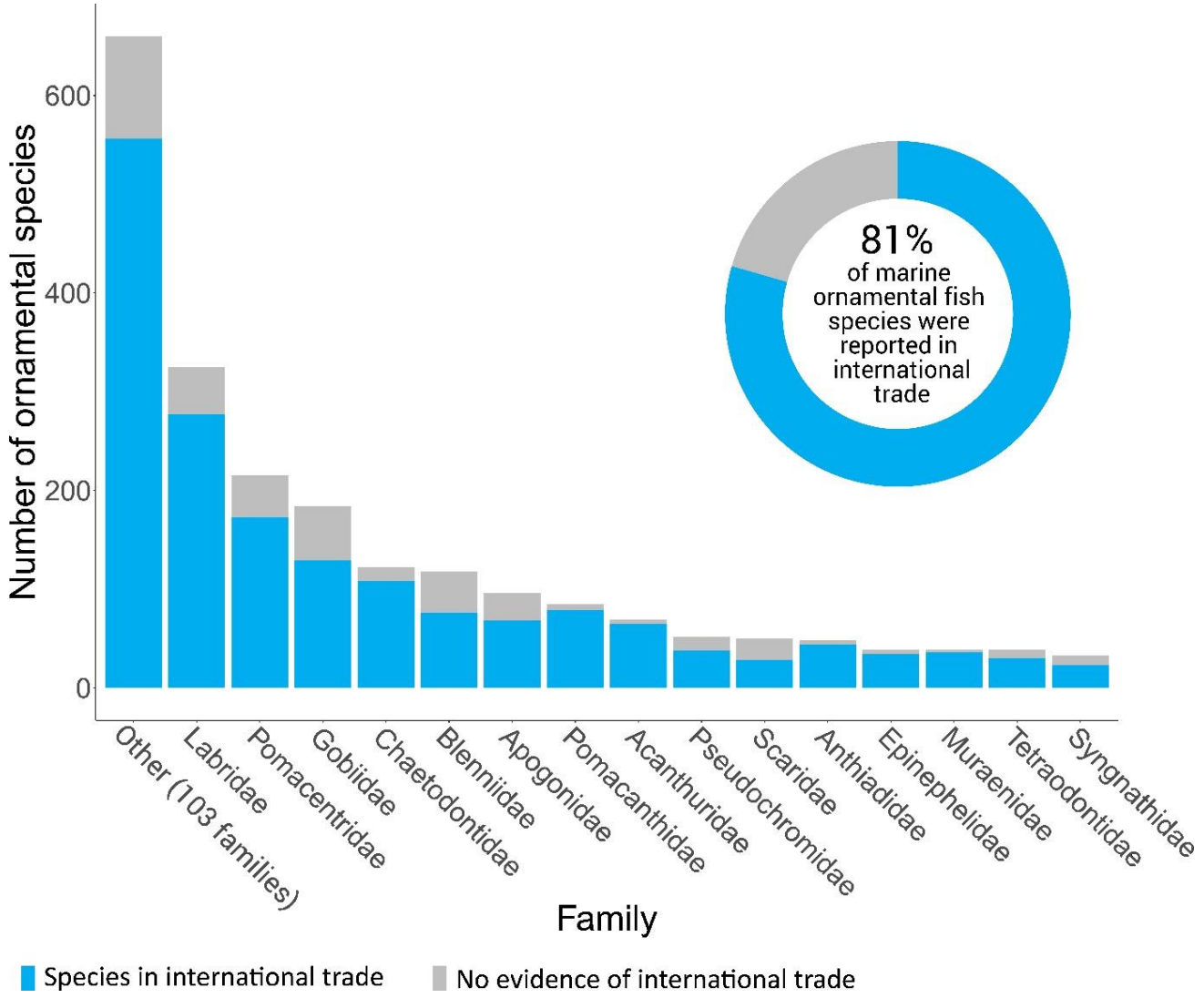
+ Evidence of international trade

Data Sources	Defining marine ornamental fish		International trade
	Native to coral reefs	Aquaria / display	
FishBase	✓	✓	
IUCN Red List		✓	✓
Stakeholder survey responses		✓	✓
Expert / industry consultation		✓	✓
GMAD		✓	✓
Published literature & supplementary unpublished data		✓	✓
Zoo display		✓	
Trade databases (LEMIS, TRACES, TRAFFIC Wildlife Trade Portal etc.)			✓

1 Identifying marine ornamental fish in international trade

→ **2191** species met the definition

→Of these, 81% (**1764 species**) with evidence of international trade



1 International trade levels

Goal → improved understanding of the global scope / scale of international trade in marine ornamental fish.

We know that marine ornamental fish are a substantial component of the wildlife trade market, but exact details are challenging.

Challenges:

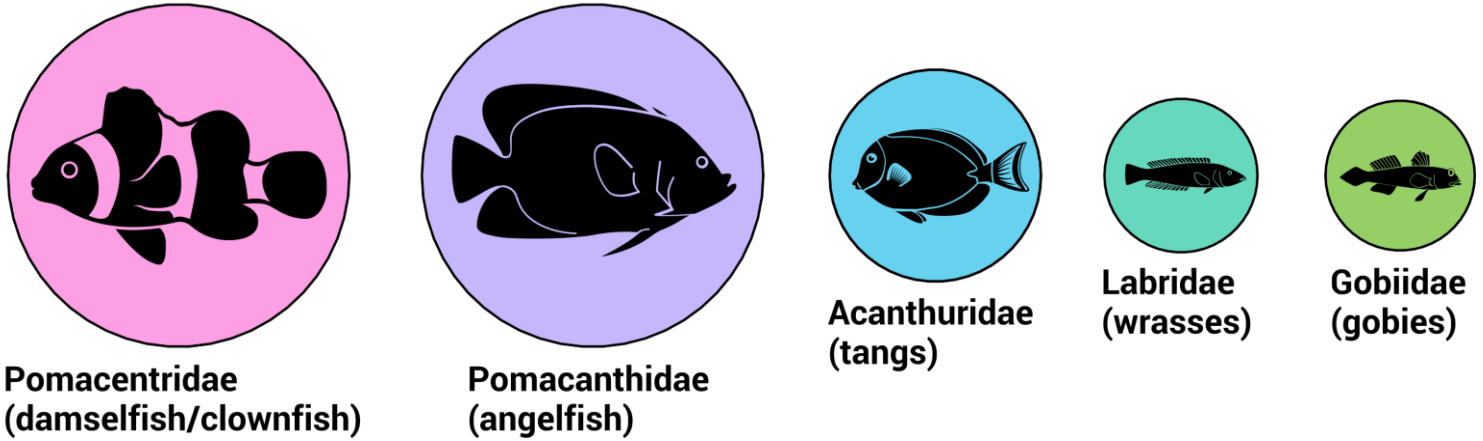
- Limited up-to-date international trade data at national / regional levels
- Lack of available global datasets on the international trade in marine ornamental fish
- Discrepancies between official government and industry data (e.g. differences in reporting)
- Some datasets not at the species level (e.g. only HS code) or do not provide source details (e.g. wild vs. captive-bred)
- Available data focused on imports; limited data on exports.

1 International trade levels

- >9 million individuals imported into EU and US per year

- According to industry data: While >1,000 species reported in trade, ~25% of EU imports in five species: Green chromis, Common clownfish, Banggai cardinalfish, Sea goldie, Bluestreak cleaner wrasse.

Top families imported by EU 2021-2023



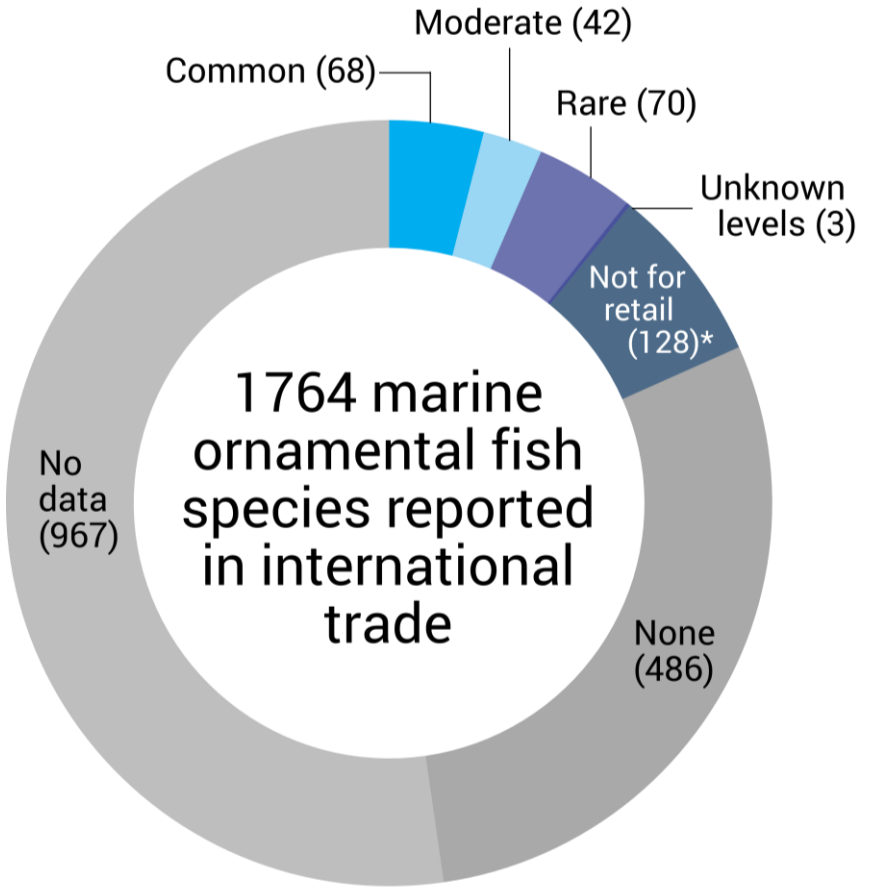
Sources of data

- Official trade databases – EU imports (TRACES) and US imports (LEMIS)
- Industry data – European imports (OATA/OFI and TMC)

1 Captive breeding

- Relatively small proportion of species with evidence of captive breeding for retail (~10%)
- 110 species (6%) commonly or moderately captive bred, with the remaining species in trade being sourced from the wild.

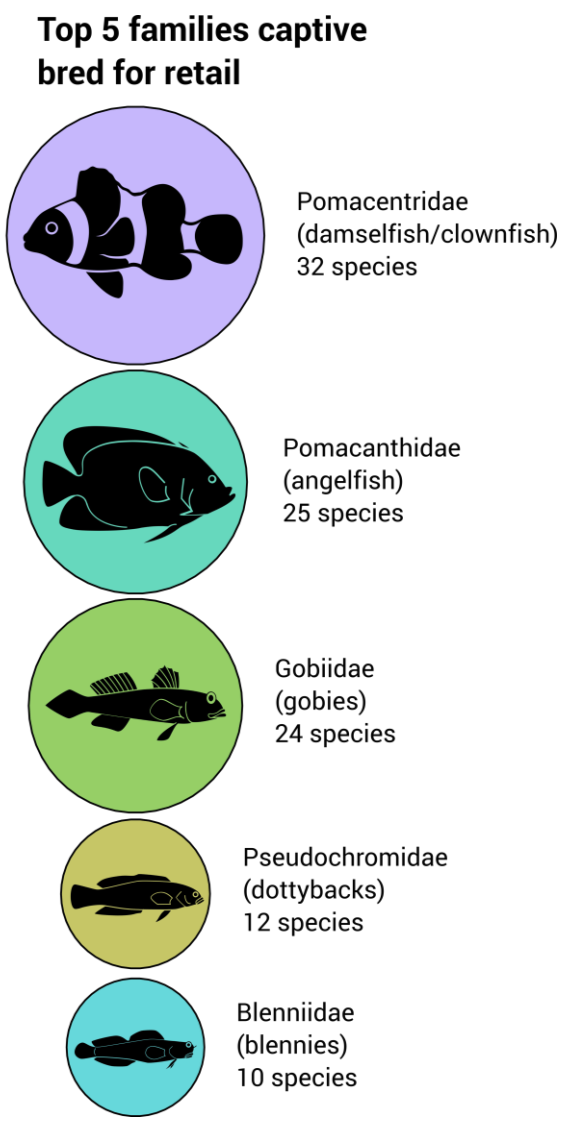
Levels of captive breeding



* 'not for retail': captive breeding has been achieved (e.g. by specialist breeders/hobbyists) has not yet been reproduced at a scale suitable for retail

1 Captive breeding

- Families commonly captive-bred overlap with those commonly in trade (e.g. top 3 families captive-bred are also in the top 5 imported into the EU)
- Example: Pomacentridae (damselfish/clownfish)
  - Largest family imported in EU (25-30% of imports by quantity)
  - ~15% of species in trade can be captive bred for retail, including common clownfish (~11% of EU imports)



Wikimedia commons – Nick Hobgood

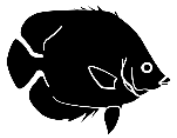
Amphiprion ocellaris (Common clownfish, **LC**)

Wikimedia commons – Nick Hobgood

Elacatinus oceanops (Neon goby, **LC**)

1 Trade in wild-sourced fish

- While there is evidence of captive-breeding for some species in heavily traded families, there are also several families commonly in trade that are **primarily traded as wild-sourced**.
- Many species in trade are only known to be sourced from the wild.

	Family	No. of species	% species in international trade	No. species frequently traded as captive-bred	Quantities imported into the EU / UK
	Chaetodontidae (butterflyfish)	122	88.5%	0	~117,000 (3% according to industry)
	Labridae (wrasses)	325	85.2%	0	~263,000 (11% of total)

1 Key Findings

- Four-fifths (81%) of marine ornamental fish species (1764) were categorised as being in international trade.
- While difficult to know the global scale of fish trade, imports into the EU and US comprised ~9 million individual fish per year.
- ~10% of species can be captive bred for retail, including some of the most traded species (e.g. common clownfish)
- Further industry data indicated that whilst over 1000 species were imported into the EU and UK, a quarter of imports were in just five species.

Wikimedia commons – Luc Viatour

Synchiropus splendidus (Mandarinfish, **LC**)

1 Key Findings

*Zebrasoma flavescens (*Yellow tang)
Wikimedia Commons, Holger Krisp

Data Gaps:

- Datasets on trade are limited; global and regional datasets are needed for (a) exports and (b) imports into other countries (e.g. China, Japan, etc.)
- To aid in monitoring, global species-level data on the number of individuals in trade are required.

2 Thematic study 2| Conservation status

Aim: For those species in trade, assess the likelihood of the species being threatened by international trade.

Methods:

- *Explore the **conservation status** and **intrinsic vulnerability** to extinction for all non-CITES marine ornamental fish species identified in Section 1 as 'in international trade'*
- *Provisionally categorise these species according to their possible likelihood of being threatened by international trade.*

Pomacanthus imperator (Emperor angelfish)
Wikimedia Commons, Brian Gratwicke

2 Conservation status | Methods

FishBase vulnerability index is a metric used to measure the vulnerability of marine fish to overharvest.

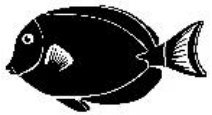
- Includes **biological**, **life history** and **ecological traits** (e.g. *maximum length, age at maturity, longevity, growth rate, mortality rate, fecundity, and geographic range*).
- Generates a score from 1 (low vulnerability) to 100 (very high vulnerability)
- Useful for assessing many species rapidly with limited data

High vulnerability species (77)
Typically large, slow to mature species with narrow ranges
E.g.


Muraenidae
moray eels


Elasmobranchii
sharks & rays

Moderate vulnerability species (304)
E.g.


Acanthurus
tangs


Labridae
wrasses

Low vulnerability species (1381)
Typically small, fecund, fast to mature species
E.g.


Chaetodon
butterflyfish


Cirrhilabrus
fairy wrasses

2 Conservation status | Key findings

Marine Ornamental Fish
2,178

in international trade
1,764

Categorised based on:
- IUCN Red List status
- FishBase vulnerability index
- other evidence of species threatened by international trade

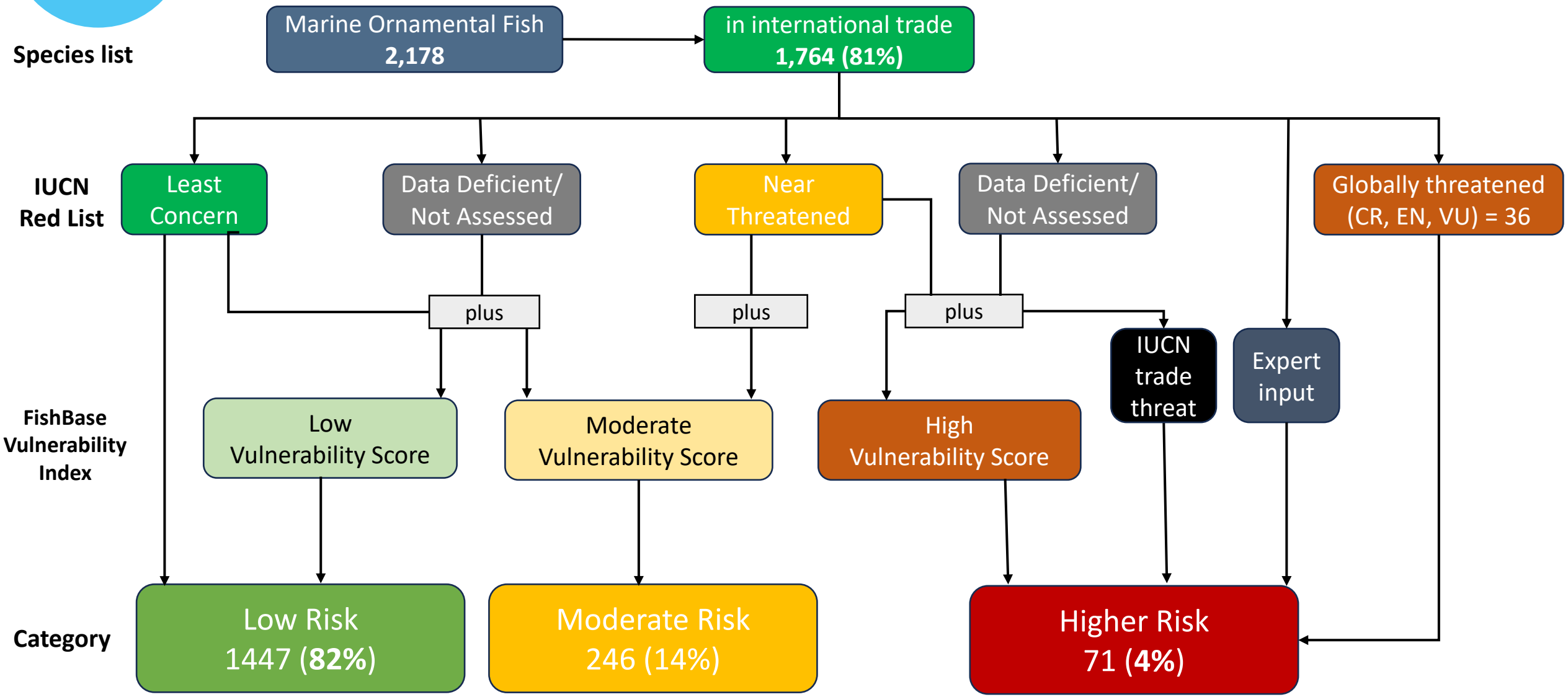
Low Risk
1447

Moderate Risk
246

Higher Risk
71

Trade datasets not used for identifying conservation priorities

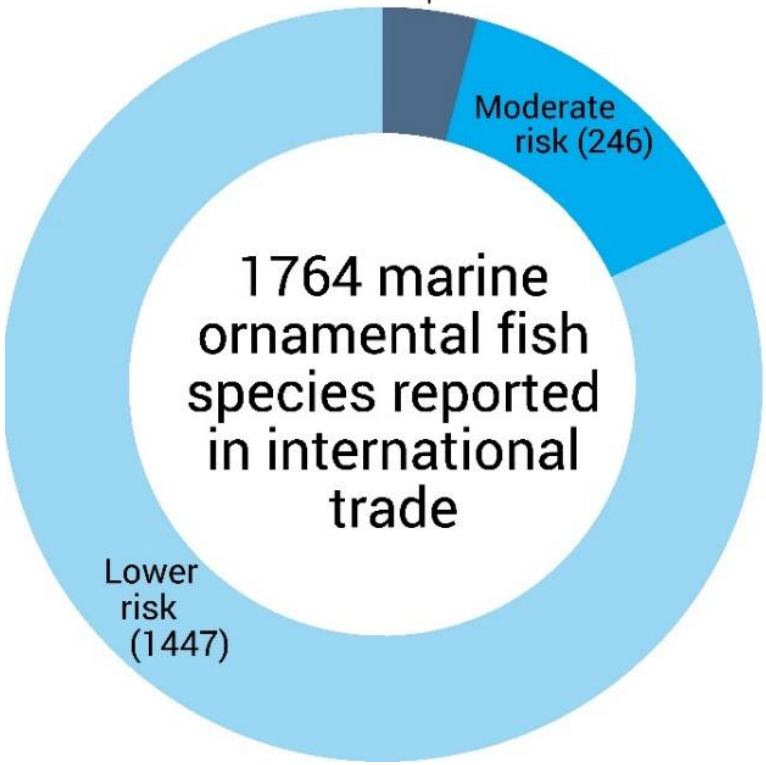
2 Conservation status | Key findings



2 Conservation status | Findings

Results of risk assessment

- Species provisionally considered a ‘higher risk’ on the basis of their conservation status may warrant further consideration.



Higher risk (71)

36 globally threatened (3 CR; 6 EN; 27 VU))

30 high intrinsic vulnerability (vulnerability index score >60)

19 considered 'likely' threatened by international trade based on their IUCN Red List assessment (Challender *et al.* 2023)

16 considered threatened by biological resource use (IUCN threat category 5.4.2)

5 considered 'threatened by international trade' on their IUCN Red List assessment

Table 2.2 - Higher risk species

Family	Species	Red List category (population trend)[a*]	Intrinsic vulnerability Index[b]	Level of captive breeding[c]	Relative level of EU/UK imports[d**]	No. of individuals imported into the EU 2021-2023[e]	Demand for use in aquaria[f]	Threat from international trade[g]	Threatened by biological resource use (5.4.2)[h]
				Actinopteri					
Acanthuridae	*Acanthurus chronixis* (Chronixis surgeonfish)	VU (?)†	Low 18)	No data	Low	0	Commercial		
Apogonidae	*Pterapogon kauderni* (Banggai cardinal fish)	EN (↓)†	Low (19.08)	Common	High	62,741	Commercial	✓ ii, iv	
Balistidae	*Balistes capriscus* (Grey triggerfish)	VU (↓)†	Moderate (46.03)	None	Very low	1	Public		
	Balistes punctatus (Bluespotted triggerfish)	VU (↓)†	Moderate (37.52)	None	Very low	1	Unspecified	✓ iv	✓
	Balistes vetula (Queen triggerfish)	NT (↓)†	Moderate (53.73)	Not for retail	Very low	17	Commercial	✓ ii	✓
Blenniidae	*Ecsenius tigris* (Tiger combtooth blenny)	VU (?)†	Low (10)	No data	0	6	Commercial		
Chaetodontidae	*Chaetodon trifascialis* (Chevron butterflyfish)	NT (↓)†	Low (10.89)	No data	Very low	30	Commercial	✓ iv	
Epinephelidae	*Epinephelus fuscoguttatus* (Brown-marbled grouper)	VU (↓)	Moderate (57.09)	Moderate	0	0	Commercial	✓ iv	
	Epinephelus lanceolatus (Giant grouper)	DD (↓)	(High) 90	Not for retail	0	2200	Commercial	✓ ii, iii	
	Epinephelus morio (Red grouper)	VU (↓)	High (63.98)	No data	0	0	Public	✓ iii, iv	
	Epinephelus striatus (Nassau grouper)	CR (↓)	High(63.42)	No data	0	0	Public	✓ ii, iv	
	Mycteroperca bonaci (Black grouper)	NT (↓)	High (62.99)	No data	0	0	Public	✓ iv	
	Mycteroperca interstitialis (Yellowmouth grouper)	VU (↓)	High (67.35)	No data	0	0	Public	✓ ii, iv	
	Mycteroperca venenosa (Yellowfin grouper)	NT (↓)	High (62.16)	No data	0	0	Public	✓ iv	
Gobiidae	*Callogobius amikami* (Amikami nano goby)	EN (?)	Low (10)	No data	Very low	1	Rarely		
	Coryphopterus lipernes (Peppermint goby)	VU (?)†	Low (10)	No data	0	0	Commercial		
	Coryphopterus personatus (Masked goby)	VU (?)†	Low (10)	Moderate	0	29	Commercial		
	Elacatinus figaro (Barber goby)	VU (?)	Low (10)	Common	Low	0	Commercial		?††
	Elacatinus prochilos (Broadstripe goby)	VU (?)†	Low (10)	Not for retail	0	0	Rarely		

Examples - Higher risk species

Coryphopterus lipernes
Peppermint goby (**VU**)

Oxymonacanthus longirostris
Harlequin filefish (**VU**)

Chiloscyllium punctatum
Brownbanded bambooshark (**NT**)

Siganus uspi
Bicolored foxface (**NT**)

Pterapogon kauderni
Banggai cardinal fish (**EN**)

Dunckerocampus dactyliophorus
Ringed pipefish (**DD**)

2 Conservation status | Findings

Overlap with other studies/lists:

- 17 “Higher Risk” also highlighted by at least 2 other methods/studies
- 52 “Higher Risk” also highlighted in at least one other method/study

Key findings:

- It identified 71 species of “Higher risk” – with much overlap with other studies.
- Species categorised as “Moderate risk” may also merit more scrutiny (as many are DD).
- Trade volumes were not used as a risk criteria in our study due to the patchiness of the available data and because trade volumes do not necessarily equate to risk from trade.
- Despite the large number of marine ornamental fish species, there is an emerging consensus around a smaller subset of species that may merit more scrutiny.

3 Thematic studies 3 & 4| Management measures & legislation (case studies)

Aim: Compile information on management and regulation of marine ornamental fisheries in major exporting countries

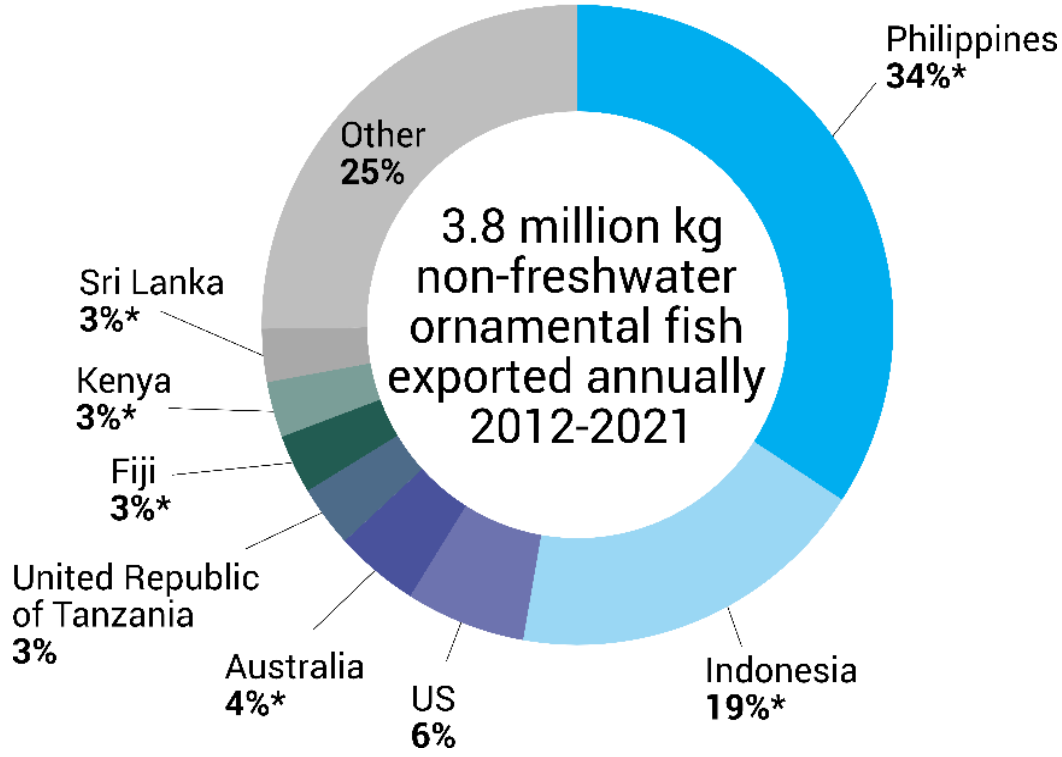
Methods:

Case studies:

- Australia, Fiji, Indonesia, Kenya, the Philippines, and Sri Lanka.

Selected based on:

- high number of native species and of ‘higher risk’ native species in trade
- high trade levels (weight of HS 030119 exports)
- stakeholder survey responses



3 Thematic studies 3 & 4| Management measures & legislation (case studies)

Brought together information on:

- National/subnational **management measures** (e.g. management plans or initiatives, harvest regulation, no take zones)
- Regulations relating to **export**

➢Opportunity to share approaches and best practices

3 Thematic studies 3 & 4| Key Findings
Management measures & legislation (case studies)

Key Findings:

- Based on available information, the harvest and export of marine ornamental fish in the focal countries appears to be **largely regulated and managed as part of general fisheries management**, rather than having management specific to live ornamental marine fish species (some exceptions exist).
- **All six focal countries of export specified harvest management or export measures for at least one marine ornamental fish species in legislation and/or management plans**. These measures included prohibition of take, prohibition or restriction of exports, requirements for a management plan and/or additional harvest monitoring.
- In general, there are limited species-specific regulation/management of exports (but in some cases covered by broader 'live animal export' legislation).
- Of the 71 species provisionally classified as 'higher risk', over half (**37) were native to the waters of at least one of the focal countries.**

CONCLUSION

- This study provides an effective mechanism for identifying species for further consideration based on conservation status.
- The vast majority of marine ornamental fish in trade emerged as “Low” likelihood of risk in our assessment
- A smaller subset were Higher (71 species, 4%) or Moderate (246 species, 14%)
- New techniques (e.g. PSA method) may provide opportunities to further refine these lists of species of conservation concern, particularly where data is lacking.
- Various management measures at national level already being implemented for some species in some range states, but not all species at ‘Higher’ or ‘Moderate’ risk are managed.
- Data gaps are a challenge for this species group:
  - Majority of species have recently been assessed by IUCN, though gaps remain (e.g. those not yet assessed and with assessments >10 years old)
  - Trade levels (including indication of volumes by species and wild vs. captive-bred) - particularly at the global level is a gap.

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