

Annual status report 2007

Coral Fishery



The Department of Primary Industries and Fisheries (DPI&F) seeks to maximise the economic potential of Queensland's primary industries on a sustainable basis.

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Introduction

The Queensland Coral Fishery (QCF) is one of a range of harvest (hand collection) fisheries managed by the Department of Primary Industries and Fisheries (DPI&F). Commercially collected coral taxa, coral rubble and sand, and living rock are marketed domestically and internationally. Coral taxa can also be collected recreationally from areas outside of State Marine Parks and the Great Barrier Reef Marine Park (GBRMP).

This report covers fishing activity during the 2006—2007 financial year.

Fishery profile 2006–07

Commercial harvest: Approximately 102 t (69 t living rock, 13 t live coral, 11 t ornamental coral, and 9 t other coral and coral rubble)

Recreational harvest: No estimate of level of harvest for 2006–07

Indigenous harvest: No estimate of level of harvest for 2006–07

Charter harvest: Not applicable to the fishery

Commercial Gross Value of Production (GVP): No estimate available

Number of authorities: 59

Commercial boats accessing the fishery: 34

Fishery season: All year

Source: DPI&F CFISH database, 25 January 2008

Description of the fishery

The commercial Coral Fishery is based on the collection of a broad range of species from the classes Anthozoa and Hydrozoa. The key components of the fishery are:

- Live corals (includes anemones, soft and hard corals)
- Ornamental (non-living) corals
- Living rock (i.e. dead coral skeletons with algae and other organisms living on them)
- Coral rubble (i.e. coarsely broken up coral fragments)
- Coral sand (i.e. finely ground up particles of coral skeleton) - only taken as incidental catch and may not be targeted within Marine Park waters.

Due to the strong market demand for live corals for use in private aquaria, key target species are generally the small and vibrant varieties of coral. Live rock is also a major

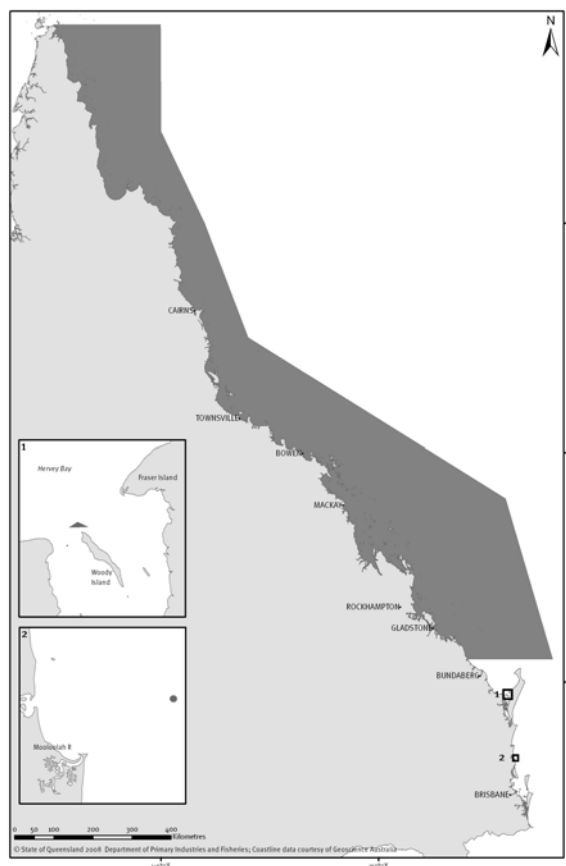


Figure 1: Map of fishery area.

component of the fishery, due to its suitability as a substrate for the smaller, brighter corals in aquarium tanks. Anemones (Order Actinaria) are also a key target group in the coral fishery.

Coral taxa from over 36 families are harvested for the live aquarium trade. Coral families targeted for the non-living, ornamental coral trade include:

- Pocilloporidae (cauliflower/bird's nest corals)
- Acroporidae (staghorn/velvet corals).

The QCF is a small scale, quota managed, hand harvest fishery (commercial Total Allowable Catch = 200 tonnes (t)) with 59 authorities. The quota is split between live coral (30%) and live rock/coral rubble/ornamental coral (70%).

Corals are also collected by recreational fishers for personal home aquaria. Recreational fishers are limited by apparatus restrictions for the QCF (see Fishing methods). Recreational fishers are not permitted to sell their catch. Additional regulations imposed under Marine Parks legislation limit the fishable area for recreational fishers to waters outside of declared Marine Parks.

Fishing methods

Coral may only be taken by hand or by using hand-held non-mechanical implements, such as a hammer and chisel. Licence holders may also use underwater breathing apparatus (SCUBA or hookah) when taking coral. Where a chisel is used, divers endeavour to remove only the coral itself, taking great care to minimise the amount of substrate that is taken or damaged. These removal methods reduce freight costs (less weight and volume) and also limit the environmental footprint of their harvesting.

Recreational harvesters are not permitted to use SCUBA or hookah gear.

Fishing area

The fishery operates along the east coast of Queensland within the bounds of the Offshore Constitutional Settlement (Figure 1). Commercial operators in the QCF are permitted to harvest coral in waters along the Queensland east coast between 10°41' S and 24°30' S in areas that are not closed through general fisheries closures or marine parks zoning under the Commonwealth Great Barrier Reef Marine Park Act 1975 and the Queensland Marine Parks Act 1982. Two small collection areas exist south of 24°30' south however access to those areas is restricted through licence conditions. The fishery area also comprises two spatially defined high use Coral Collection Areas (CCAs) at Cairns and around the Keppel group of islands (Figures 2 and 3). Harvest levels in these areas from July 2006 onwards are to be reviewed to ensure that management arrangements are providing for the sustainable and equitable use of the coral resources.

Main management methods used

Under Offshore Constitutional Settlement (OCS) arrangements between the Commonwealth and Queensland governments, management of coral collection adjacent to the east coast of Queensland falls under Queensland law. Fisheries in the Coral Sea (outside of the OCS) are managed by the Commonwealth Government.

From 1 July 2006 the commercial coral fishery has operated under the DPI&F "Policy for the Management of the Coral Fishery". This Policy introduced several major changes to the operation and management of the fishery:

- Roving harvest for all licence holders, in place of individual coral collection areas
- Removal of the inappropriate 6m depth limit to allow collection in ideal habitats

- Capping the take of live coral at 30% of the commercial fishery's 200 t Total Allowable Catch (TAC)
- Reporting of catch prior to landing
- More detailed logbook reporting
- Review reference points¹ for total coral harvest from the Cairns CCA (43 t) and the Keppel CCA (36 t).

Additionally, the following management measures are still in place for the commercial fishery under legislation and policy:

- Limited entry: 59 Commercial Harvest Fishery Licences are endorsed for the coral fishery.
- Limits on the number of boats and collectors operating under a licence at any one time.

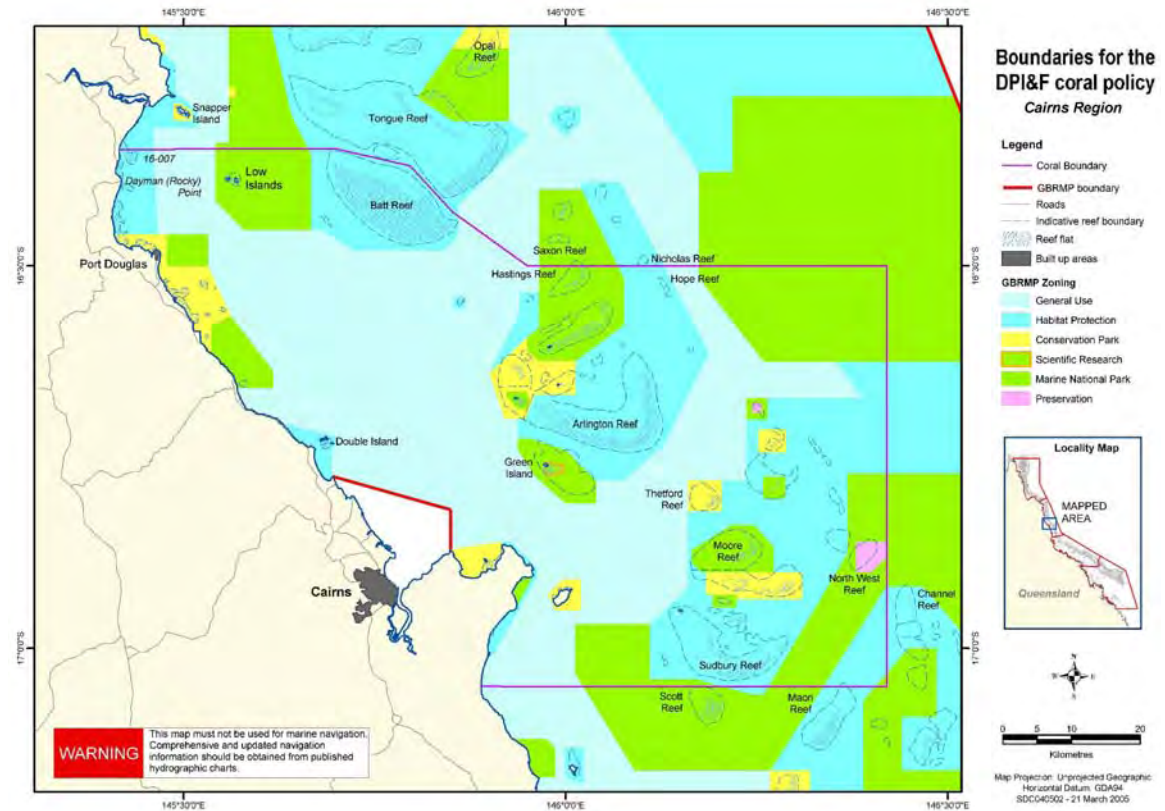


Figure 2. Boundary of the Cairns Region as defined under the DPI&F Coral Fishery Policy.

Approximate allocation between sectors

The QCF is considered to be a predominantly commercial fishery. Very little coral habitat is available outside of State Marine Parks and the GBRMP where recreational collection is allowed and although there are no quantitative data available, the recreational harvest of coral and coral related products is considered negligible relative to the commercial sector.

Collecting coral is not considered to be a part of traditional or customary fishing practice by Indigenous fishers (McCormack 2006) and will not be reported on further in this report.

¹ Review reference points were based on existing quota holding for these regions. These were reviewed by the Coral Policy Review Working Group after the first year of operation of the fishery under the Coral Fishery Policy.

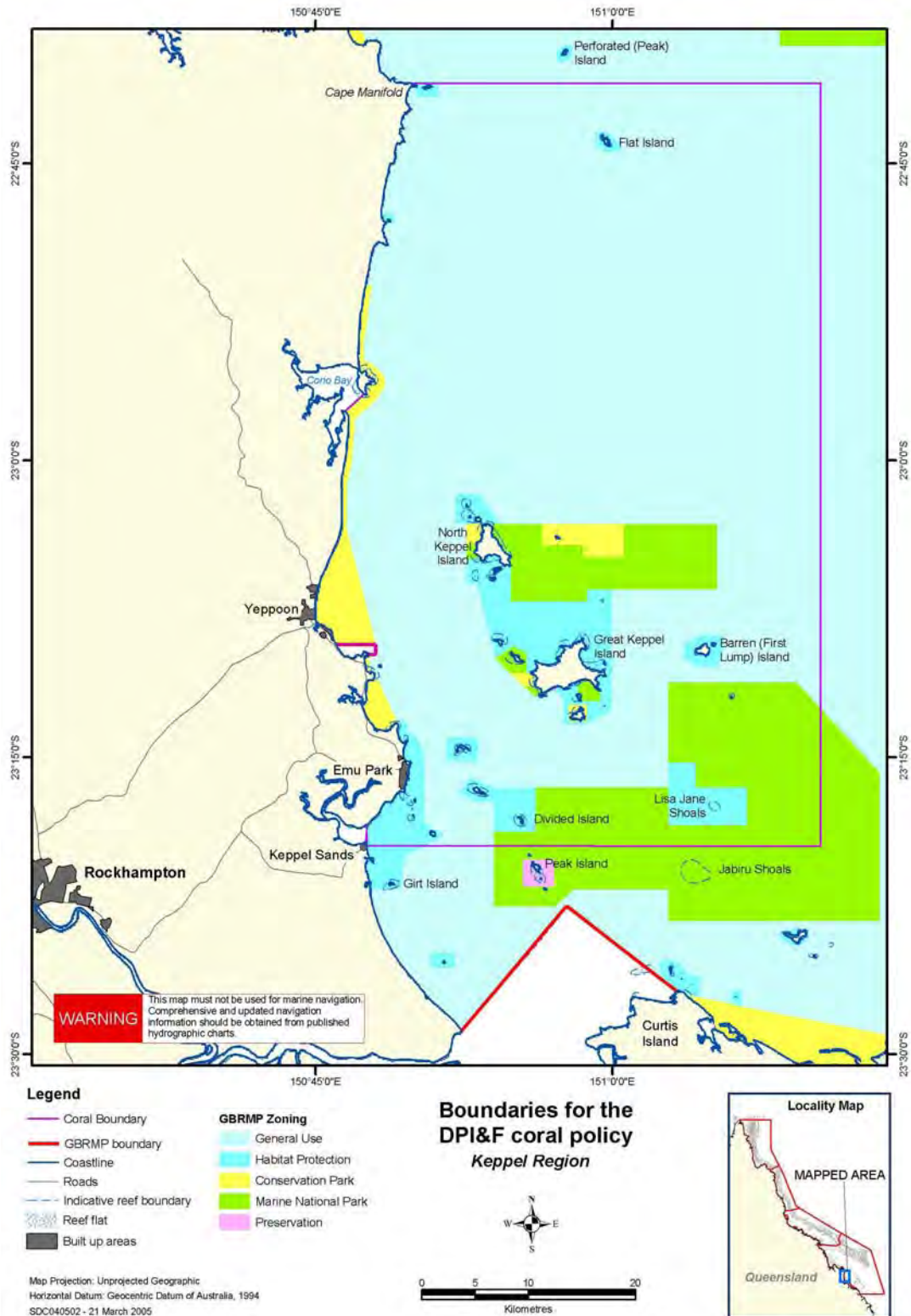


Figure 3. Boundary of the Keppel Region as defined under the DPI&F Coral Fishery Policy.

Fishery accreditation under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

The QCF was granted a Wildlife Trade Operation (WTO) approval under Part 13A of the Commonwealth EPBC Act on 1 July 2006. The WTO approval acknowledged that the fishery is being managed in an ecologically sustainable manner and allows the continued export of product caught in this fishery. The current approval expires on 30 June 2009.

Catch statistics

Commercial

Approximately 102 t, comprising 69 t of living rock, 13 t of live coral, 11 t of ornamental coral and 9 t of other coral and coral rubble (combined) was harvested in the QCF in 2006–07 (Figure 4)². This represents just over half the TAC of 200 t. Industry members suggested bad weather throughout the 2006–07 season was a major cause of the under-catch of quota.

The majority of harvest (66 t) came from the Cairns Coral Collection Area (CCA) (Figure 4), exceeding the review reference point (RRP) of 42 t and despite poor weather affecting fishing performance. Approximately 20 t was harvested in the Keppel CCA; well under the RRP of 36 t.

The two Families Acroporidae and Pocilloporidae dominate (46% by weight) the total of 24 t of Live and Ornamental Coral collected in the QCF for 2006–07 (Figure 5). Corallimorphs, soft corals (Family Alcyoniidae) and Acroporid corals together comprised nearly 24% of the total harvest by number of pieces collected. The diversity of harvest (n=39 logbook categories) is typical of the complexity of this fishery which is based on careful selection of quality specimens from a wide range of taxa to provide the best possible economic return, rather than one based on large quantities.

Acroporid and Pocilloporid corals are mainly collected for ornamental purposes (i.e. non-live specimens). About 29% of the Acroporid corals were harvested from the Cairns CCA (Figure 6), very small quantities from the Keppel CCA (Figure 7) and the remainder (nearly 70%) from outside of the CCAs (Figure 8).

The more detailed logbook introduced with the Coral Fishery Policy has allowed greater resolution of harvest in the fishery (Figures 5–8) from which catch trends of species of interest (i.e. export species and species identified at risk in the Ecological Risk Assessment (ERA)) can be tracked spatially and temporally. At this stage, there are no species identified as greater than low risk in the fishery, however these results are yet to be finalised. A Performance Measurement System for the fishery is to be developed for the QCF that will include review reference points for catches of those low risk species to ensure their harvest remains sustainable.

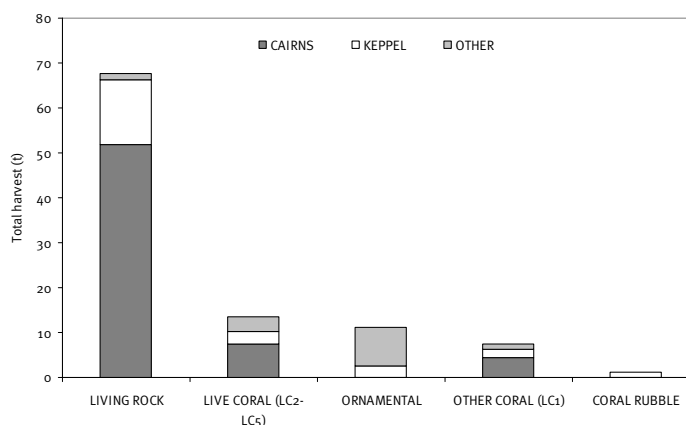


Figure 4. Catch composition (QCF Logbook categories) of Live Coral collected in the Queensland Coral Fishery for the quota year 2006–07 (Source: DPI&F CFISH database, 25 Jan 2008)

² Coral categories are defined in the Coral Fishery Policy. There are five classifications of Live Coral (LC1 – LC5).

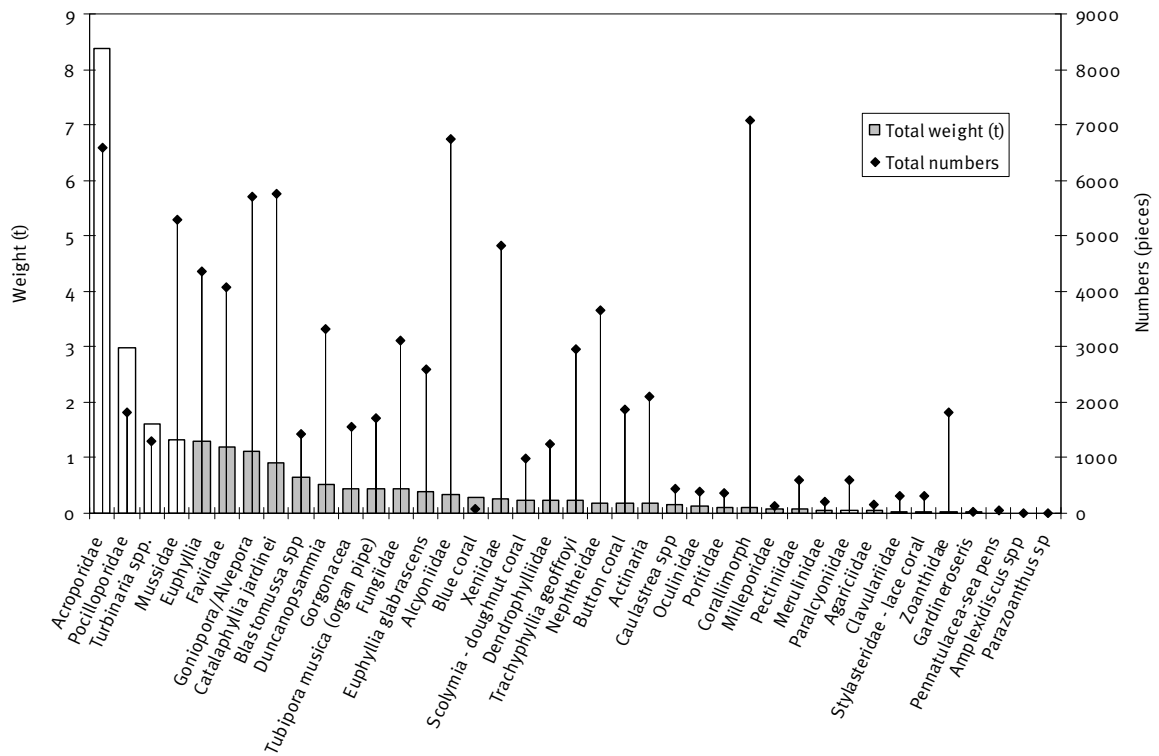


Figure 5. Catch composition (QCF Logbook categories) of Live Coral collected in the Queensland Coral Fishery for the quota year 2006–07 (Source: DPI&F CFISH database, 25 Jan 2008)

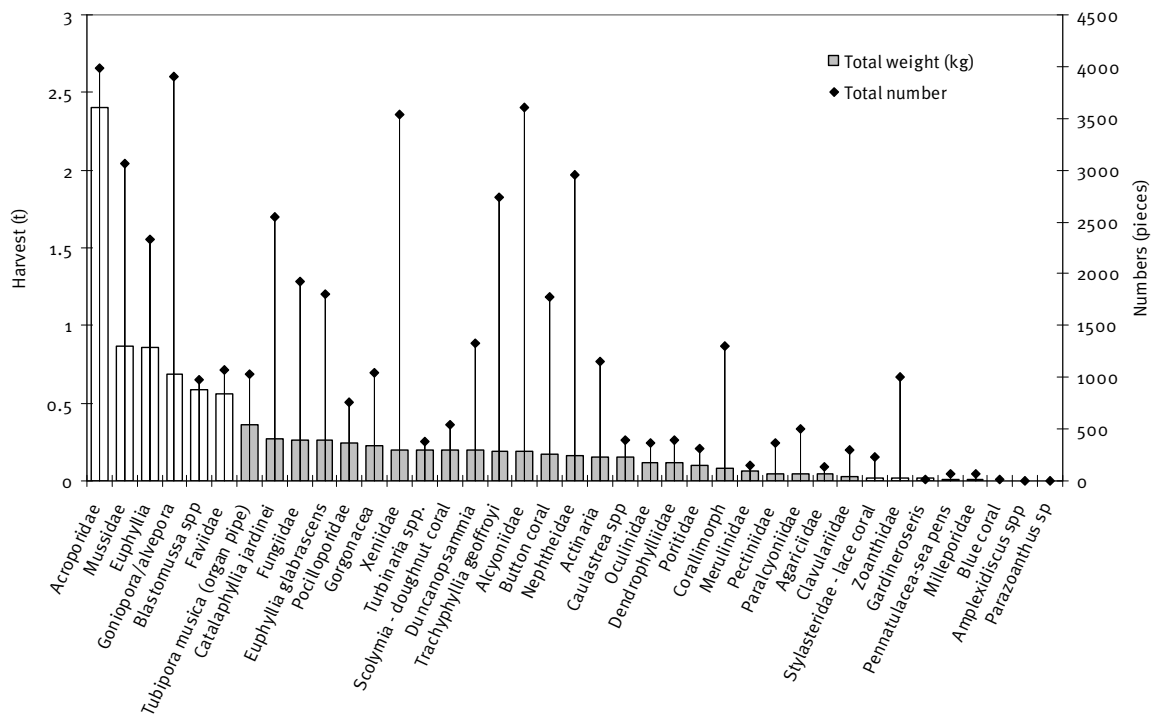


Figure 6. Catch composition (QCF Logbook categories) of Live Coral collected in the Cairns Coral Collection Area (QCF) for the quota year 2006–07 (Source: DPI&F CFISH database, 25 Jan 2008)

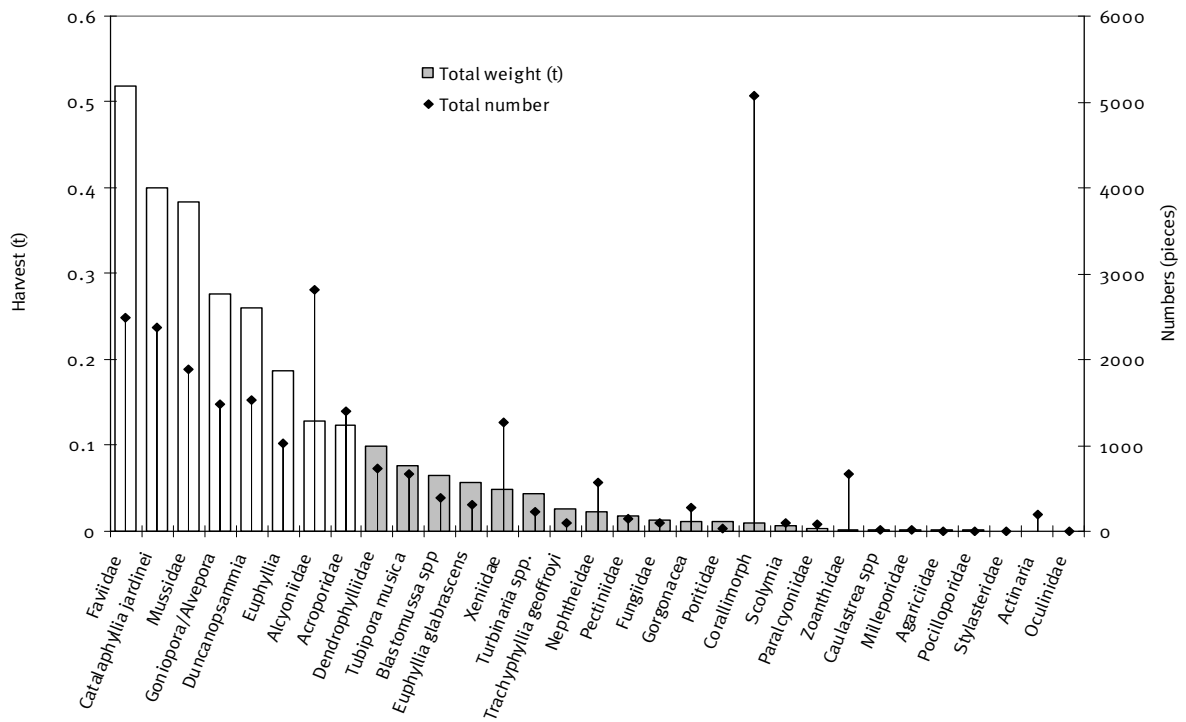


Figure 7. Catch composition (QCF Logbook categories) of Live Coral collected in the Keppel Coral Collection Area (QCF) for the quota year 2006–07 (Source: DPI&F CFISH database, 25 Jan 2008)

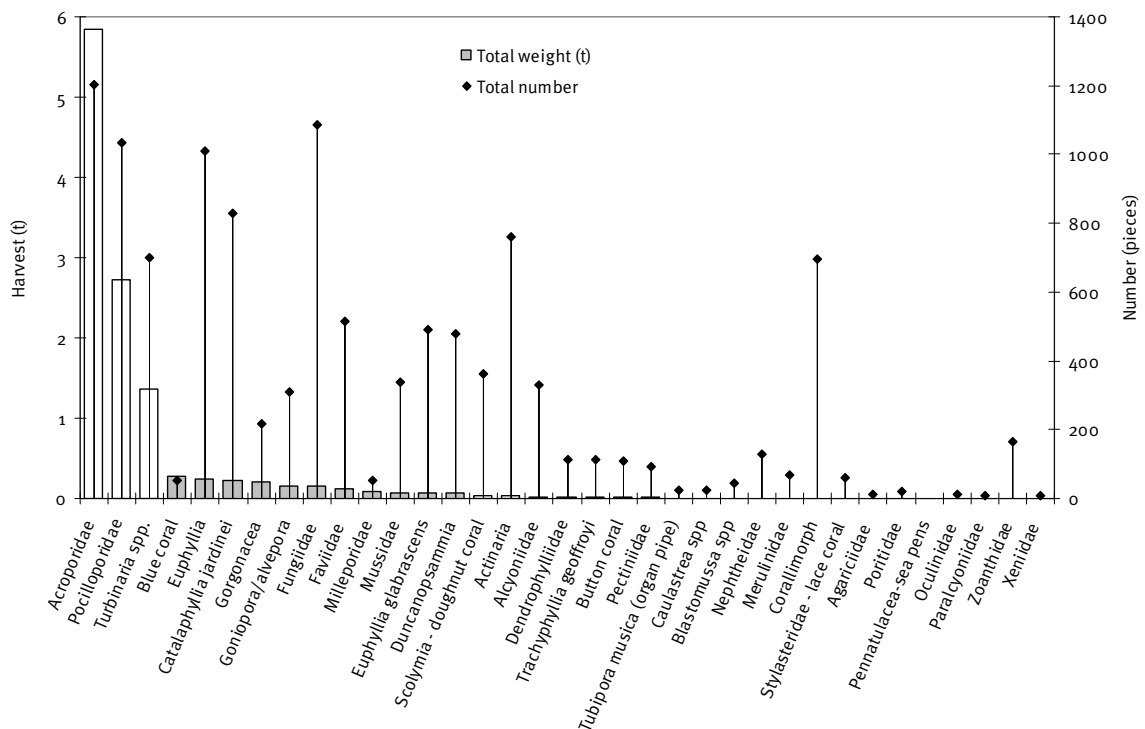


Figure 8. Catch composition (QCF Logbook categories) of Live Coral collected outside of the QCF Coral Collection Areas for the quota year 2006–07 (Source: DPI&F CFISH database, 25 Jan 2008)

Recreational

The amount of coral taken recreationally within the fishery is considered minimal considering the limited known distribution of coral outside Marine Parks and the gear restrictions imposed.

There are no recent data available on the level of recreational harvest of QCF species. DPI&F's recreational fishing telephone survey and diary rounds (RFISH) are not suitable for estimating recreational catches for the QCF. Investigations are underway to determine if there are feasible alternative methods for collecting information on recreational harvest in this fishery.

Indigenous

Indigenous use of corals has not been documented and any participation in the fishery is considered to be minimal (McCormack 2006).

Spatial issues/trends

DPI&F have spatially defined control measures in place under the Coral Fishery Policy for the Cairns and Keppel areas, where high concentrations of fishing effort may impact on sustainability and where there is potential conflict between industry and other stakeholder interests over access to those stocks. These locations are popular coral harvesting sites and are highly attractive to the coral industry, tourism operators and other sectors due to the proximity to airports and facilities. Under existing management arrangements Review Reference Points (RRP) were set based on the amount of coral quota that could be harvested from authorised coral areas (Figures 2 and 3) when they constituted exclusive Coral Collection Areas (i.e. 43 t for Cairns and 36 t for the Keppel area).

The appropriateness of the control measures and quotas were reassessed during the recent review of the Coral Fishery Policy in February 2008. The Coral Policy Working Group reviewed the RRP for their appropriateness as sustainability reference points. Based on information supplied by the ERA for the fishery and a discussion paper on living rock harvest, the Working Group established that the existing Cairns RRP was well below sustainable levels and could be increased. Implementation of the suggested increase will be subject to a public consultation period.

Recent coral bleaching events in the Keppel region have caused local concern for anemone and associated anemonefish stocks. A working group under the Harvest Management Advisory Committee (Harvest MAC) was formed by DPI&F to investigate whether this presents any sustainability issues for the Marine Aquarium Fish Fishery (MAFF). The MAFF industry peak representative body, Pro-Vision Reef, has instigated a moratorium for the Keppel Region, prohibiting the commercial take of certain anemone fish and their parent anemones as a proactive move to facilitate recovery following the bleaching event.

An outcome of these bleaching events is the development by DPI&F of a draft *Coral Stress Response Plan for Coral and Marine Aquarium Fish Fisheries*. The plan is expected to be implemented in 2008. The Performance Measurement System for the QCF (to be implemented in 2008) refers to the plan as the preferred management response in the event that a bleaching event impact is detected.

Socio-economic characteristics and trends

The QCF focuses on the collection of coral specimens for commercial and private marine aquariums and to supply a small trade in decorative souvenirs and ornaments. Currently more than 80% of all coral harvested goes into the aquarium trade. Although a significant Australian industry, the QCF is not considered one of the major exporters of hard and soft corals and living rock on the world scale (Wabnitz *et al.* 2003). Given the size of harvest relative to the resource and the quota control of coral amounts being harvested, Queensland's coral fishery is one of the lowest impact coral fisheries on an international level. The emphasis of the fishery is on quality

rather than quantity, which contributes to both the ecological and economic sustainability of the fishery.

There are no Gross Value of Production (GVP) estimates for the fishery. The small size of the fishery, its multi-species focus, variations in market prices and international currency fluctuations make it difficult to accurately estimate GVP.

Fishery performance

Appraisal of fishery in regard to sustainability

Catch and fishing effort data from commercial fisher logbooks suggest that the QCF continues to be managed by DPI&F in a sustainable manner. There have been no significant changes to harvest levels in the fishery as a whole or at the taxa level. The QCF underwent an ERA in 2007. The ERA determined the risks to the ecological sustainability of the target species in the fishery, based on the best available data on catch levels, biological characteristics and the distribution of harvested species. The results are yet to be finalised however the preliminary findings are that from the 100 taxa collected in the fishery, no taxa were identified as moderate risk or above, eleven taxa were identified as low risk; the remainder were at negligible risk from the fishery.

Progress in implementing Department of the Environment, Water, Heritage and the Arts (DEWHA) recommendations

Recommendation	Progress	Improvements to management regime
DPI&F to inform DEWHA of any intended amendments to the management arrangements that may affect sustainability of the target species or negatively impact on bycatch, protected species or the ecosystem	<i>Ongoing</i> There have been no management changes during the reporting period.	N/A
Within 6 months of the Queensland Policy for the Management of the Coral Fishery being implemented, DPI&F, in collaboration with GBRMPA and QPWS, to conduct compliance risk assessment for the QCF. DPI&F to develop and implement strategies to address all identified risks (other than risks categorised as low) within 3 months of their identification.	<i>Completed</i> A Compliance Risk Assessment was conducted for the QCF in October 2006. Strategies to address identified risks have been incorporated in Queensland Boating and Fisheries Patrol operational plans.	A compliance risk assessment is used by the QBFP in undertaking operational planning activities associated with management of the fishery. Through identification and prioritisation of compliance risks associated with the fishery, planning and operational process in specific areas may be improved.

Recommendation	Progress	Improvements to management regime
<p>Within 18 months of the implementation of the Queensland Policy for the Management of the Coral Fishery, DPI&F, in collaboration with relevant stakeholders, to develop fishery specific objectives linked to performance indicators and performance measures for target, bycatch, protected species and impacts on the ecosystem.</p>	<p><i>In progress</i></p> <p>A draft Performance Measurement System (PMS) was developed by the Coral and Aquarium Working Group in March 2008. The PMS development was delayed pending the outcomes of an Ecological Risk Assessment of the QCF (December 2007) and the Coral Policy Review (February 2008). Outputs from these two processes were critical to the development of appropriate objectives and associated review reference points. Formal implementation of the PMS is expected by the end of 2008 following consideration by DPI&F of comments from Harvest MAC.</p>	<p>Outputs from the ERA have provided a basis for developing performance indicators aimed at measuring management performance in maintaining ecological sustainability of the species supporting the QCF. Species identified as low risk from the operation of the QCF, will be monitored through the PMS.</p>
<p>DPI&F, in collaboration with relevant stakeholders, to monitor the status of the fishery in relation to the fishery specific objectives, performance indicators and performance measures specified in the QCF management regime once developed. Within 3 months of becoming aware of a breach in a performance indicator or a performance measure not being met, DPI&F to finalise a clear timetable for the implementation of appropriate management responses.</p>	<p><i>In progress</i></p> <p>The recommendation will be met following implementation of the PMS. Performance measures will be regularly assessed and reported against in the timeframes specified within the PMS.</p>	<p>N/A</p>
<p>DPI&F to implement data validation mechanisms for fishery dependent data for the QCF within 6 months.</p>	<p><i>Completed</i></p> <p>Data validation procedures were implemented for the QCF on 1 July 2006 through prior reporting arrangements under the Coral Policy and via licence conditions. The arrangement now requires that all coral harvesters provide a report of their catch to DPI&F via a 24 hour phone system before coming into port.</p>	<p>Validation of logbook information provides confidence in the accuracy of reporting by commercial fishers. With greater reliance on logbook data for ecological assessments, there is a need for authentication of the information reported by fishers through the logbook program.</p>

Recommendation	Progress	Improvements to management regime
<p>DPI&F to finalise a data sharing agreement with GBRMPA and QPWS within six months of the start of the WTO.</p>	<p><i>In progress</i></p> <p>The formal data agreement has been postponed following completion of recommendations from the 'Review of the Great Barrier Reef Marine Park Act 1975'. The review (released in 2006), recommended establishing an intergovernmental agreement that clearly defines the nature, functions, powers, accountability, operational protocols, and interrelations between governments and the Authority. As a result the Intergovernmental Agreement relating Great Barrier Reef is currently being developed. A component of this agreement relates to information sharing, therefore DPI&F considers it inappropriate to develop a separate agreement relating to the sharing of information in relation to the QCF.</p> <p>Although a formal data sharing agreement has not been finalised, DPI&F and GBRMPA have worked collaboratively to undertake fine scale spatial analysis of fishery catch information during the Coral Policy Review.</p>	<p>Sharing of information resources will serve to provide more efficient reviews of fishery performance against sustainability and compliance objectives and will facilitate greater public accountability of the Queensland Coral Fishery.</p>
<p>DPI&F to develop a research strategy for the QCF within 18 months. DPI&F will cooperate with other Australian jurisdictions with marine aquarium fisheries to facilitate research.</p>	<p><i>In progress</i></p> <p>DPI&F are developing a Research and Development Plan for Queensland hand collection fisheries. Outcomes from the QCF ERA will feed into the development of research priorities and strategy within the R&D plan. The plan will focus research providers in the development of appropriate research proposals for the QCF.</p>	<p>Strategically focused research effort will benefit management of the QCF by ensuring information is being collected on priority research and management needs for the fishery.</p>

Recommendation	Progress	Improvements to management regime
<p>Within 3 months of the review of the Policy DPI&F, in collaboration with relevant stakeholders, will develop and implement a process to review the risk of localised depletion in high use areas in the fishery. DPI&F will review available catch data, identify any harvest areas and species groups at risk of localised depletion and, where necessary, develop and implement management measures to mitigate any risks.</p>	<p><i>Completed</i></p> <p>The Coral Policy Review group identified in August 2007 that an ERA approach would best meet the requirement to review the risk of unsustainable harvest levels in high use areas in the fishery, and to identify any harvest areas and species groups at risk of localised depletion. A Coral Fishery ERA workshop involving industry members, research scientists, DPI&F and GBRMPA, was conducted in December 2007. A draft ERA report has been developed and will be finalised by 2008. No harvested taxa were identified as higher than low risk from this fishery. DPI&F undertakes to review the outcomes of the ERA every three years.</p>	<p>Outputs from the ERA indicate there is negligible to low risk for local concentration of harvesting effort in the QCF that leads to localised and serial depletion of harvested species.</p>
<p>Within 18 months, DPI&F to develop a process to improve estimates of recreational and Indigenous take and factor these, along with permitted take under research and other relevant permits, into fishery assessments and management controls to ensure overall catch levels are sustainable.</p>	<p><i>Ongoing</i></p> <p>The QCF is considered to be a predominantly commercial fishery. Very little coral habitat is available outside of State Marine Parks and the GBRMP where recreational collection is permitted. Although there are no quantitative data available, the recreational harvest of coral and coral related products is considered negligible. Collecting coral is not considered to be a part of traditional or customary fishing practice by Indigenous fishers.</p> <p>DPI&F will continue to investigate methods for improving the estimates of recreational and Indigenous catch relevant to the QCF. The permitted take under research and other relevant permits will also be considered in fishery assessments and management controls.</p>	<p>N/A</p>

Management performance

A draft Performance Measurement System (PMS) has been developed for the QCF. DPI&F plan to implement the PMS in 2008.

Resource concerns

DPI&F are satisfied that there are no resource concerns in this fishery at the current participation levels and with the suite of management controls that are in place. Outcomes from the recent ERA of the QCF support the low impact nature of this fishery which is based more on quality than quantity. Natural catastrophic events such as coral bleaching and cyclones are likely to have more localised impact on coral and anemone resources than fishery activity at the present level of effort in the fishery.

Non-retained species/bycatch

There is no bycatch from this fishery due to the highly selective harvesting methods used.

Interactions with protected species

Commercial operators are required to fill in a Species of Conservation Interest (SOCI) logbook if they have interactions with protected species. Due to the selective, relatively benign harvesting method and high attendance of fishing gear, operators pose negligible risk to protected species. There have been no reported interactions with SOCI during this reporting period.

Fishery impacts on the ecosystem

The physical impact on the broader ecosystem is considered negligible as a result of the selective fishing method and the small number of individual animals that are collected relative to the available resource.

Preliminary outcomes from the recent ERA indicate that QCF operations are not likely to negatively impact on natural food webs and critical predator/prey relationships. Broader ecosystem impacts from natural events, such as cyclone damage to reefs and coral bleaching, are likely to have greater ecological impacts than the fishery operations. However, DPI&F is responsible for ensuring coral collecting activities post-impact are managed in a sustainable manner, taking into account the status of target species populations and their capacity to recover from such natural events.

Research and monitoring

Recent research and implications

DPI&F has developed a draft response plan for the QCF and the Marine Aquarium Fish Fishery in the event that the supporting fisheries habitat (e.g. coral reef) is impacted by ecological and physical disturbances (e.g. coral bleaching, cyclones). The draft framework supports the adoption of a tiered approach to determining and implementing an appropriate management response that is dependent on factors such as the severity and longevity of the impact.

Monitoring programs and results

Compulsory logbook program

Logbook data provide the DPI&F with detailed information on catch trends in the commercial fishery. No independent monitoring is currently undertaken by the DPI&F.

Summaries of logbook data are provided to the Harvest MAC for consideration by representatives from industry, scientists and managers. Data is assessed further, if required, by the DPI&F Harvest Fishery Scientific Advisory Group.

Collaborative research

DPI&F were not involved in collaborative research during the 2006—07 reporting period.

Fishery management

Compliance report

Compliance and enforcement in the QCF are the responsibility of DPI&F, Queensland Boating and Fisheries Patrol (QBFP).

During the 2006—07 quota year, 25 units were inspected in the QCF, including 19 commercial fishing vessels, with the remainder comprising recreational fishers, marketer premises and motor vehicles. No offences were detected. Inspections were random with no significant issues identified by either industry or enforcement.

A compliance risk assessment was conducted for the QCF in October 2006 in order to determine compliance priorities and allow the most effective use of QBFP resources. The risk assessment identified violation of marine parks zoning by commercial fishers and recreational collection within a marine park as the highest priorities for enforcement and compliance in the fishery. There were also a number of activities rated as having a moderate risk, which are also being addressed.

Changes to management arrangements in the reporting year

No changes have been made to the management arrangements in the reporting year.

Consultation, communication and education

Consultation with stakeholders in the QCF mainly occurs through the Harvest MAC. Two meetings were held in 2006—07 reporting period.

Complementary management

There were no complementary management issues in the reporting period.

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Front cover image

Coral collection activity