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

Technical workshop on marine ornamental fishes (7 to 10 May 2024, Brisbane, Australia)

MARINE ORNAMENTAL FISH TRADE IN THE U.K.

1. This information document is submitted by the Centre for Environment, Fisheries and Aquaculture Science (Cefas), United Kingdom of Great Britain and Northern Ireland for discussion at the technical workshop on marine ornamental fishes (7 to 10 May 2024, Brisbane, Australia).

2. This document provides an update of information on the UK's trade in marine ornamental fishes following CoP19 Inf.68.

Background

Species-level information on traded marine ornamental fishes has historically been challenging to compile, and best available data are generated through analysis of shipment documents, notably the United States of America's import records and commercial invoices which list species, volumes, and values (Rhyne et al 2012; Rhyne et al., 2017). To support the implementation of Decision 18.296, UNEP-WCMC developed a questionnaire to gather data from stakeholders, including the species and volumes of species of marine ornamental fishes in global trade.

At the time of UNEP-WCMCs request, data on UKs trade in marine ornamental fishes at species resolution were not easily accessible. In response, the Centre for Environment, Fisheries and Aquaculture Science (Cefas) on behalf of the Department for Environment, Food and Rural Affairs (Defra) obtained a sample of 290 consignment documents from shipments imported into the UK in 2018 and 2019 (see methods section below for details of samples analysed). This data provides a species-level characterization of the UK's contribution to trade and was made available at CoP19 (CoP19 Inf.68). Since CoP19, additional shipment records have been processed and analysed and the updated results are presented here.

Overview of marine taxa in trade

Of the 290 marine consignments analysed, 257 (88.6 %) contained bony fish (class Actinopterygii). Stony corals (order Scleractinia), which are all listed under CITES Appendix II, appeared in 26 consignments (9 %). Other taxa were divided into "other invertebrates" (237 consignments, 81.7 %) and "other vertebrates" (27 consignments, 9.3 %) (Figure 1).

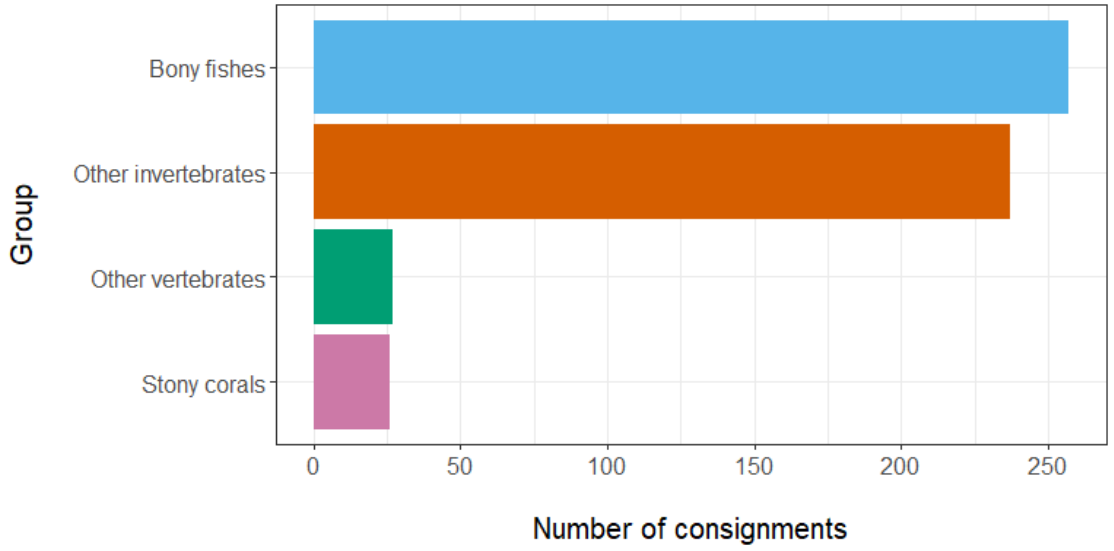

Figure 1: Number of consignments (total 290 consignments) containing broad taxonomic groups. Blue = bony fishes (class Actinopterygii), pink = stony corals (order Scleractinia), green = other vertebrates, orange = other invertebrates.

Bony fish

Overview

The most common family of marine fish imported was the Pomacentridae (damselfishes and clownfishes), accounting for 30.3% of all bony fish imports by number of individuals (Figure 2). The top two most commonly imported species by number were also pomacentrids:

Chromis viridis (blue-green damselfish), followed by *Amphiprion ocellaris* (common clownfish), with 16,862 and 9,003 individuals imported, respectively (Table 1). Next most common were the Labridae (wrasses) followed by the Gobiidae (gobies), which comprised 10.8% and 9.7% of imports by number, respectively (Figure 2). The most common Labridae species imported by value was *Labroides dimidiatus* (bluestreak cleaner wrasse). For Gobiidae, the most common species imported by number was *Valencienna puellaris* (diamond watchman goby).

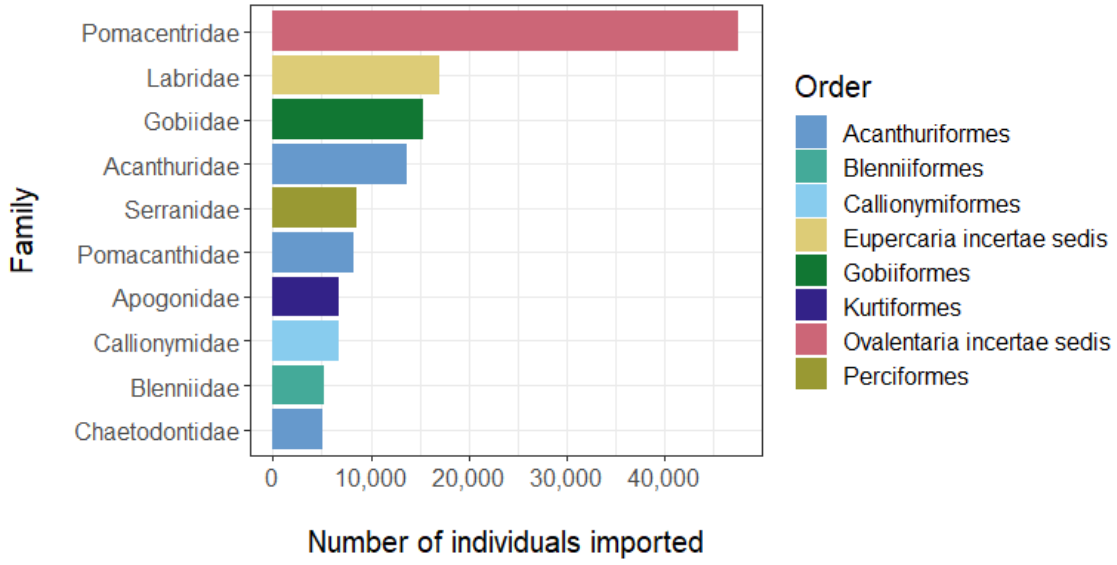

Figure 2: Top ten bony fish families by trade volume (number of individuals imported), coloured by order.

Table 1: Species comprising 50% of trade in marine bony fish (class Actinopterygii), by number of imports.

Species	Family	Number	Cumulative sum	Cumulative percentage
Chromis viridis	Pomacentridae	16862	16862	10.7
Amphiprion ocellaris	Pomacentridae	9003	25865	16.5
Pseudanthias squamipinnis	Serranidae	3825	29690	18.9
Chrysiptera parasema	Pomacentridae	3531	33221	21.1
Synchiropus splendidus	Callionymidae	3053	36274	23.1
Pterapogon kauderni	Apogonidae	2949	39223	25.0
Paracanthurus hepatus	Acanthuridae	2544	41767	26.6
Zebrasoma flavescens	Acanthuridae	2465	44232	28.2
Valenciennea puellaris	Gobiidae	2324	46556	29.6
Labroides dimidiatus	Labridae	2315	48871	31.1
Nemateleotris magnifica	Microdesmidae	2021	50892	32.4
Gramma loreto	Grammatidae	2018	52910	33.7
Valenciennea strigata	Gobiidae	2011	54921	35.0
Chelmon rostratus	Chaetodontidae	1851	56772	36.1
Salarias fasciatus	Blenniidae	1631	58403	37.2
Pomacentrus alleni	Pomacentridae	1619	60022	38.2

Species	Family	Number	Cumulative sum	Cumulative percentage
Valenciennea sexguttata	Gobiidae	1544	61566	39.2
Sphaeramia nematoptera	Apogonidae	1507	63073	40.2
Macropharyngodon bipartitus	Labridae	1460	64533	41.1
Chrysiptera hemicyanea	Pomacentridae	1446	65979	42.0
Chrysiptera springeri	Pomacentridae	1441	67420	42.9
Gobiodon okinawae	Gobiidae	1314	68734	43.8
Centropyge bispinosa	Pomacanthidae	1304	70038	44.6
Halichoeres chrysus	Labridae	1221	71259	45.4
Neosynchiropus ocellatus	Callionymidae	1221	72480	46.1
Amphiprion percula	Pomacentridae	1219	73699	46.9
Pseudocheilinus hexataenia	Labridae	1173	74872	47.7
Chrysiptera cyanea	Pomacentridae	1105	75977	48.4
Siganus vulpinus	Siganidae	1088	77065	49.1
Azurina cyanea	Pomacentridae	1078	78143	49.7

Exporting countries

Indonesia was the greatest exporter of bony fish to the UK and was the origin for 50,567 individuals (Figure 3). Next was the Philippines (39,067 fish), followed by the Maldives (14,308 fish), and Sri Lanka (11,823 fish).

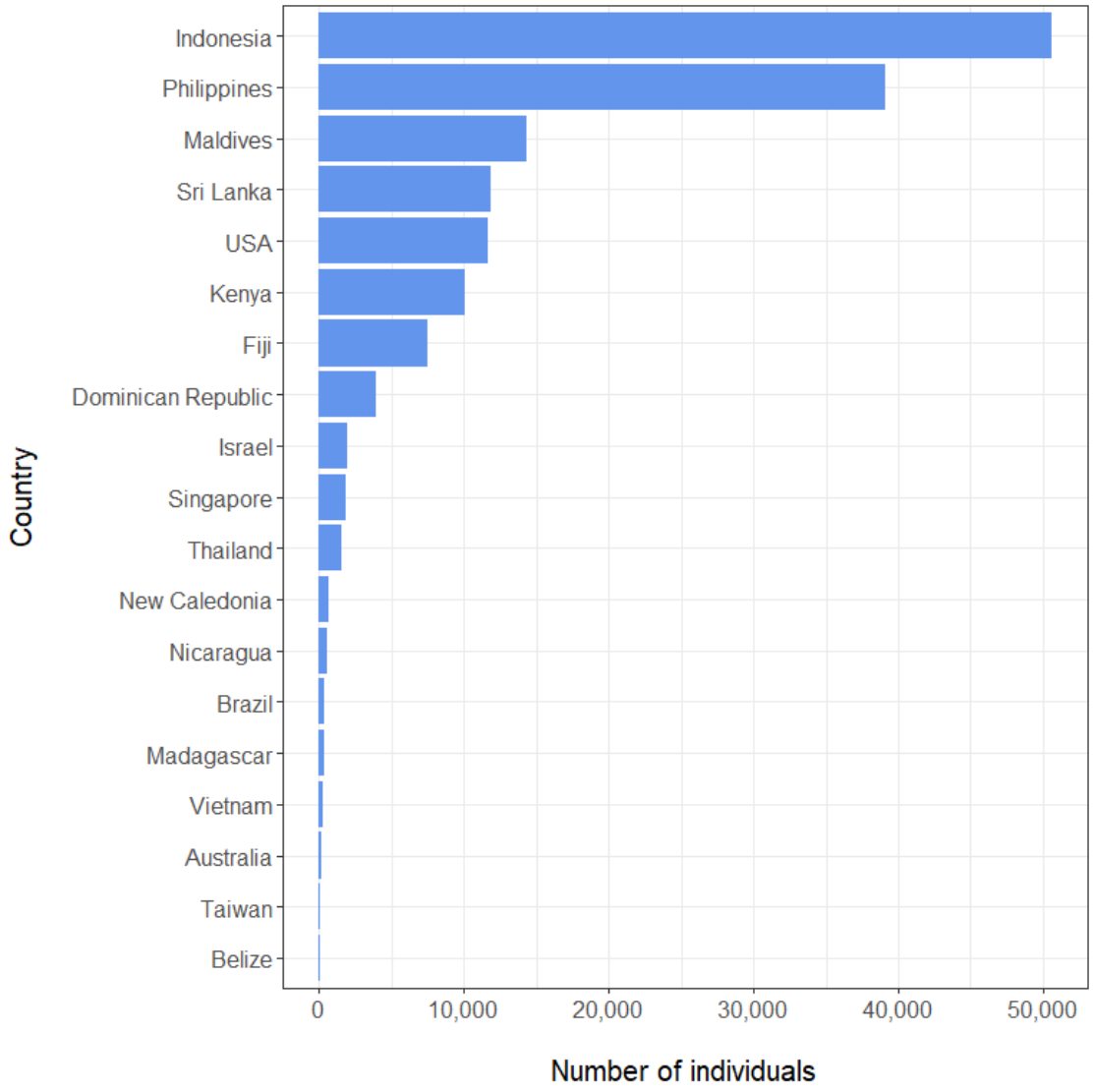

Figure 3: Number of fish imported by country.

Conservation listings

Declaration of captive breeding

Of the species imported into the UK, 81.5 % are listed as Least Concern (LC) by the IUCN. A total of 12 species are listed as Threatened; 10 of these are listed as Vulnerable (VU). Two fish species are listed as Endangered (EN): *Pterapogon kauderni* (Banggai cardinalfish, family Apogonidae), and *Callogobius amikami* (Red Sea goby, family Gobiidae).

In the dataset, very few (< 0.1 %) individuals were declared as farmed, though 12.1 % were likely farmed as they were exported from countries outside of their native ranges (Figure 4). The proportion of individuals likely to have been farmed increased slightly for CITES listed taxa (11.3 %) and was much higher for IUCN threatened taxa (34.3 %). The proportion of individuals declared farmed was the same for CITES listed taxa (0.4 %), and no consignments of threatened species were declared farmed.

Of the Threatened species, *P. kauderni* had the highest trade volume with 2949 individuals imported. However, over half of these individuals (51.1 %) were likely farmed, as they originated from countries outside of Indonesia (the native range of *P. kauderni*, Figure 4). 0.5 % were declared wild caught, and the origin of the remaining 48.4 % could not be

determined. No *P. kauderni* were declared as being farmed. All *C. amikami* were likely farmed, as they originated from Indonesia which is outside of their native range of the Red Sea, however, this was not declared on the invoice.

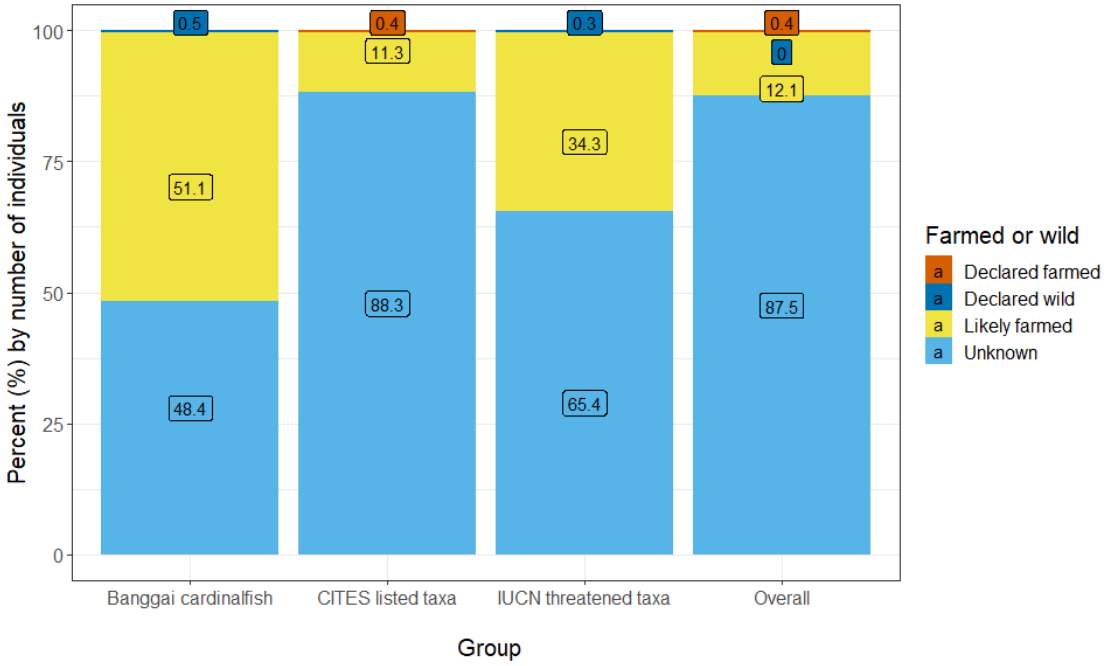

Figure 4: Percentages of farmed and wild caught fish within different import categories. Orange = declared farmed (farmed origin was listed on the invoice), dark blue = declared wild (wild origin declared on the invoice), yellow = likely farmed (based on native range and location), light blue = unknown. Banggai cardinalfish = *Pterapogon kauderni.*

Unassessed species

In total, there were 86 species comprising 7450 individuals which were either Data Deficient (DD) or had not been assessed by the IUCN. Of these, 18.8 % of the individuals were likely captive bred, with the remaining 81.2 % being of unknown farmed or wild caught status. There were 12 unassessed species listed in volumes greater than 200 individuals, which are given in detail below. Of these, one had a volume greater than 1000 individuals: *Neosynchiropus ocellatus* (ocellated dragonet, family Callionymidae). All individuals of *N. ocellatus* were of unknown wild or farmed origin.

Table 2. Species identified in UK imports that were unassessed by IUCN but recorded in volumes greater than 200 individuals.

Species	Family	IUCN Listing	Number
Neosynchiropus ocellatus	Callionymidae	NA	1221
Pholidichthys leucotaenia	Pholidichthyidae	NA	584
Synchiropus sycorax	Callionymidae	NA	555
Plectorhinchus chaetodonoides	Haemulidae	NA	430
Paracheilinus carpenter	Labridae	DD	416
Dunckerocampus dactyliophorus	Syngnathidae	DD	326
Ostracion cubicum	Ostraciidae	NA	317
Cirrhilabrus exquisitus	Labridae	DD	301
Cirrhilabrus solorensis	Labridae	DD	281

Species	Family	IUCN Listing	Number
Lactoria cornuta	Ostraciidae	NA	270
Cirrhilabrus cyanopleura	Labridae	DD	248
Siganus unimaculatus	Siganidae	DD	245

Methods

A sample of paper copies of shipment documents for “ornamental aquatics” consignments imported into the UK in the years 2018 and 2019 were obtained from London Heathrow Airport, the UK’s largest Border Control Post (BCP). Shipment document packs, including health certificates, invoices, packing lists and a CITES permit if required, were scanned and species-level information from the packing lists/invoices manually digitized. Two hundred and ninety (290) consignments (records) of marine species were digitized. While the sample used in the study does not enable an estimation of the total volume of trade imported into the UK, it does illustrate general trends which are representative of what the UK is importing.

Species names were validated using the worrms and taxize packages for R (version 4.1.2). Where necessary, species names were also validated manually using the World Register of Marine Species (WoRMS). Taxonomic ranks and aquatic ecosystems were also validated using the worrms package. IUCN listings were acquired using the rredlist package.

Species ranges were used to estimate wild or farmed status where no declaration was made on the invoice. Species ranges were determined using the Ocean Biodiversity Information System, accessed through the robis package. Individuals originating from outside their species range were determined as likely to be farmed.

Marine species were defined as inhabiting strictly marine environments (i.e. not brackish waters). Bony fish were defined as those belonging to the class Actinopterygii.

Selected Publications

Rhyne, A.L., Tlusty, M.F., Schofield, P.J., Kaufman, L.E.S., Morris Jr, J.A. and Bruckner, A.W., 2012. Revealing the appetite of the marine aquarium fish trade: the volume and biodiversity of fish imported into the United States. PloS one, 7(5), p.e35808.

Rhyne, A.L., Tlusty, M.F., Szczebak, J.T. and Holmberg, R.J., 2017. Expanding our understanding of the trade in marine aquarium animals. PeerJ, 5, p.e2949.