

Sustainable Fisheries Strategy

2017–2027

Marine Aquarium Fish Fishery

Scoping Study

This publication has been compiled by Fisheries Queensland, Department of Agriculture and Fisheries

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Fishery Summary

Note—All information contained in the Marine Aquarium Fish Fishery (MAFF) Scoping Study is correct as of 1 April 2023. Queensland Department of Agriculture and Fisheries (QDAF) notes that the broader management regime for the MAFF is being reviewed and will be subject to change. Consult the Fisheries Act 1994, Subordinate legislation and the Fisheries Working Group correspondence for the up-to-date information on management and monitoring systems used in this fishery.

Feature	Details
Species targeted	A diverse range of fish and invertebrate species from various families and genera.
Fisheries symbols	A1 and A2
Fisheries legislation	<i>Fisheries Act 1994; Fisheries (General) Regulation 2019; Fisheries (Commercial Fisheries) Regulation 2019; Fisheries Declaration 2019; Fisheries Quota Declaration 2019.</i>
Working Group	<p><i>Marine Aquarium Fish and Coral Fisheries Working Group.</i></p> <p>Working group terms of reference and communiques available at: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable/fishery-working-groups</p>
Harvest Strategy	<p>In effect as of September 2021.</p> <p><i>* Marine Aquarium Fish Harvest Strategy 2021–2026 is being reviewed and subject to change.</i> The most up-to-date harvest strategies can be accessed at: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable/harvest-strategy</p>
Gear	<p>The following apparatus are currently permitted for use within the commercial Marine Aquarium Fish Fishery:</p> <ul style="list-style-type: none"> • Hand collection, hand-held non-mechanical implements using approved underwater breathing apparatus (hookah, SCUBA, free dive) • Recreational—hand collection only (excluding hookah/scuba) <p><i>A full description of the types of apparatus prescribed for each fishery symbol can be found in the Fisheries (General) Regulation 2019, Fisheries (Commercial Fisheries) Regulation 2019, and Fisheries Declaration 2019.</i></p>
Main management methods	<p><i>Commercial</i></p> <ul style="list-style-type: none"> • Limited access • Gear restrictions • Effort controls • Vessel, diver number & tender restrictions
Quota (assessed annually)	Not applicable.
Fishing season	1 July–30 June

Feature	Details
Commercial fishery licences	Number of A1 symbols: 41 Number of A2 symbols: 2
Total annual harvest by sectors	Commercial: Unknown Harvest by Recreational sector and Aboriginal and Torres Strait Islander peoples: Unknown
GVP	GVP for the MAFF and Queensland Coral Fishery are reported on as a single entity. The combined GVP for these two fisheries was estimated to be \$21.8 million (2019/20; BDO EconSearch, 2022). ¹
Stock status	Not applicable. <i>* Stock status is assessed using the nationally agreed Status of Australian Fish Stocks (SAFS) classification framework. While some MAFF species have been assessed as part of SAFS, these assessments primarily focus on the capture of these species in other fisheries i.e. when caught for human consumption.</i>
Accreditation under the EPBC Act (Part 13 & 13A)	Part 13A: Accredited (expires 23 April 2024) Part 13: Accredited

¹ Full report available at: www.publications.qld.gov.au/dataset/fisheries-economic-and-social-indicators-2019-20

1 Overview

The Marine Aquarium Fish Fishery (MAFF) is a hand-collection fishery that primarily operates within the confines of the Great Barrier Reef Marine Park (GBRMP). Operators collect a diverse range of marine fish and invertebrates for the live aquarium trade. Most are collected in coral reef and inter-reef habitats and sold on international and domestic markets for display in aquaria or as brood stock.

The MAFF operates under the 'A' fishery symbol, which is subdivided into A1 and A2 licence holders. The two licence classifications are not mutually exclusive, and operators may hold both an A1 and A2 fishery symbol.

The prescribed fishing area for the MAFF covers the entire Queensland east coast; extending from the tip of Cape York to the Queensland – New South Wales border (Fig. 1). The prescribed fishing area includes five aquarium zones that can only be accessed by fishers with an A1 fishery symbol. These zones are located in regions where there is a higher potential for heavy localised fishing and localised depletions. The remainder of the fishery is open to both A1 and A2 license holders.

Limited information is available on the harvest of marine aquarium fish and invertebrates in non-commercial sectors, namely by researchers, recreational fishers and Aboriginal peoples and Torres Strait Islander peoples. The recreational sector is subject to gear restrictions with collectors only permitted the use of mask and snorkel. The use of a hookah and SCUBA apparatus for recreational fish and invertebrate collection is not permitted. Further, the non-commercial take of marine species is not permitted the GBRMP and state marine parks without a permit (Department of Agriculture and Fisheries, 2021a; Great Barrier Reef Marine Park Authority, 2022a).

2 Legislation & Advisory Bodies

Management of the MAFF is enforced through the *Fisheries Act 1994* (Queensland) and subordinate legislation *i.e.*, the *Fisheries (General) Regulation 2019*, *Fisheries (Commercial Fisheries) Regulation 2019*, *Fisheries Declaration 2019*, and *Fisheries Quota Declaration 2019*. Other relevant legislation includes the *Great Barrier Reef Marine Park Act 1975*, *Great Barrier Reef Marine Park Regulations 2019*, *Environment Protection and Biodiversity Conservation Act 1999* and broader

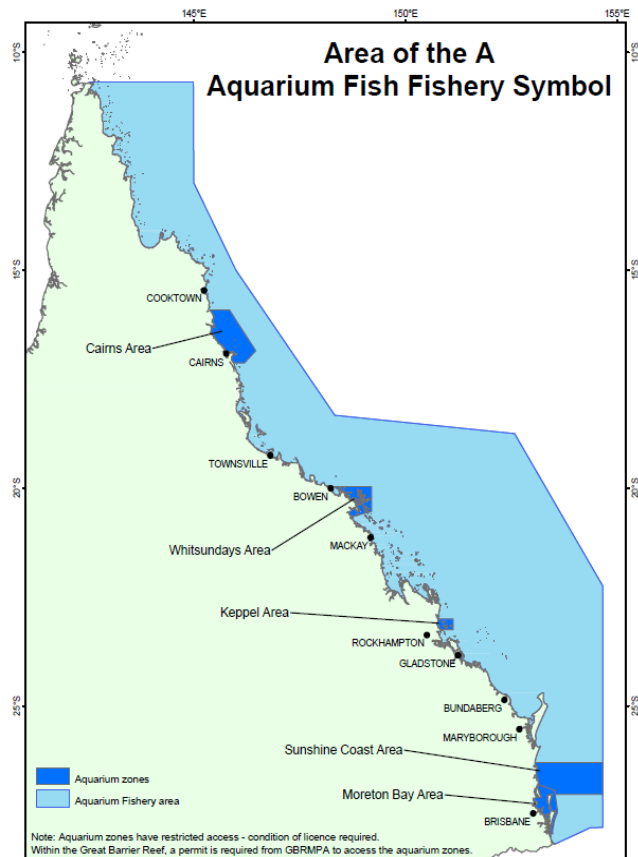


Figure 1. The prescribed fishing area for the Marine Aquarium Fish Fishery (MAFF). Refer to the *Fisheries (Commercial Fisheries) Regulation 2019*.

regulations managing the use of marine resources in the Great Sandy and Moreton Bay marine parks (Department of Environment and Science, 2020a; b).

The *Queensland Sustainable Fisheries Strategy 2017–2027* (the Strategy) was implemented in 2017 and outlines the government's reform agenda for the next decade. The Strategy outlines 33 actions to be delivered across 10 reform areas that include (among others) harvest strategies, sustainable catch limits, improved monitoring and research, compliance, improved engagement, resource allocation and impacts on non-target species (Department of Agriculture and Fisheries, 2017). The *Marine Aquarium Fish and Coral Fisheries Working Group* (FWG) was established as part of the Strategy and provides operational advice on the management of the fishery. The Working Group includes a wide range of stakeholders representing industry, the scientific community and management agencies. While the terms of reference of the FWG are more intricate, the primary objectives of the working group are to:

1. Assist with the implementation of a coral harvest strategy and marine aquarium fish harvest strategy, including providing advice on management options and fishing rules, consistent with the *Queensland Harvest Strategy Policy* and the *Fisheries Act 1994*; and
2. Provide general advice to Fisheries Queensland on any operational matters, emerging issues, and general management of Queensland Coral Fishery (QCF) and Marine Aquarium Fish Fishery (MAFF).

Further information regarding the FWG, including communiques are available at:

<https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable/fishery-working-groups>. The

complete Strategy has been made publicly available and can be accessed at:

<https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable>

3 Management

The management regime for the MAFF relies on a range of input and output controls to restrict catch and effort. This includes the implementation of a limited licencing policy, gear restrictions and diver limits. Commercial marine fish and invertebrate collection in the MAFF includes the use of hand-held implements (e.g. small nets, fishing lines and herding devices) on scuba and surface supplied air *i.e.* a hookah (hose) apparatus. The take of marine aquarium species for commercial purposes is restricted to fishers operating under an 'A1' or 'A2' fishery symbol (see section 4). While catch limits exist for the A2 fishery symbol (Appendix A), there are no catch or effort limits in place for the A1 fishery symbol (Table 1; Fig. 1). With that said, the MAFF has a comparatively small effort footprint due to it being a hand collection fishery with a small (maximum) operating capacity ($n = 43$ fishery symbols, Table 1).

The MAFF operates mostly within the confines of the GBRMP and operations are subject to provisions governing the use of resources within the World Heritage Area (Department of Agriculture and Fisheries, 2022a; Great Barrier Reef Marine Park Authority, 2018; 2022b). This includes the *Great Barrier Reef (GBR) Representative Areas Program* which restricts or prohibits commercial fishing activities across a significant portion of the marine park. For example, commercial fish collection is not permitted in around 38 per cent of the GBRMP *i.e.* the *Buffer (Olive Green) Zones*, *Scientific Research (Orange) Zones*, *Marine National Park (Green) Zone* and *Preservation (Pink) Zones*. While commercial harvesting is allowed outside these zones, operators must have a permit to

legally fish within the GBRMP. Similarly, non-commercial harvest of fish cannot occur within the entire GBRMP without a relevant permit (Great Barrier Reef Marine Park Authority, 2020; 2022b; c). The introduction of these restrictions has helped constrain the footprint of the fishery.

Within the MAFF, the management of fishing activities is guided by a fisheries-specific harvest strategy (Department of Agriculture and Fisheries, 2021b). The *Marine Aquarium Fish Fishery Harvest Strategy: 2021–2026* was developed as part of the *Queensland Sustainable Fisheries Strategy 2017–2027* and was implemented in September 2021. This harvest strategy includes clear objectives for the long-term management of this fishery and provides a transparent process for measuring and managing the performance of the fishery over a five-year period.

The harvest strategy contains a defined list of Tier 1 species with all remainder classified as Tier 2 species (Department of Agriculture and Fisheries, 2021b). If the annual harvest of any Tier 1 species is greater than 1.5 times the average historical reference period (2003–2008) management action must be in place for the following fishing season to restrict species catches. If the annual harvest of any Tier 2 species is greater than three times the average historical reference period, a review is to be undertaken to understand the reason for the increased harvest, assess the risks and ensure catch of a species does not increase more than 10% above the trigger.

A general overview of the symbol-specific restrictions is provided in Appendix A. Refer to the *Fisheries Act 1994* and its subordinate legislation for a full account of the rules governing the use of the MAFF fishery symbols (available at: <https://www.legislation.qld.gov.au/>). Additional information on provisions contained within the harvest strategy can be found at: <https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable/harvest-strategy>.

4 Licence & Symbol Summary

Access to Queensland’s commercial fisheries is managed using fishery symbols. These symbols define what gear can be used in each fishery (e.g. A = Aquarium collection, N = Net, L = line, T = trawl), and/or the area of operation (e.g. A1 and A2; Appendix A). While operators can have multiple fishery symbols (e.g. N1, N2 and L1 or a L1 and T1) attached to their commercial fishing boat licence, only one fishery symbol can be used at a time. There are however notable exceptions to this, for example, the coral (D) fishery symbol can be used in conjunction with the (A1) fishery symbol (Business Queensland, 2016). In each fishery, the total number of symbols represents the number of fishers that could potentially access the fishery at any given time. This differs from data on the number of ‘active’ licences which represents the number of operators that have used their symbol to access the fishery at some point over a 12-month period.

When compared to other commercial fisheries, the maximum MAFF operating potential is comparatively small. The number of fishing symbols peaked at 62 in 1997/98 but declined progressively over the 1999 to 2015 period. Symbol numbers post-2015 have stabilised at or around 43 licences (Table 2). Proportionately, the decline in symbol numbers represents a ~31 per cent reduction in the maximum MAFF operating potential. A range of factors would have contributed to the observed decline in fishing symbol numbers including operational considerations (e.g. business restructures and licence surrenders), management reforms and ancillary programs like the expansion of the *Great Barrier Reef Marine Park Representative Areas Program*.

Table 1. Summary of fishing dynamics in the Marine Aquarium Fish Fishery (MAFF) for the 1994/95–2020/21 period (inclusive). This table provides an overview of the total number of MAFF symbols (A, A1 and A2) previously and currently available for use within the MAFF, the number of active licenses, days fished and number of individuals harvested between 1994/95–2021/22.

Season	Symbols				Fishing Data		
	A ²	A1	A2	Total	No. Active Licences	Effort (days fished)	Harvest (No. individuals)
1994/95					42	73	90,463
1995/96	2			2	48	150	200,724
1996/97	8			8	51	142	146,292
1997/98	61	1		62	45	1273	174,084
1998/99	58	1		59	48	2439	265,473
1999/00	57	1		58	46	1944	212,413
2000/01	55	1		56	46	2126	211,694
2001/02	55	1		56	45	2081	191,989
2002/03	53	1		54	39	2022	197,056
2003/04	4	40	5	49	36	2000	215,818
2004/05		44	5	49	30	1985	220,884
2005/06		44	5	49	32	1801	202,698
2006/07		44	5	49	36	1758	179,134
2007/08		44	4	48	30	1488	160,180
2008/09		45	4	49	32	1530	181,018
2009/10		42	4	46	34	1651	185,341
2010/11		42	4	46	30	1344	149,173
2011/12		44	4	48	32	1403	157,075
2012/13		42	3	45	25	1142	135,073
2013/14		44	4	48	23	1059	113,972
2014/15		42	3	45	27	982	109,992
2015/16		42	3	45	29	1006	119,340
2016/17		42	2	44	28	803	115,451
2017/18		42	2	44	25	738	107,025
2018/19		41	2	43	27	724	106,029
2019/20		41	2	43	30	628	85,688
2020/21		41	2	43	28	636	104,119
2021/22		41	2	43	23	447	63,497

² The 'A' fishery symbol was introduced in December 1995 and was progressively phased out from 2003 to 2005. The fishery has fully operated under the A1 / A2 fishery symbol system since the 2004–2005 fishing system.

Monitoring systems used by the *Department of Agriculture and Fisheries* (DAF) classifies any licence that reports catch from a fishery as 'active'. This classification is given regardless of the fishing intensity, frequency and catch quantity. As active licence data tracks the number of symbols being used in the fishery, it provides a better indication of annual participation rates.

In the MAFF, fishing data shows that half to two-thirds of the available licences are used in the fishery each season (Table 1). Participation rates in this fishery show considerable inter-season variability with earlier years reporting catch across 80 per cent of the available licences. There has however been a general decline in the number of operators reporting catch from the MAFF each year. This decline can be partly attributed to the fact that there are fewer licences available for use in the fishery (Table 1).

Given the area of operation, management reforms including the expansion of the *Great Barrier Reef Marine Park Representative Areas Program* (and ancillary programs) would have contributed to the observed decline in participation rates (Table 1, Fig. 2). Similarly, a number of the MAFF operators are actively involved in the Queensland Coral Fishery (QCF) which has seen a corresponding increase in harvest rates and effort levels (Department of Agriculture and Fisheries, 2022a). To this extent, the decline in participation rates will reflect changing operational priorities and a transition of effort to the QCF.

5 Catch & Effort

Marine aquarium fish collection has an extensive history on the Queensland east coast and has been occurring on a commercial scale since the 1970's (Provision Reef, 2022; Whitehead *et al.*, 1986). However, formal logbook records were not kept until 1994/95 with the introduction of a MAFF-specific fishery symbol (Table 1).

Data compiled through the logbook program shows that effort levels have declined progressively since 1998/99 (Fig. 2). This decline coincides with a reduction in annual participation rates and is, in part, due to licence holders prioritising the harvest/sale of corals (Department of Agriculture and Fisheries, 2022a). Effort levels have more than halved since 1998/99 (2439 days fished) and have not exceeded 1000 days fished since 2015/16 (Table 1).

Due to the inherent challenges of weighing retained fish, harvest data for the MAFF is based on the number of individuals. Annual harvests cover a considerable range with between 63,497 and 265,473 individuals (*average* = ~157,000 fish) retained each year (Table 1; Fig. 2; Appendix B). Harvest rates over the last ten years are smaller than the historical average with operators reporting a seasonal range of 63,497–157,075 fish and an average of 113,870 fish over the 2010/11–2021/22 period (Appendix B). As with participation rates and effort trends, it is probable that catch variation in the MAFF is due to shifting market demands *i.e.* from fish only aquariums, to displays comprising a diverse assortment of marine life, including corals and other invertebrates.

It is reasonable to conclude that catch declines are attributed to the decreased demand for fish and increased demand for coral, likely due to the desire to build "reef tanks". "Reef tanks" replicate coral reef ecosystems and are the most popular marine aquarium display (Calado *et al.*, 2017). There is also an economic driver involved as corals are higher value and easier to collect; therefore, more cost-effective for commercial collectors to harvest. Other factors that may have contributed to the observed wild harvest decline include improved collection techniques, improved operating procedures for export,

advancements in post-collection husbandry and captive breeding. These advancements have likely increased the post-capture survival of fish, meaning less fish need to be collected as mortality rates are lower. These operational shifts partly reflect the dynamic and reactive nature of the fishery.

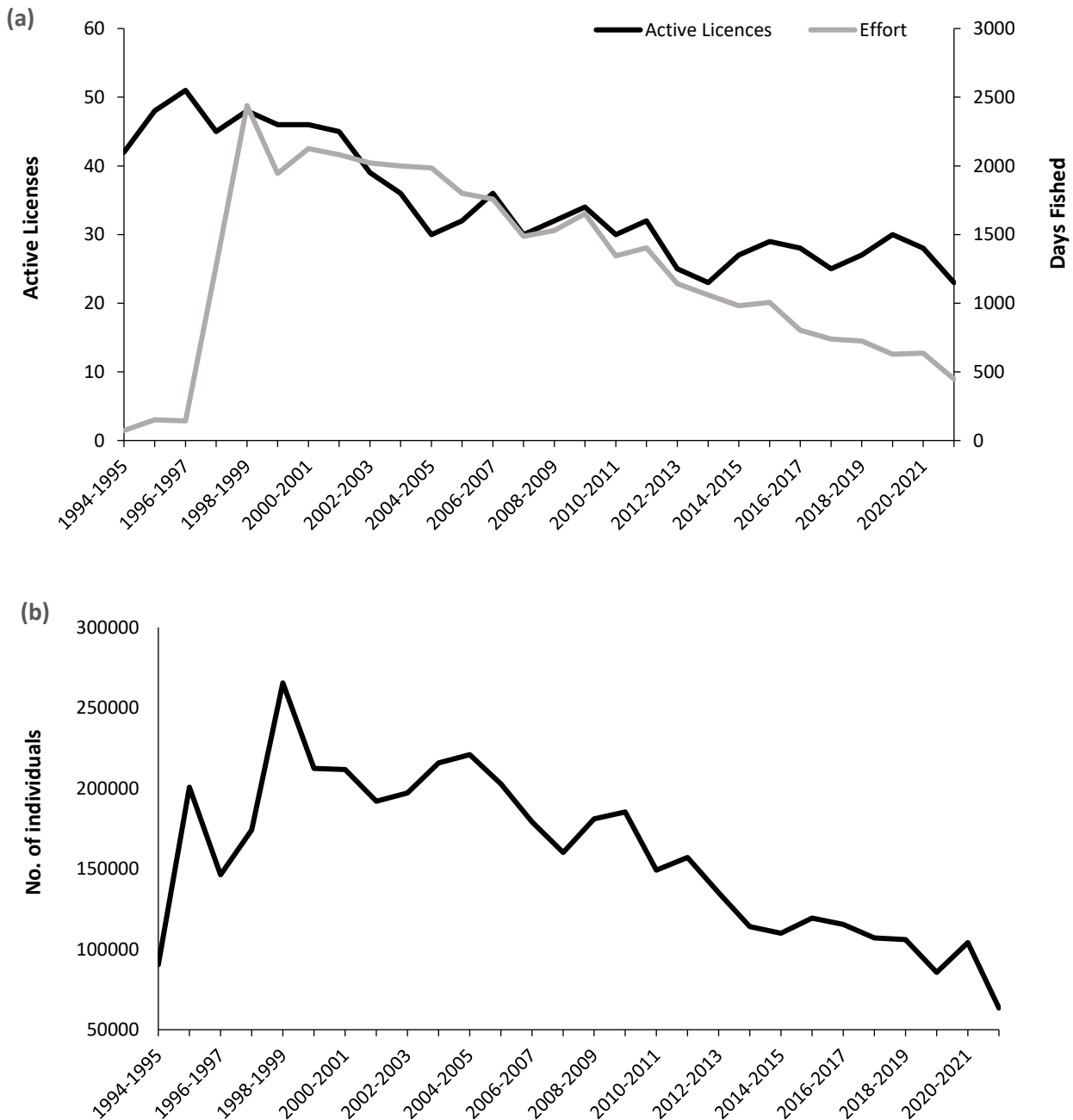


Figure 2. Summary statistics for the Marine Aquarium Fish Fishery (MAFF) a) participation rates (active licences*) and effort usage (days fished) and (b) Number of individuals (includes fish and invertebrates) caught in the MAFF from 1994/95–2021/22 fishing seasons. *An ‘active licence’ represents any licence that has reported catch from the fishery during a given season.

6 Species Compositions

6.1 Target Species

A diverse range of fishes and invertebrates are collected in the MAFF. Aquarium fishes make the greatest contribution to total MAFF harvest followed by invertebrates (namely echinoderms, crustaceans, and molluscs). Over 1500 marine fish could be harvested from Queensland for private or public aquaria, although only a few hundred are collected regularly.

Historical MAFF data shows that fishes comprise approximately 70 per cent of reported catch. The most collected families include *Pomacentridae* (damselfishes), *Labridae* (wrasses), and *Pomacanthidae* (angelfishes). Other groups targeted include *Chaetodontidae* (butterflyfishes), *Gobiidae* (gobies), *Acanthuridae* (surgeonfishes), *Serranidae* (namely anthias), *Apogonidae* (cardinalfishes), *Blenniidae* (blennies) and *Plesiopidae* (assessors; Table 2). Collection intensities for these species are frequently dictated by market demand which is often determined by morphology, colouration, size and rarity. Some species are also targeted due to their endemism or have restricted distributions; therefore are more valued/prized in the aquarium trade due to their limited availability. Some examples from the Great Barrier Reef include the Queensland Yellowtail Angelfish (*Chaetodontoplus meredithi*) and Bluetail Wrasse (*Anampses femininus*). The market push for rare and/or endemic species can lead to localised depletions which damages natural populations if left unchecked (Calado *et al.*, 2017).

Approximately 30 percent of the MAFF catch over the last decade consist of invertebrates from the Class Crustacea, Phylum Echinodermata and Phylum Mollusca. Catch data for the MAFF shows that the number of retained invertebrates has declined through time (Appendix C). This decline mirrors trends observed at a whole-of-fishery level and within the teleost data (Fig. 2; Appendix C). There has however been a proportional shift with the invertebrate contribution increasing from approximately 30 per cent to 40 per cent over the last three years (Table 2). This increase is linked to a disproportionate decline in teleost/invertebrate retention rates *versus* the increased targeting of invertebrates.

Elasmobranchs (sharks and rays) and syngnathids (seahorses and pipefish) make up a small percentage of the total MAFF catch. Syngnathids are listed under the *Environment Protection and Biodiversity Conservation Act 1999* and are no-take species within the GBRMP. While syngnathids can be retained outside the GBRMP, this represents a comparatively small percentage of the fished area. Most syngnathids that occur in the trade are sourced from aquaculture facilities. Elasmobranchs are primarily caught for public aquaria displays via special order.

Commercial fishers currently report catch from the MAFF through physical logbooks and an *Automated Integrated Voice Response (AIVR)* system (Department of Agriculture and Fisheries, 2021c). The current MAFF logbook has poor species resolution with commercial collectors reporting catch under broad species groupings, common names or to family or genus. Broad-scale reporting makes it difficult to assess harvest trends and/or make more specific inferences regarding species compositions, key targets or market influences.

Of significance, catch reporting deficiencies are being actively addressed as part of a broader *Marine Aquarium Fish Fishery Data Improvement Plan* (Department of Agriculture and Fisheries, 2022b). This plan includes a detailed review of the current logbook requirements and the introduction of detailed species-specific reporting requirements. The updated logbook is due to come into effect on 1 July

2023 and follows on from updates undertaken in 2000 (logbook AQ03), 2006 (logbook AQ04) and 2010 (logbook AQ05).

A more comprehensive breakdown of the catch compositions, including regional breakdowns, has been provided in the latest *Wildlife Trade Operation* agency submission (available at: <https://www.awe.gov.au/environment/marine/fisheries/qld/aquarium>). The *Marine Aquarium Fish Fishery Data Improvement Plan* can also be downloaded at: <https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-research/federal-government-reporting>.

Table 2. Summary of the catch composition data from 2010/11–2021/22 (inclusive) and the last three fishing seasons. Data from 2019/20–2021/22 demonstrates the change in market demand for key groupings. Values represent the percentage contribution each group made to the total reported catch. For a more detailed account of the reported catch refer to Appendix C.

Family	Group	Catch proportions (2010/11–2021/22)	Catch proportions (2019/20–2021/22)
Teleosts	All	72.6%	59.4%
Pomacentridae	Damselfishes	18.6%	14.1%
Labridae	Wrasses	15.5%	12.3%
Pomacanthidae	Angelfishes	8.7%	7.1%
Chaetodontidae	Butterflyfishes	5.6%	4.8%
Serranidae	Anthias, rock cods	5.2%	1.6%
Acanthuridae	Surgeonfishes	3.7%	3.2%
Plesiopidae	Assessors	2.7%	2.6%
Gobiidae	Gobies	2.6%	3.1%
Apogonidae	Cardinalfishes	2.6%	2.4%
Blenniidae	Blennies	2.3%	3.1%
Pseudochromidae	Dottybacks	0.8%	0.7%
Tetraodontidae	Pufferfishes	0.6%	0.6%
Balistidae	Triggerfishes	0.4%	0.2%
Zanclidae	Moorish Idol	0.4%	0.4%
Scorpaenidae	Scorpionfishes	0.3%	0.2%
Siganidae	Rabbitfishes	0.1%	0.4%
Cirrhitidae	Hawkfishes	0.1%	0.1%
Monocentridae	Pineapplefishes	0.1%	0.04%
Ostraciidae	Boxfishes	0.1%	0.1%
Syngnathidae	Seahorses, pipefishes	0.006%	0.0008%
Sharks and Rays		0.3%	0.3%
Other–Teleosts (unspecified)		1.8%	1.9%
Invertebrates		27.4%	40.6%
Crustacea	Shrimps, crabs, lobsters	10.6%	14.9%
Echinodermata	Star fish, sea cucumbers, sea urchins	8.1%	11.1%
Mollusca	Marine snails, nudibranchs, etc.	4.7%	8.1%
Other (unspecified)		4%	6.5%

6.2 Bycatch / Non-target Species

Due to the highly selective nature of hand-collection fishing, methods used in the MAFF produce minimal bycatch and have low impacts to the broader ecosystem. While interactions with Threatened, Endangered and Protected (TEP) species are monitored through a dedicated logbook (Queensland Government, 2022), none have been reported from this fishery.

7 Assessment History

A sustainability assessment of marine fish collected in the Queensland marine aquarium trade was completed in 2008 (Roelofs & Silcock, 2008). This assessment was informed by a separate vulnerability and susceptibility assessment which assessed 587 species to collection activities carried out in the MAFF. Out of the 587 species assessed, 24 teleosts were assigned higher vulnerability/susceptibility ratings. No invertebrates were assessed.

The management regime for the MAFF has undergone considerable change since the completion of the sustainability assessment (Roelofs & Silcock, 2008). These changes include the introduction of a fishery-specific harvest strategy to manage longer-term sustainability risks for species collected in the MAFF, particularly those experiencing increased rates of harvest and/or with higher conservation concerns (Department of Agriculture and Fisheries, 2021b). The broader structure of the fishery has also shifted in recent seasons with licence holders prioritising the collection of coral. QDAF notes though that the management regime for the QCF now includes catch limits for harvested species (Queensland Government, 2023). These measures were implemented on 1 July 2022 and the potential implications for the MAFF are yet to be fully explored. For example, it is not currently clear if effort will transition back to the MAFF if coral catch limits become exhausted.

The changing landscape of the MAFF, combined with ongoing management reforms like the establishment of a *Marine Aquarium Fish Fishery Data Improvement Plan* (Department of Agriculture and Fisheries, 2022b), supports the development of an updated risk assessment for this fishery. In line with this need, the risk assessment for the MAFF will be updated in accordance with the *Queensland Ecological Risk Assessment Guidelines* (Department of Agriculture and Fisheries, 2018). The content of this Scoping Study will be used to inform a whole-of-fishery (Level 1) and species specific (Level 2) risk assessment for this fishery. These initial assessments will be built on through time to include secondary species and emerging priorities.

For reference, previous sustainability and vulnerability evaluations for the MAFF can be accessed at: <https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-research/data/ecological-risk-assessments>. The *Marine Aquarium Fish Harvest Strategy 2021–2026* can be accessed at: <https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable/harvest-strategy>.

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9 Appendices

- **Appendix A** - Summary of key management arrangements
- **Appendix B** – Overview of total catch (numbers of fish) in the Marine Aquarium Fish Fishery from 2010/11–2021/22 by region.
- **Appendix C** – Complete overview of the retained catch (individuals) of the current fishing environment in the MAFF from 2010/11–2021/22.

APPENDIX A—Summary of the provisions relating to the 'A' fishing symbol permitted for use in the Marine Aquarium Fish Fishery (MAFF). This information is accurate as of the 1 February 2023. Further information regarding the most up to date legislation is available at: <https://www.legislation.qld.gov.au/>

A1 Fishery Symbol Hand Collection Provisions

Fishery area

- (1) The fishery area consists of the area of the following waters—
- a. tidal waters within the Moreton Bay Marine Park;
 - b. tidal waters north of Cape Moreton and south of latitude 26°18' south, other than waters within the Moreton Bay Marine Park;
 - c. tidal waters west of longitude 151°08' east and between latitude 23°15' south and latitude 23° south;
 - d. tidal waters within the area described as area 1 in the Whitsundays Plan of Management, schedule 1;
 - e. tidal waters within the following boundary
 - tidal waters within the following boundary—
 - from the intersection of latitude 17°08' south with the mainland shore to latitude 17°08' south, longitude 146°12' east
 - to latitude 16°51' south, longitude 146°28' east
 - to latitude 15°55' south, longitude 145°51' east
 - along latitude 15°55' south to the mainland shore
 - along the mainland shore to latitude 17°08' south

Target species

A wide range of teleosts, invertebrates, seahorses/pipefish, sharks and rays can be collected in the 'A' fishery excluding—

- (1) Fish other than the following fish may be taken under the licence—
- (a) barramundi;
 - (b) sea cucumber;
 - (c) shell grit;
 - (d) star sand;
 - (e) any species of coral, oyster, pearl oyster or trochus.
- (2) Sea cucumber does not include fish of the following species—
- Bohadschia graeffei*;
Calachrius crassus;
Cucmaria miniata;
Euapta godeffroyi;
Holothuria edulis;
Holothuria hilla;
Opheodesoma spp.;
Pentacta anceps;
Pentacta lutea;
Pseudocolchirus violaceus;
Stichopus noctivagus;
Synapta maculata.

Permitted ways of taking fish

- (1) Fish may only be taken in the 'A' area—by hand; or by using cast, scoop or mesh nets or fishing lines.
- (2) Underwater breathing apparatus (e.g. hookah or scuba) or a herding device (e.g. a rod) may be used while collecting fish.

Who may take fish

- (1) A commercial fishery and assistant fishers may collect fish under the licence.

A1 Fishery Symbol Hand Collection Provisions

(2) However, no more than 3 persons may take fish under the licence at the same time.

Net Fishing Line

A fishing line may only be used in the fishery area if it has a single barbless hook.

Net Configuration (cast nets)

A cast net may be used in the fishery area only if the net—(a) is no longer than 3.7 m; and (b) has a mesh size of no more than 28mm.

Net Configuration (scoop nets)

A scoop net may be used in the fishery area only if the net—(a) is no more than 2 m in any dimension; and (b) has—(i) a mesh size of no more than 25 mm; and (ii) a handle or shaft no longer than 2.5 m.

Net Configuration (scoop nets)

Use of mesh nets in the aquarium fish fishery 'A' area.

(1) A mesh net may be used only if the net—

- (a) Is no longer than 16 m; and
- (b) has—
 - (i) a mesh size of no more than 28 mm; and
 - (ii) a drop of no more than 3 m

(2) A person using the net must be within 100 m of it.

A2 Fishery Symbol Hand Collection Provisions

Fishery area

Tidal waters south of latitude 10°41' south and east of longitude 142°31'49" east other than the five special management areas restricted to A1 licence holders.

Target species

A wide range of teleosts, invertebrates, seahorses/pipefish, sharks and rays can be collected in the 'A' fishery excluding—

- (2) Fish other than the following fish may be taken under the licence—
- (a) barramundi;
 - (b) sea cucumber;
 - (c) shell grit;
 - (d) star sand;
 - (e) any species of coral, oyster, pearl oyster or trochus.

(3) Sea cucumber does not include fish of the following species—

- Bohadschia graeffei*;
- Calachrius crassus*;
- Cucmaria miniata*;
- Euapta godeffroyi*;
- Holothuria edulis*;
- Holothuria hilla*;
- Opheodesoma spp.*;
- Pentacta anceps*;
- Pentacta lutea*;
- Pseudocolchirus violaceus*;
- Stichopus noctivagus*;
- Synapta maculata*.

A2 Fishery Symbol Hand Collection Provisions

Permitted ways of taking fish

- (3) Fish may only be taken in the 'A' area—by hand; or by using cast, scoop or mesh nets or fishing lines.
- (4) Underwater breathing apparatus (e.g. hookah) or a herding device (e.g. a rod) may be used while collecting fish.

Who may take fish

- (3) A commercial fishery and assistant fishers may collect fish under the licence.
- (4) However, no more than 3 persons may take fish under the licence at the same time.
- (5) A person taking fish under an A2 licence must not take or possess—
 - (a) more than 10 fish; or
 - (b) more than 2 fish of the same species.

Net Fishing Line

A fishing line may only be used in the fishery area if it has a single barbless hook.

Net Configuration (cast nets)

A cast net may be used in the fishery area only if the net—(a) is no longer than 3.7 m; and (b) has a mesh size of no more than 28 mm.

Net Configuration (scoop nets)

A scoop net may be used in the fishery area only if the net—(a) is no more than 2 m in any dimension; and (b) has—(i) a mesh size of no more than 25 mm; and (ii) a handle or shaft no longer than 2.5 m.

Net Configuration (scoop nets)

Use of mesh nets in the aquarium fish fishery 'A' area.

- (1) A mesh net may be used only if the net—
 - (a) Is no longer than 16 m; and
 - (b) has—
 - (i) a mesh size of no more than 28 mm; and
 - (ii) a drop of no more than 3 m
- (2) A person using the net must be within 100 m of it.

APPENDIX B—*Catch data (total number of individuals) per region for the Marine Aquarium Fish Fishery (MAFF) based on commercial logbook receipts submitted by hand collection operations between 2010/11 and 2021/22 (inclusive).*

Year	Other	Cairns	Keppel	Moreton Bay	Sunshine Coast	Whitsundays
2010/11	59336	56651	3386	3462	26338	
2011/12	73938	48653	1650	4079	28745	10
2012/13	71505	49610	1498	1814	10646	
2013/14	56342	36302	1424	9452	10452	
2014/15	42781	42149	395	15056	9595	16
2015/16	64365	34711	867	9237	10160	
2016/17	61532	36875	1239	9701	6030	74
2017/18	65130	32187	1417	2456	5835	
2018/19	61647	36243	942	1459	5710	28
2019/20	28286	45012	2950	3456	5984	
2020/21	44339	41409	4036	6854	7450	31
2021/22	12285	32831	1253	10331	6769	28

APPENDIX C—Catch composition data for the Marine Aquarium Fish Fishery (MAFF) based on commercial logbook receipts submitted by hand collection operations between 2010/11 and 2021/22 (inclusive).

Species (logbook entry name)	Financial Year												Total
	2010 – 2011	2011 –2012	2012 –2013	2013 –2014	2014 –2015	2015 –2016	2016 –2017	2017 –2018	2018 –2019	2019 –2020	2020 –2021	2021 –2022	
[a glassfish]			150								400		550
[a rockcod]									1				1
[a spiny lobster]						4							4
Actinaria	15						2					7	24
Anemonefish	3793	2244	1661	1328	1133	1070	876	550	545	592	854	525	15171
Angel fish – personifer												14	14
Angel fish – scribbled	5677	6778	4826	2239	3248	5650	3050	2467	2601	2052	4057	2463	45108
Angel fish – unspecified	1692	1616	767	667	521	677	436	843	425	362	680	408	9094
Angelfish–conspicuous												17	17
Angelfish – personifer (qld yellowtail)	6714	5885	3763	2562	2230	2698	2883	3286	3003	1520	2044	1426	38014
Anglerfish	11						1	2	6	2	2		24
Anthias	4844	9635	9025	8396	5037	8415	7204	8195	4327	2142	1137	643	69000
Assessor	4184	5165	5302	3496	2455	2704	2204	2194	2961	2201	2575	1845	37286
Bannerfish	412	402	147	96	113	165	84	70	40	77	53	61	1720
Bass–red									5				5
Batfish–unspecified			2					1	1	2			6
Beche de mer – unspecified	1714	1911	917	656	600	702	595	524	496	306	1262	847	10530
Bigeye Soldierfish								2					2
Blackback Anemonefish	337	273	403	289	267	212	182	36	100	51	210	85	2445
Blacktip reef shark										20			20
Blennies	1813	3574	3449	2039	2805	3251	2685	1968	1672	3198	3132	1636	31222
Blotched Fantail Ray		2	8										10

Species (logbook entry name)	Financial Year												
	2010 – 2011	2011 –2012	2012 –2013	2013 –2014	2014 –2015	2015 –2016	2016 –2017	2017 –2018	2018 –2019	2019 –2020	2020 –2021	2021 –2022	Total
Blue devil									1	2	6		9
Blue tang	1554	2302	2306	1129	829	2398	1602	929	1101	560	394	222	15326
Box fish	135	153	91	127	93	82	57	84	42	41	71	28	1004
Bream–butter		10								3			13
Bream–unspecified								9	12	4	5		30
Butter fish – striped											6		6
Butterfly fish	8905	11235	6624	5719	5006	6487	6865	6885	5557	3871	4612	3516	75282
Cardinal fish - unspecified	4412	3290	3099	2954	2117	2193	4891	2959	3568	3609	1574	898	35564
Catfishes					46		73		21	65	2	80	287
Cleaner wrasses	3137	2697	2068	2387	1932	1557	1592	1780	1076	1237	2052	1316	22831
Cod–barramundi			2			1	3	4	3				13
Cod – blue maori			1	1									2
Cod–potato		3	7				1	3					14
Cod – reef unspecified	227	158	170	104	148	172	93	113	115	60	120	70	1550
Cod–unspecified	5	1						3	4		1	2	16
Coleman's Seahorse										2			2
Common blacktip shark										1			1
Coral Croucher							24	23	37	13	6		103
Crab – hermit unspecified						380		300			50	150	880
Crimson spotted rainbowfish		210	124										334
Crustaceans	2144	2340	2317	3810	3793	2704	2323	1781	4424	3090	6080	2191	36997
Cypraea tigris		1											1
Damselfish	30203	30837	27173	19860	17085	18994	20051	18582	12441	11959	11528	8321	227034
Dart – swallow tailed		10	57	50		9	21	33	7	2	1		190
Dart–unspecified	306	225	247	37	175	148	134	111	183	31	58	43	1698

Species (logbook entry name)	Financial Year												Total
	2010 – 2011	2011 –2012	2012 –2013	2013 –2014	2014 –2015	2015 –2016	2016 –2017	2017 –2018	2018 –2019	2019 –2020	2020 –2021	2021 –2022	
Dottybacks	1877	1388	1911	648	718	626	815	292	332	366	869	459	10301
Dusky Surgeonfish											12		12
Eagle ray			1			210						2	213
Eastern Clown Anemonefish	12	20	27	6			44	11	12	53	47	36	268
Eastern Spiny Seahorse									2				2
Eel (marine)				2	4		5		6	1	2	2	22
Emperor–red			2	12	2	2	2	6				2	28
Emperor–unspecified					2		34	17	35	14	37	25	164
Emperor – yellow tailed									2				2
Fish–unspecified	4670	1923	1069	508	626	556	98	31	16	9	1		9507
Flashlight fishes		84											84
Flounder–unspecified									1	1	1		3
Fusilier – yellow tail											30		30
Fusiliers–unspecified						7	24		211	5			247
Goat fish	5	3				11	11	22	22	36	67	18	195
Gobies	1968	3288	4374	2854	3169	4104	2983	3204	1511	2306	3000	2644	35405
Gobies, blennies and dartfishes	3997	915	15	17									4944
Grey carpet shark										6			6
Grunter – bar tailed									9				9
Gudgeon or sleepers										16	150		166
Guitarfishes – shovelnose unsp										2			2
Hawkfish–unspecified		128	416	5		50	184	132	383	108	127	23	1556
Himantura spp.			4										4
Holocentridae		3					3	4		1	1	1	13
Invertebrates–undifferentiated	3538	5366	3136	3612	3468	4132	3435	1189	10486	7785	6510	2202	54859

Species (logbook entry name)	Financial Year												Total
	2010 – 2011	2011 –2012	2012 –2013	2013 –2014	2014 –2015	2015 –2016	2016 –2017	2017 –2018	2018 –2019	2019 –2020	2020 –2021	2021 –2022	
Leatherjacket–pigmy									2				2
Leopard whipray			6										6
Lizardfish							3	2					5
Lobster–unspecified								1					1
Lobster–ornate			4	6		8	1	3					22
Lyretail Grubfish								7		1			8
Mandarinfish							1	5	7	7	11	4	35
Molluscs–unspecified	2750	1365	3237	4151	10058	6996	4977	4469	5890	4488	10398	5621	64400
Monocle bream–unspecified									4	134	11		149
Moorish idol	788	931	690	539	258	424	391	312	163	285	509	210	5500
Moray eel	1	3			1								5
Mullet–unspecified		200									225		425
Nudibranch						16	2	20					38
Old wives	1				20	2	1				1		25
Pacific Blue Eye		300	200		3				1		2950		3454
Paddle tail									8				8
painted rocklobster						1				1			2
Painted sweetlip									11				11
Paradise Threadfin Bream										23			23
Pigfish–unspecified											1		1
Pineapple fish	319	262	209	222	107	159	93	56	63	31	40	32	1593
Pipe fish/sea horses			20	10	27								57
Porcupine Ray			1										1
Puffer fish	441	978	950	983	743	831	755	786	637	387	577	477	8545
Pufferfish and boxfish	650	188		8							8	2	856

Species (logbook entry name)	Financial Year												
	2010 – 2011	2011 –2012	2012 –2013	2013 –2014	2014 –2015	2015 –2016	2016 –2017	2017 –2018	2018 –2019	2019 –2020	2020 –2021	2021 –2022	Total
Pygmy angels	4092	3806	2957	2363	2250	2579	2528	2193	1443	1189	987	853	27240
Ray–cowtail sting			5									1	6
Ray - sting unspecified	126	71	11				6					4	218
razorfishes						12	125		15	26			178
Remora							1		2				3
Samoaan Pipefish	18	2	1	2									23
Scat										33			33
Scorpion fish – unspecified	509	570	505	351	303	334	286	215	173	182	208	139	3775
Seahorse–unspecified	2												2
Sea-urchin	705	728	688	574	550	365	644	232	536	3254	990	567	9833
Shark–epaulette	309	341	226	177	151	195	221	70	76	180	216	91	2253
Shark – grey reef	19	10	12	1		8	4	2	12				68
Shark–lemon			2										2
Shark–leopard		1	6	2	1	3	1						14
Shark–tawny			2			12	1						15
Shark–unspecified	79	23	24										126
Shark – white tip reef		6	6		1			3	3	3		13	35
Shark–wobbegong			1			2							3
Sharks and rays	32	135	235	114	108	95	112	51	64	84	121	75	1226
Shrimp											1		1
Shrimp–anemone		2	3			25			14	58	4	52	158
Shrimp – coral banded	2102	2751	2059	1507	1529	2180	2040	1492	1509	1708	1889	1204	21970
Shrimps – all others	2723	2923	4687	10026	10779	8681	9965	8160	6148	4057	9522	7730	85401
Snapper – unspecified tropical						20	33	29	25	11	3	2	123
Spinefoot	2				1	171	300	154	137	315	493	103	1676

Species (logbook entry name)	Financial Year												
	2010 – 2011	2011 –2012	2012 –2013	2013 –2014	2014 –2015	2015 –2016	2016 –2017	2017 –2018	2018 –2019	2019 –2020	2020 –2021	2021 –2022	Total
Sponges										20			20
Star fish	9337	8340	6241	6167	7635	8085	6085	6018	10910	7994	7795	5097	89704
Stone fish – estuary					1				2				3
Striped Catfish							50		100			95	245
Stripey				50					20		58	20	148
Stripey – spanish flag						6				1			7
Surgeon fish – convict	122	136	110	47	31	21	27	120	72	52	7	170	915
Surgeonfish – all others	4484	4074	2839	2295	1867	2860	3416	3094	2936	2580	2429	1669	34543
Sweepers										3			3
Sweetlip–clown	11				16							20	47
tilefishes								9	22				31
Trevally – blue fin									2				2
Trevally–unspecified							5	1	5	3			14
Trigger fish	627	735	579	474	358	467	660	312	967	171	185	245	5780
Tropical snapper											1		1
Trout–passionfruit									5				5
Trumpet fish									6				6
Tusk fish – harlequin	4401	4713	4316	3614	3295	2563	3438	3632	3180	2431	2778	1903	40264
Tusk fish – unspecified									2				2
Two-line Monocle Bream											11		11
Weever									1				1
Western/Eastern Clown Anemonefish	359	669	1014	855	847	791	587	249	342	475	586	305	7079
Wideband Anemonefish	572	452	120	109	98	117	87	115	89	82	65	62	1968
Wrasse – humphead maori		15	13	3	13	6	3	4	3				60

Species (logbook entry name)	Financial Year												
	2010 – 2011	2011 –2012	2012 –2013	2013 –2014	2014 –2015	2015 –2016	2016 –2017	2017 –2018	2018 –2019	2019 –2020	2020 –2021	2021 –2022	Total
Wrasse–unspecified	15291	18270	17432	13712	11319	10934	13032	16564	12618	7635	7213	4503	148523
Zebra fish									1				1
Zebra lionfish			1										1