

Queensland lobster fishery
harvest strategy: 2021–2026
CONSULTATION DRAFT

Business Unit Owner Management & Reform

Endorsed by Deputy Director General (Fisheries & Forestry) in accordance with delegated powers under Part 2, Division 1 (Harvest Strategies) of the *Fisheries Act 1994*

Approved by Minister responsible for fisheries in accordance with section 16 of the *Fisheries Act 1994*

Revision history

Version no.	Approval date	Comments
1.0	September 2020	Draft harvest strategy for consultation

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What the harvest strategy is trying to achieve

This harvest strategy has been developed to manage the tropical rock lobster resources of Queensland. Lobster stocks in Queensland are considered sustainable with the risk of fishing considered low, due to the biology of the species, protection through marine park zoning and catch limits. This harvest strategy will inform decision making through clear fishery objectives, performance indicators, triggers for management action and appropriate management responses based on the status of Queensland's lobster stocks.

Primary management methods for Queensland's Lobster Fishery (QLF) is Individual Transferable Quotas (ITQ) for commercial fishing and in-possession limits for recreational fishing. The decision rules are designed to set catch at levels appropriate for achieving Maximum Economic Yield (60% proxy) for tropical rock lobster species as well as to maintain catch shares amongst sectors.

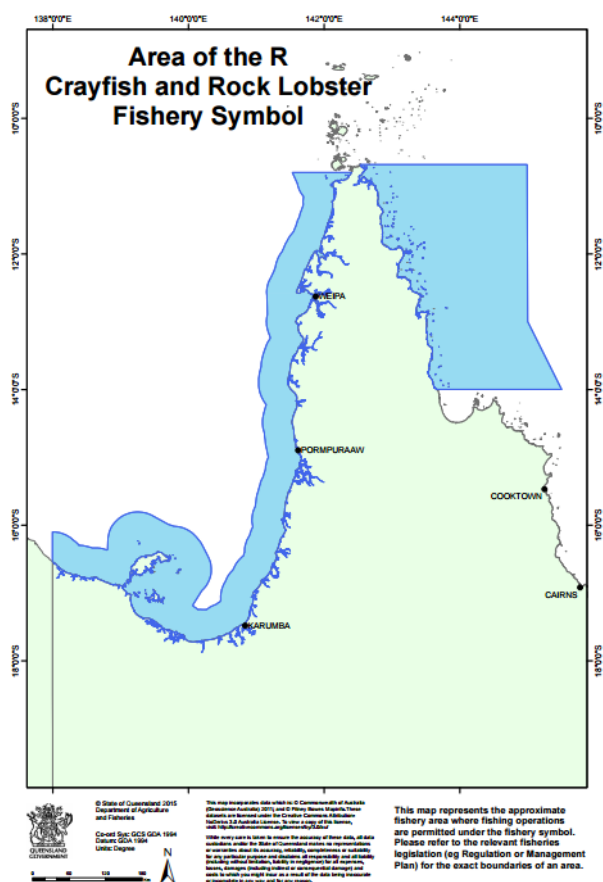
Fishery overview

The QLF target species is the ornate rock lobster (*Panulirus ornatus*), however other lobster from the family Palinuridae and the red champagne lobster (*Linuparus trigonus*) are also taken. Crayfish are also managed through the QLF. The commercial fishery comprises all tidal waters north from Princess Charlotte Bay to Torres Strait as well as tidal waters of the Gulf of Carpentaria (excluding the Protected Zone Joint Authority managed Torres Strait Rock Lobster Fishery). However, the commercial fishery operates almost exclusively on the east coast between Cape York and Cape Melville.

The QLF is a hand-harvest fishery for both commercial and recreational fishers. Divers collect bottom-dwelling lobsters by hand using small tender boats. The high value ornate rock lobster harvested from this fishery is an important live export product for Queensland.

The recreational fishery covers all Queensland waters and is subject to in-possession and size limits as well as fishing gear restrictions.

The QLF is also an important fishery for Aboriginal People's and Torres Strait Islanders both culturally and for economic development.



Fish stocks covered by the harvest strategy

Tropical rock lobsters are defined as all species in the family Palinuridae. The most common species, the ornate rock lobster, consists of a single stock in North Eastern Australian which expands multiple management jurisdictions. Currently, the North Eastern Stock is defined to include northern Queensland (managed by Queensland), the Coral Sea (managed by the Commonwealth) and the Torres Strait (managed by the Torres Strait Protected Zone Joint Authority). Research suggests that the Queensland component of the stock supplies recruits to both the northern fishery regions and that mixing larvae from different areas occurs in the Coral Sea. Fish stocks covered by this harvest strategy is outlined in Table 1.

Table 1: Summary of fish stocks covered by this harvest strategy

Feature	Details
Target species	Ornate rock lobster
Other species	Red champagne lobster and species within family Palinuridae
Biology	Ornate rock lobster grow rapidly and reach maturity at 2-3 years of age. They are also known to be highly fecund with some populations undertaking extensive spawning migration (mostly in the Torres Strait) from which they often suffer high natural mortality after spawning events. Recruitment patterns into the commercial fishery area are highly influenced by oceanographic conditions and have been shown to inter-annually favour either northward recruitment into the Torres Strait or southward recruitment to the East Coast.

Management units for this harvest strategy

Defining the fishery to which a harvest strategy will apply is a critical step in determining its scope. The management unit for this harvest strategy are as defined by the *Fisheries (Commercial Fisheries) Regulation 2019*:

- The tropical rock lobster stock includes all tidal waters east of longitude 142°31'49", south of latitude 10°41' and north of latitude 14°S. It also includes waters of the Gulf of Carpentaria and adjoining waterways, between the 25n mile and the shore, south of latitude 10°48' south.

Noting that the commercial fishery is restricted to the Northern Rock Lobster Regulated Waters, whereas recreational fishing includes all Queensland tidal waters and in practice takes place, mainly, south of the regulated waters.

Summary of management information

A summary of the management arrangements for the QLF are set out in Table 2. Fishers should consult the relevant fisheries legislation for the latest and detailed fishery rules or visit www.fisheries.qld.gov.au.

Table 2: Summary of QLF is management arrangements

Feature	Details
Commercial access	Primary Commercial Fishing Licence with a "R" fishery symbol
Relevant fisheries legislation	<i>Fisheries Act 1994</i> <i>Fisheries (General) and (Commercial Fisheries) Regulations 2019</i> <i>Fisheries Declaration and Fisheries Quota Declaration 2019</i>
Other relevant legislation	<i>Great Barrier Reef Marine Park Act 1975 and Regulation 2019</i> <i>Environment Protection and Biodiversity Conservation Act 1999</i> <i>(Queensland) Marine Parks Act 2004</i>
Working Group	Tropical Rock Lobster Fishery Working Group

Feature	Details
	Terms of Reference and meeting communiques are available online
Gear	<p>The following apparatus are permitted for use:</p> <p><i>Commercial fishers</i> - Hand collection, hand-held non-mechanical implements, spears and spear guns using underwater breathing apparatus.</p> <p><i>Recreational fishers</i> – Hand collection, hand-held non-mechanical implements, spears and spear guns (excluding Hookah/SCUBA).</p>
Main management methods	<ul style="list-style-type: none"> • Closed waters, regulated waters <p><i>Commercial</i></p> <ul style="list-style-type: none"> • Primary management method is species-specific ITQ • Limited commercial fishing access • Primary & tender vessel restrictions • Number of divers ‘to take’ restrictions <p><i>Recreational</i></p> <ul style="list-style-type: none"> • In-possession limit • Boat limit of two times the in-possession limit
Fishing year	1 January - 31 December
Stock Status	<p>Tropical rock lobster listed as ‘Sustainable’.</p> <p>Australian fish stocks (SAFS) www.fish.gov.au.</p> <p><small>*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 Sustainable Fisheries Strategy 2017-2027.</small></p>
Accreditation under the Environment Protection and Biodiversity Conservation Act 1999	<p>Part 13: Accredited (expires 2025)</p> <p>Part 13A: Accredited (expires 2025)</p> <p>https://www.environment.gov.au/marine/fisheries/qld/crayfish-and-lobster</p>

Fishery objectives

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

- Maintain the tropical rock lobster resource at, or returned to, a target spawning biomass level that aims to maximise economic yield (MEY) for the fishery.

While:

- Minimising and mitigating high ecological risks arising from fishing related activities;
- Maximising economic yield for the commercial fishing sector;
- Maintaining sectoral catch shares; and
- Monitoring the 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 resource allocation arrangements are set out in Table 3 below to ensure that catch shares among sectors are maintained in response to changes in the Total Allowable Catch (TAC).

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

Aboriginal Peoples and Torres Strait Islanders desire more economic opportunities through fishing, particularly in their own sea country. In line with the Indigenous Commercial Fishing Development Policy, up to 5 tonnes will be set aside to provide access through an Indigenous Fishing Permit, issued in accordance with section 54 of the *Fisheries (General) Regulation 2019*, to provide opportunities for communities to take part in fishing-related business

Table 3: Resource allocation arrangements for the QLF

Species	Commercial Fishing [®]	Recreational Fishing [*]
Tropical rock lobster	95%	5%
Indigenous Commercial Fishing Development	5 tonnes	

[®] Commercial catch information collected through commercial logbook requirements.

^{*} Recreational catch share includes charter fishing is based on information from state-wide recreational fishing surveys.

Measuring performance of the fishery

Biomass based performance indicators and reference points for target species

Key indicators measure how healthy the fishery is performing. The indicators relate to the objectives, and use reference points to establish acceptable performance. The indicators measure the relative amount of fish biomass of key stock(s) against target and other reference points. The default biomass-reference-points identified in this harvest strategy are:

- A target reference point (B_{targ}) of 60% of the unexploited spawning biomass (for key target species) being the relative biomass level the harvest strategy aims to achieve. This is also considered a proxy measure of B_{mey} for the purposes of this harvest strategy;
- A limit reference point (B_{lim}) of 20% of the unexploited spawning biomass being the level that the harvest strategy aims to avoid. If the stock is assessed to be below B_{lim} the risk to the stock is unacceptably high and the stock is defined as “depleted”.

For key stocks, performance indicators and sustainable harvests for all sectors will be estimated from a stock assessment. The aim is to measure the capability for the stock to attain the target biomass level (B_{targ} 60%), and at which point the harvest strategy will be considered as meeting its fishery objectives.

The decision rules for setting a sustainable harvest in the rock lobster harvest strategy are based on a ‘hockey stick’ approach. This is where the TAC is set based on a linear relationship between B_{lim} , where the level of fishing mortality (F) is equal to zero, and B_{targ} where the exploitation rate and TAC is set at the level to achieve MEY (Figure 1). The decision rule takes into account the current biomass level of the stock for determining the TAC to achieve the B_{targ} . The recommended TAC is calculated by applying the rate of fishing mortality to achieve B_{targ} to the current spawning biomass level. As a result, the recommended TAC represents the total catch from all sectors (including discards) that can be harvested in the following years, to move the current biomass level towards the target level.

If the spawning biomass falls below the limit reference point (B_{lim} 20%), there will be no more targeted fishing of the stock until a rebuilding strategy is developed to increase the spawning biomass above the limit within two generation (where a generation is defined as the average age of full maturity for the fish species). The rebuilding timeframe of two generations takes into account the productivity and life span of the fish species.

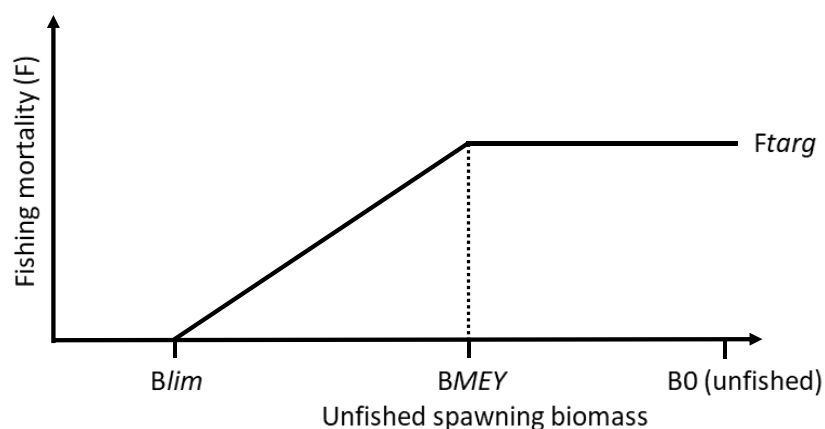


Figure 1: showing the “hockey stick” rule, B_{lim} is limit reference point, B_{mey} is the biomass at MEY, B_0 is the unfished biomass at 100%, F is fishing mortality and F_{targ} is the level of fishing mortality for B_{mey} .

To meet the objectives of the fishery, the harvest strategy will also act to constrain all sectors within their allocated catch share. Should a new estimate of recreational harvest or catch from charter fishing logbooks indicate that a sector has increased their catch share outside of their allocated proportion for any TAC species, then adjustment will be made to constrain harvest within this share. Adjustments to the recreational fishing limits may be undertaken if large changes are made to the TAC for a species.

Management of target species

Decision rules for the commercial take of lobster

The decision rules below have been designed to provide clear guidance to the TACC setting process by defining how advice should be developed and implemented from quantitative stock assessments.

- 1.1 If the biomass is at or above *B_{targ}*, set the TACC at a level that maintains biomass at *B_{targ}*.
- 1.2 If biomass is below *B_{targ}* and above *B_{lim}*, the TACC should be set as inferred by the hockey stick approach, where fishing mortality is reduced to the rate that allows the biomass to increase effectively back to *B_{targ}*.
- 1.3 If biomass is below *B_{lim}*, there will be no further targeted fishing for that species, and a rebuilding strategy will be developed to increase the stock biomass to above *B_{lim}* within two generation.
- 1.4 If any new information becomes available indicating that the assessment and TACC-setting arrangements are not consistent with the sustainable management of the fishery, decision rules must be reviewed and, if appropriate, the reference points or timeframes should be adjusted.

Notwithstanding that:

- 1.5 The rate of fishing mortality should not exceed that required to achieve *B_{targ}* (i.e. F₆₀);
 - 1.6 The TAC should not exceed the level of fishing mortality required to maintain a stock at MSY
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Decision rules for the recreational, including charter sector take of lobster

To ensure that no one fishing sector is increasing their catch share at the expense of another sector the harvest strategy has been designed to include decision rules for maintaining catch shares between sectors. As the commercial catch of tropical rock lobster is limited through a TACC, the recreational in-possession limit will serve to constrain the recreational (and charter) fishing catch. The below decision rules relate to changes in recreational catch informed by the state-wide recreational fishing survey and charter logbooks.

- 2.1 If a recreational harvest estimate is no more than 5% above the allocated recreational catch proportion then no management action is required.
 - 2.2 If a recreational harvest estimate exceeds the catch share by greater than 5% the recreational in possession limit will be decreased to return catch to allocated proportions.
 - 2.3 If a stock assessment recommends an increase in the TAC to a level that would increase the commercial catch share by 5% or more then the recreational in possession limit will be increased to return catch shares to allocated proportions.
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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. Ecological Risk Assessments (ERA) identify and measure the ecological risks of fishing activity and identify issues that must be further managed under harvest strategies.

The QLF 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 Action Plan. The below decision rules are in place to minimise and mitigate high ecological risks arising from fishing related activities.

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- 3.1 If an ERA identifies fishing impacts that are considered to generate an undesirable level of risk to any secondary or bycatch species' populations, (i.e. high risk) a review is triggered to investigate the reason for the increased risk. Appropriate management action should be taken to reduce the risk to acceptable level; **and**
 - 3.2 To ensure fishery impacts do not result in serious or irreversible harm to the Great Barrier Reef World Heritage Area, where a reef event is identified under 'GBRMPA's Reef Action Plan' a review will be led by GBRMPA and additional management action, voluntary or regulated, may be considered in order reduce the risk to an acceptable level.

The most recent ERA for the QLF was completed in 2006. It found impacts to the environment of the Queensland QLF to be negligible to minor. The next ERA is scheduled for 2019-20.

Fisheries Queensland's Ecological Risk Assessment Guideline is published online at <https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/ecological-risk-assessment-guidelines>.

Future risk assessments will be undertaken periodically to reassess any current or new issues that may arise in the fishery. Risk assessments 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.

Social and economic performance

The Sustainable Fisheries Strategy outlines the target to set sustainable catch limits based on achieving maximum economic benefits of the resource, taken initially to correspond to around 60% of unfished biomass. This is to support the most economically efficient use of the resource, improve the fishing experience for all sectors (e.g. recreational fishing satisfaction) and promote a resilient system that can bounce back from other adverse environmental conditions (e.g. floods, cyclones and bleaching). The harvest strategy rules have been set up to maintain the stock to this target biomass level.

The following objectives are to support 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 if fishery trends are of concern.

Table 4: social and economic indicators for the QLF

Objective	Performance indicators	Management options
Maximising profitability of the commercial sector.	Potential indicators to monitor include: <ul style="list-style-type: none"> • CPUE (average per day) • Costs, earnings and net financial and economic profit • Quota sale and lease price 	Consider regulatory and non-regulatory options. Adjust management as needed. Options include minimum quota holding, latent effort review.
Monitoring 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) • Percent of quota/licences that are owned (rather than leased) • Income generated (crew plus profit – gross value added) • Proportion of catch sold locally • Fish prices • Number of platforms/number of active licenses/total capacity 	Consider regulatory and non-regulatory options. Adjust management as needed

Monitoring and assessment information

The catch and effort data required to determine the standardised commercial catch rate for harvested lobster species is obtained through commercial logbook returns. The QLF logbook is at <https://www.business.qld.gov.au/industries/farms-fishing-forestry/fisheries/monitoring-reporting/requirements/logbooks>

As the QLF is a quota-managed fishery, real-time reporting and catch disposal records are also required to provide an accurate record of the catch. All boats in the QLF are required to have vessel tracking installed and operational on all primary and tender vessels to verify fishing effort reported in commercial fishing logbooks.

Surveys of recreational fishers at boat ramps and the state-wide recreational fishing and logbook program data help provide important information on recreational fishing. Charter operators also record catch information in logbooks which are included as recreational harvest.

No modelled stock assessment is currently available for the QLF. It is a priority under this harvest strategy to develop a modelled stock assessment for the commercial fishery area initially and subsequently the full East Coast stock. It is anticipated that this will enable a stock assessment to inform TAC setting process at least biannually.

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 updated as required.

Table 5: Information and research priorities for the QLF

Project Description	Explanation of Need	Priority	Funding sources
Modelled stock assessment	A new biomass estimate with associated TAC levels for achieving fishery targets	High	Industry
Explore collecting additional information such as weight to improve length frequency data	To improve modelling of the stock	Medium	Industry
Improve understanding of recreational, charter and traditional harvest	To improve modelling of the stock outside the commercial fishing area	Low	Undetermined
Review source and sink profiling of Queensland lobster stocks	To better understand the genetic and spatial extent to improve modelling and management	Medium	Undetermined

Schedule of performance assessment and review

The fishery’s performance will be reviewed against this harvest strategy annually. This review will include convening the Tropical Rock Lobster Working Group in September/October to provide operational advice on the fishery’s performance and any matters that may need addressing. The primary performance measure for review will be spawning biomass that will be undertaken biennially, with a review of catch and effort data in intervening years. If a biomass estimate becomes available prior to the scheduled timeframe that indicates the TAC should be adjusted in order to meet the objectives of the fishery, then the TAC for that year should be reviewed.

Table 6: Anticipated performance schedule for the QLF

	Year 1 – 2021	Year 2 – 2022	Year 3 – 2023	Year 4 – 2025	Year 5 – 2026
Monitoring and assessment Activity	Catch and effort monitoring	Modelled Assessment	Catch and effort monitoring	Modelled Assessment	Catch and effort monitoring
Management activity	Review of catch and effort data and bring forward TAC decision if needed	Review of TAC, declaration made if required	Review of catch and effort data and bring forward TAC decision if needed	Review of TAC, declaration made if required	Review harvest strategy and reset reference points and TAC if required

The above schedule outlines the expected timeframes that assessment information will be available to inform management action. There may be instances where an assessment may need to be available prior to, or delayed beyond the scheduled date. Any change to the schedule should be considered by the working group and decided on by the chief executive based on the below conditions:

- If during the period between scheduled stock assessments the chief executive is concerned that a performance indicator (e.g. stock status, length frequency distributions, standardised commercial catch rates, total harvest, age distributions etc.) suggests that the stock is not performing in a way that will achieve the target biomass level, the chief executive may decide that a stock assessment will be undertaken before the scheduled timeframe.
- If the chief executive is satisfied that; (1) indicators for the stock suggests that it is achieving, or rebuilding to, target biomass levels, and that there is a low ecological risk to the stock under the current management arrangement (i.e. TAC levels); (2) or if resourcing requirements prohibit the ability for an assessment to be delivered in the scheduled timeframe, the chief executive may decide that a scheduled stock assessment will be delayed.

Schedule of 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*.

While harvest strategies provide certainty and transparency in terms of management decisions in response to fishery information, there needs to be flexibility to allow new information or changing circumstances to also be considered. Consequently, the harvest strategy may be subject to further review and amendment as appropriate within the five-year period if 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; or
- It is clear the harvest strategy is not working effectively and the intent of the Queensland Harvest Strategy Policy is not being met.

Further explanation and information on the processes for amending harvest strategies can be found in the Queensland Harvest Strategy Policy published at <https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable-fisheries-strategy/harvest-strategy>.