



Queensland coral fishery harvest strategy: 2021–2026

Business area owner Management & Reform

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Enquiries and feedback regarding this document can be made as follows:

Email: info@daf.qld.gov.au
 Telephone: 13 25 23 (Queensland callers only)
 (07) 3404 6999 (outside Queensland)
 Monday, Tuesday, Wednesday and Friday: 8 am to 5 pm, Thursday: 9 am to 5 pm
 Post: Department of Agriculture and Fisheries GPO Box 46 BRISBANE QLD 4001 AUSTRALIA
 Website: daf.qld.gov.au

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What the harvest strategy is trying to achieve

This harvest strategy has been developed in line with the *Queensland harvest strategy policy* to manage the coral resources of Queensland. The sustainability risk to coral stocks from harvesting is currently considered low. In addition to the substantial protection provided by marine park zoning, the hand-harvesting methods used in the Queensland coral fishery (QCF) produce minimal bycatch and have negligible impacts on the broader ecosystem.

The primary management method for the QCF is individual transferable quotas (ITQ) for commercial fishing. The decision rules are risk-based and designed to ensure harvesting remains sustainable by monitoring harvesting trends. Other management tools (e.g. size limits, spawning closures etc.) may also be used to support the sustainable management of stocks under this harvest strategy.

Fishery overview

The QCF operates along the Queensland east coast, from the tip of Cape York to the southern border of the Great Barrier Reef. Fishing can take place within permitted zones of the Great Barrier Reef Marine Park. Harvesting is also permitted, for some authority holders, in two small areas in south-east Queensland waters.

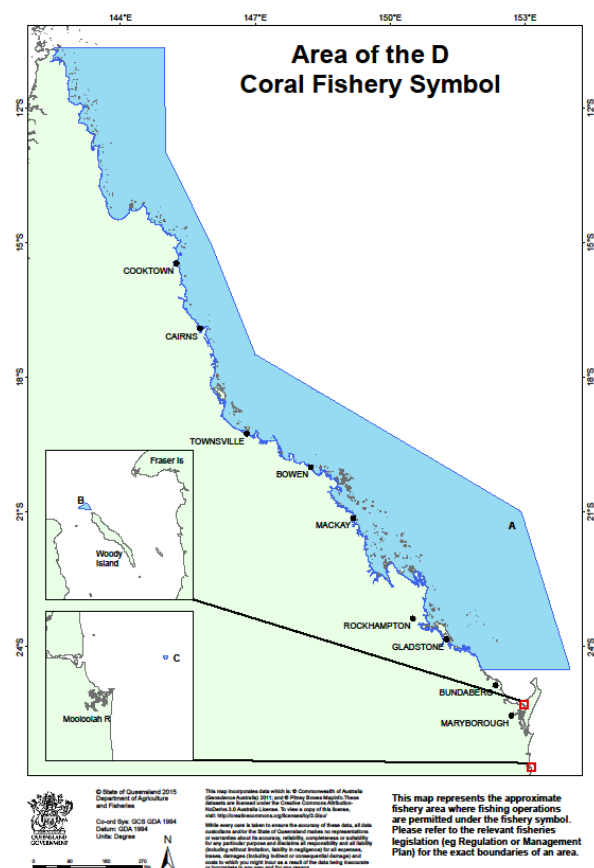
The QCF is a hand-collection fishery that includes the collection of whole, and/or parts of, colonies of a wide variety of corals and related Cnidarian species for the live aquarium trade, most of which is exported overseas. Operation is primarily on the Great Barrier Reef and licence conditions specifically ensure sustainability of the resource. Coral is collected using hand-held implements and scuba or surface-supplied air from hookah (hose) apparatus.

Commercial operations in the QCF take coral under a 'D' fishery symbol. It is a small-scale, quota-managed, hand-harvest fishery with 59 authorities.

Commercially collected coral species, coral sand and rubble, and living rock are marketed domestically and internationally.

There is a current total allowable commercial catch (TACC) for the fishery, which is split between two categories – 'speciality coral' and 'other coral' (live rock, coral rubble and ornamental coral).

There is no information available on traditional or recreational harvest of coral species. Hobby aquarists do harvest some coral outside the state marine parks and the Great Barrier Reef Marine Park. Recreational fishers cannot legally use scuba or hookah apparatus for harvesting corals but may use a mask and snorkel.



Stocks covered by the harvest strategy

Corals are primitive animals that belong to the phylum Cnidaria, which also includes hydroids, jellyfish and sea anemones. Species permitted to be taken in the fishery include those of the class Hydrozoa and Anthozoa. Most corals targeted by the fishery belong to the class Anthozoa and represent approximately 80 of over 400 coral species present on the Great Barrier Reef. Of these species, the market dictates collection of a narrow range of size and appearance.

Corals targeted for the aquarium trade include a diverse range of mainly hard and soft corals, as well as sea anemones. These corals are generally small colonies or large-polyped species, which survive well in captivity.

Management units for the harvest strategy

The management unit for this harvest strategy is all tidal waters and foreshores south of latitude 10°41' south and east of longitude 142°31'49" east. The fishery area is defined by the Fisheries (Commercial Fisheries) Regulation 2019.

Summary of management information

A summary of the management arrangements for the QCF is set out in Table 1 below. Fishers may access copies of fisheries legislation at legislation.qld.gov.au or visit fisheries.qld.gov.au for the latest information on fishing rules.

Table 1: Summary of QCF management arrangements

Feature	Details
Commercial access	Primary commercial fishing licence with a D fishery symbol
Relevant fisheries legislation	<i>Fisheries Act 1994</i> Fisheries (General) Regulation 2019 Fisheries (Commercial Fisheries) Regulation 2019 Fisheries Declaration 2019 Fisheries Quota Declaration 2019
Other relevant legislation	<i>Great Barrier Reef Marine Park Act 1975</i> and Great Barrier Reef Marine Park Regulations 2019 (Cwlth) <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth) <i>Marine Parks Act 2004</i> (Qld)
Working group	Marine aquarium fish and coral fisheries working group Terms of reference and communiques are available at fisheries.qld.gov.au
Gear	The following apparatus are permitted for use: <ul style="list-style-type: none">• commercial – hand collection, hand-held non-mechanical implements using underwater breathing apparatus• recreational – hand collection only (excluding hookah/scuba) Refer to fisheries legislation for specific gear requirements and rules.

Feature	Details
Main management methods	<p>Commercial only</p> <ul style="list-style-type: none"> • Limited access • Individual transferable quotas (ITQ) • Vessel and tender restrictions • Number of divers 'to take' restrictions
Stock status	<p>Stock status is assessed using the nationally agreed Status of Australian Fish Stocks (SAFS) classification framework – most coral species would be listed as 'undefined'</p> <p>*Note: The classification system used as part of the SAFS reporting is assessed against a 20% biomass sustainability criteria. Therefore, although a species may be classified as 'sustainable' in SAFS, this does not mean that the biomass is meeting the targets set out in the <i>Queensland Sustainable Fisheries Strategy: 2017–2027</i>.</p>
Accreditation under the Environment Protection and Biodiversity Conservation Act 1999	<p>Part 13: Accredited (expires 2021)</p> <p>Part 13A: Accredited (expires 2021)</p> <p>Visit environment.gov.au</p>

Fishery objectives

The objective of the harvest strategy is to manage the fishery in accordance with the objectives of the *Fisheries Act 1994* and the *Queensland Sustainable Fisheries Strategy: 2017–2027*.

Fishery objectives set out the direction and aspirations to achieve in the long term. The primary objective for the QCF is to:

- maintain coral harvesting effort at levels that are low risk to ecological sustainability for target species.

In pursuing the primary objective, the harvest strategy aims to:

- effectively use spatial management to reduce the risk of localised concentrations of fishing effort
- minimise and mitigate any unacceptable ecological risks arising from fishing-related activities
- maximise economic performance of the commercial fishing sector
- monitor the broader social and economic benefits of the fishery to the community.

Catch shares

This harvest strategy aims to maintain the existing catch shares between sectors. The existing resource allocation arrangements (as at 2018) are set out in Table 2 (overleaf) and this harvest strategy will aim to maintain the existing catch shares between the sectors.

The traditional fishing rights of Aboriginal peoples and Torres Strait Islanders are protected under native title legislation and relate to harvest for domestic, communal and non-commercial purposes. Accordingly, traditional and customary fishing is recognised in Queensland and is not a defined allocation.

Aboriginal peoples and Torres Strait Islanders and their communities continue to express a desire to have more economic opportunities through fishing, particularly in their own sea country. The *Aboriginal and Torres Strait Islander commercial fishing development policy* provides for an Indigenous fishing permit to be issued, on a case-by-case basis and in accordance with section 54 of the Fisheries (General) Regulation 2019, to provide opportunities to take part in fishing-related business.

Table 2: Resource allocation arrangements for the QCF

Species	Commercial fishing*	Recreational fishing (including charter) *
Coral species	99%	1%

* Commercial catch information collected through commercial logbook requirements.

Managing the performance of the fishery

This harvest strategy will manage the commercial catch at a species level and manage risks identified through ecological risk assessments (ERA). Appropriate performance indicators have been selected, where available, to describe fishery performance in relation to the fishery objectives. Catch data for coral species is used to evaluate the status and level of risk of harvesting to coral populations.

Catch triggers provide a way for controlled increases in fishing mortality, providing they are within historical catch levels. Annual catch levels are assessed against a reference period to detect changes in fishery behaviour that may represent an unacceptable risk to coral species. A reference period from 2016 to 2018 has been defined for this fishery. This reference period represents a stable period of operation for the QCF. As the level of exploitation increases above historical levels, species will be elevated to higher levels of monitoring, assessment and management.

ERAs are also used to inform the acceptable level of risk from harvesting coral species. If the ecological risk to a species is increased, then species are elevated to a higher tier of monitoring and management to ensure the risk is reduced to an acceptable level. Industry and emerging science can also identify species that may be considered for monitoring and management at a higher tier. If fishing impacts are considered to generate an acceptable level of risk to the harvested coral species, then no management action will be required. However, if fishing impacts are considered to generate an undesirable level of risk (moderate), then the coral species will be elevated to tier 2 and an appropriate management response developed. If fishing impacts were considered to generate an unacceptable level of risk (high), then the coral species will be elevated to tier 1. A management response should be developed to reduce the risk.

Table 3: Tiered management of coral species

TIER 1 – high risk	TIER 2 – moderate risk		
<i>Homophyllia australis</i>	<i>Micromussa lordhowensis</i>	<i>Cynarina lacrymalis</i>	<i>Trachyphyllia geoffroyi</i>
	<i>Acropora echinata</i>	<i>Duncanopsammia axifuga</i>	Anemone (<i>Entacmea</i>)
	<i>Acropora microclados</i>	<i>Fimbriaphyllia ancora</i>	Anemone (<i>Magnifica</i>)
	Other <i>Acropora</i>	<i>Fimbriaphyllia divisa</i>	Anemone (<i>Quadricolor</i>)
	<i>Blastomussa wellsi</i>	<i>Euphyllia glabrescens</i>	
	<i>Catalaphyllia jardinei</i>	<i>Euphyllia parancora</i>	

Management of target species

1.0 Decision rules for all coral species

The decision rules have been designed to reduce the risk of localised depletion to coral species through assessment and management of intensive fishing practices. The below decision rules are used to identify the potential for localised depletion of any coral species and ensure that any associated management action is informed by a species-specific assessment of risk.

- 1.1 If the annual harvest within a single 6 nautical mile grid for any species is less than half the average total harvest of that species from the reference period (2016–2018), or is less than 2000 pieces in total, then no management action is required.
 - 1.2 If the annual harvest within a single 6 nautical mile grid for any species is greater than half the average total harvest of that species from the reference period (2016–2018) and more than 2000 pieces in total, a risk assessment of the species will be undertaken to determine whether the harvest level is acceptable or unacceptable.
AND
 - 1.3 If the risk is determined to be unacceptable then management action is required to reduce the risk of localised concentrations of effort (i.e. TACC, trip limits, spatial closures).
OR
 - 1.4 If the risk is determined to be acceptable, then no management action is required.
-

2.0 Decision rules for tier 1 coral species

The below decision rules are to ensure that fishing does not result in unacceptable levels of fishing pressure on tier 1 coral species.

- 2.1 If the two-year average harvest of any tier 1 species is less than 80% of the average historical reference period (2016–2018), then no management action is required.
 - 2.2 If the two-year average harvest of any tier 1 species is above 80% of the average historical reference period (2016–2018), management action must be in place for the following fishing season to restrict species catches (i.e. TACC, trip limits, spatial closures) to achieve rule 2.1.
-

Management of secondary and by-product species

3.0 Decision rules for Tier 2 coral species

The following decision rules are to ensure that fishing does not result in unacceptable levels of fishing pressure on secondary species (i.e. tier 2 coral species). The harvest strategy also includes decision rules to allow management arrangements to be implemented if updated risk assessment becomes available.

If the annual harvest of any tier 2 species is less than 1.5 times the average historical reference period (2016–2018) or less than 2000 pieces, then no management action is required.

- 3.1 If the annual harvest of any tier 2 species is greater than 1.5 times the average historical reference period (2016–2018) and more than 2000 pieces, 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. If rule 3.2 is triggered, management action must be in place for the following fishing season until a detailed review is completed (e.g. trip or catch limits, size limits or spatial/temporal closures), including whether the species should be elevated to tier 1. If the review identifies that a species is of increasing importance, the species may be considered for further risk assessment, monitoring or management action. If the review identifies sustainability is at risk, a risk assessment for this species is required within three years.
 - 3.2 If a risk assessment or stock assessment becomes available, then the risk assessment or stock assessment will be used to inform management of the species.
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Management of ecological risks from fishing

A foundation of sustainable fisheries management is managing the impact of fishing activities on non-target species and the broader marine ecosystem. ERAs identify and measure the ecological risks of fishing activity and identify issues that must be further managed under harvest strategies.

The QCF operates within the Great Barrier Reef World Heritage Area, and as a result this harvest strategy also considers the potential for management action to be taken if fishing is identified as a high risk under a Great Barrier Reef Marine Park Authority (GBRMPA) Reef Health Incident Response Plan. The below decision rules are in place to minimise and mitigate high ecological risks arising from fishing-related activities.

- 4.1 If an ERA identifies fishing impacts that are considered to generate an acceptable level of risk to coral species, then no management action is required.
 - 4.2 If an ERA identifies fishing impacts that are considered to generate an unacceptable level of risk to any ecological component, a review is triggered to investigate the reason for the risk rating. Appropriate management action will be taken to reduce the risk to an acceptable level.
 - 4.3 If a reef event (e.g. coral reef bleaching event) is identified under the GBRMPA Reef Health Incident Response Plan, a review will be led by GBRMPA and additional management action may be considered in order reduce the risk to an acceptable level.
-

The most recent ERA for the coral fishery was completed in 2013. Fisheries Queensland developed the [Ecological risk assessment guideline](#) to assess ecosystem impacts of fishing activities. ERAs will be undertaken in line with the guideline to reassess any current or new ecological risks that may arise in the fishery. ERAs can be undertaken more frequently if there are significant changes identified in fishery operations, management activities or controls that are likely to result in a change to previously assessed risk levels.

Monitoring social and economic performance

The *Queensland Sustainable Fisheries Strategy: 2017–2027* outlines the target to set sustainable catch limits based on achieving the biomass at the maximum economic yields (*B_{mey}*), around 60% of unfished biomass, to support the most economically efficient use of the resource, improve the fishing experience for all sectors and promote a resilient system that can respond to other adverse environmental conditions (e.g. floods, cyclones and bleaching). This harvest strategy has been developed to maintain harvesting at levels that represent a low risk and are considered ecologically sustainable, noting that ideally Fisheries Queensland would like to move towards understanding biomass of the QCF to inform future management.

The objectives and performance indicators in Table 4 will be used to monitor the social and economic performance of this fishery. The management options outlined are intended to provide some guidance on the options that could reasonably be considered alongside the decision rules if fishery trends are of concern.

Table 4: Social and economic indicators for the QCF

Objective	Performance indicators	Management options
Maximise economic performance of the commercial sector	Potential indicators to monitor include: <ul style="list-style-type: none"> • capacity utilisation • catch per unit effort (average per day) • costs, earnings and net financial and economic profit • net economic returns, gross state product, gross value of production • quota sale and lease price • profit decomposition (using profit or lease price) to determine impacts of prices, costs and stock/catch rates on changes in profits 	Consider regulatory and non-regulatory options Adjust management as needed Options include minimum holding, latent effort review
Monitor the broader social and economic benefits of the fishery to the community	Potential indicators to monitor include: <ul style="list-style-type: none"> • fisher satisfaction (with their fishing experience – commercial and recreational) • Recreational fisher participation and economic information • percentage of quota/licences that are owned (rather than leased) • Gini coefficient of quota owner (measure of concentration) • percentage of total costs/inputs purchased from local businesses/residents • income generated (crew plus profit – gross value added) • proportion of catch sold locally • fish prices • number of platforms / number of active licences / total capacity • community satisfaction (with their fisheries and the way in which they are managed) 	Consider regulatory and non-regulatory options Adjust management as needed
Maintain Wildlife Trade Operation (WTO) accreditation under the <i>Environment Protection and Biodiversity Conservation Act 1999</i>	Number of conditions met as required through WTO accreditation	Amend fisheries legislation or implement other measures as required to align with best practice and maintain accreditation

Data collection, validation and assessment

Fishery-dependent data (self-reported)

Catch and effort data is obtained through commercial logbook returns and real-time landing reports. The catch and effort data required to determine the standardised commercial catch rate for key species is obtained from catch and effort logbook returns and vessel tracking data. The QCF logbook is available at business.qld.gov.au.

Fishers are also required to report any interactions with protected species in a mandatory threatened, endangered and protected animal logbook.

Fishery-dependent data (independent validation)

All commercial fishing vessels are required to have vessel tracking systems installed and active on their vessels. Vessel tracking data is used to verify effort information reported in commercial fishing logbooks. As a quota-managed fishery, compulsory quota unload reports provide an accurate record of the catch. Queensland Boating and Fisheries Patrol undertake routine and intelligence-based at-sea and landing (unload) inspections to check compliance and validate reported information.

Scientific assessment of stock

No modelled stock assessment is currently available for the QCF. Fisheries Queensland aspires to move towards understanding the biomass of key coral species in the QCF to better inform management of the fishery. It is anticipated that if biomass were determinable, it would be able to inform TACC-setting process more confidently at least every three years.

Compliance with CITES requirements

The Convention on International Trade in Endangered Species of Wild Fauna and Fauna (CITES) lists most hard corals as Appendix II species. This means they are not necessarily threatened with extinction, but they may become extinct, requiring trade to be closely controlled. International trade of Appendix II species may be authorised by the Australian Government granting an export permit or re-export certificate. Permits or certificates should only be granted if the relevant authorities are satisfied that certain conditions are met and the trade of species will not be detrimental to the survival of the species in the wild.

The QCF is required to provide an annual report to the CITES Scientific Authority of Australia as part of annual reporting under the *Environment Protection and Biodiversity Conservation Act 1999* WTO accreditation.

Information and research priorities

Key information and research priorities have been identified in Table 5 to help meet the objectives of this harvest strategy. These will be reviewed and updated as required through the marine aquarium fish and coral fisheries working group.

Table 5: Information and research priorities for the QCF

Project description	Explanation of need	Priority
Develop an industry-based monitoring program to support understanding of stock status for tier 1 and tier 2 species	Inform future monitoring of target and high-risk species	High
Investigate reproductive biology for tier 1 and tier 2 species.	Preliminary information only was used in the development of the harvest strategy.	High
Develop industry code of practice for the harvest of tier 1 and tier 2 species	Increase stewardship, reduce localised depletion and enhance reproduction ability of some target species	Medium
Investigate non-fishery threats to tier 1 and tier 2 species	Inform future monitoring of target and high-risk species	Medium
Understanding biomass or abundance index for target coral species	Inform future management frameworks	Medium

Schedule of performance monitoring, assessment and review

Annual performance monitoring and assessment

The fishery's performance will be reviewed against this harvest strategy **annually**. This will include an annual marine aquarium fish and coral fisheries working group meeting to provide operational advice on the fishery's performance and any matters that may need addressing.

The primary performance measure is the ERA, which will be reviewed every three years. In the intervening years, other fishery data (e.g. catch and effort) will be reviewed annually.

While harvest strategies provide certainty and transparency in terms of management decisions in response to certain fishery information, there must also be flexibility to allow new information or changing circumstances to be appropriately considered. There may be instances in which a risk assessment may need to be available prior to, or delayed beyond, the scheduled date. Any change to the risk assessment schedule should be considered by the harvest strategy workshop and decided on by the chief executive based on the below conditions:

- If during the period between scheduled risk assessments the chief executive is concerned that a performance indicator (e.g. stock status, commercial catch and effort, total harvest) suggests the stock is not performing in a way that will ensure sustainability, the chief executive may decide that a risk assessment will be undertaken before the scheduled timeframe.
- If the chief executive is satisfied that (1) indicators for the stock suggest it is sustainable, and that there is a low ecological risk to the stock under the current management arrangements, or (2) if resourcing requirements prohibit the ability for an assessment to be delivered in the scheduled timeframe, the chief executive may decide that a scheduled risk assessment will be delayed.

Table 6 (overleaf) outlines the expected timeframes that assessment information will be available to inform management action.

Table 6: Schedule of performance monitoring, assessment and review

	Year 1 (2021–22)	Year 2 (2022–23)	Year 3 (2023–24)	Year 4 (2024–25)	Year 5 (2025–26)
Monitoring and assessment activity	Catch and effort monitoring	Catch and effort monitoring	Ecological risk assessment	Catch and effort monitoring	Catch and effort monitoring
Management activity	Review of catch and effort data Adjust management if required	Review of catch and effort data Adjust management if required	Review of catch and effort data Adjust management if required	Review of catch and effort data Adjust management if required	Review harvest strategy Reset reference points and TACC if required

Harvest strategy review

This harvest strategy will remain in place for a period of five years, after which time it will need to be fully reviewed in accordance with the *Fisheries Act 1994*.

The harvest strategy may be subject to further review and amendment as appropriate within the five-year period if any of the following circumstances arise:

- there is new information that substantially changes the status of a fishery, leading to improved estimates of indicators relative to reference points
- drivers external to management of the fishery increase the risk to fish stock/s
- a new recreational harvest estimate becomes available that suggests the defined sectorial catch shares may have been set incorrectly or may be unrepresentative
- it is clear the harvest strategy is not working effectively and the intent of the *Queensland harvest strategy policy is not being met*.

For more information on the processes for amending harvest strategies, refer to the [Queensland harvest strategy policy](#).

Acronyms and definitions

Acronym/term	Definition
Biomass	Total weight or volume of a stock or component of a stock (e.g. spawning stock biomass would refer to all adult (reproductively mature) fish in a population)
Biomass at maximum economic yield (<i>B_{mey}</i>)	The average biomass that corresponds to maximum economic yield
Bycatch	<p>A species that is incidentally either:</p> <ul style="list-style-type: none"> • taken in a fishery and returned to the sea • killed or injured as a result of interacting with fishing equipment in the fishery, but not taken <p>Bycatch can include protected species</p>
By-product	<p>Any part of the catch that is kept or sold by the fisher, but is not the target species</p> <p>By-product makes some contribution to the value of the catch in a fishery but less than that of key commercial species</p>
Catch-per-unit-effort	<p>The number or weight of fish caught by a unit of fishing effort</p> <p>Can be used as an index of relative abundance or indicator of change in the fishery</p>
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Fauna
Ecological risk assessment (ERA)	An assessment process that evaluates the relative risk posed by fishing on species, habitats and communities within a fishery
GBRMPA	Great Barrier Reef Marine Park Authority
Individual transferable quota (ITQ)	Amount of catch or effort allocated to an individual fisher or company
QCF	Queensland coral fishery
SAFS	Status of Australian Fish Stocks
Total allowable commercial catch (TACC)	The harvest limit set for the commercial fishing sector usually achieved through setting TACC, but sometimes through input controls
WTO	Wildlife Trade Operation