

Management advice Reef line fishery 2022

Harvest strategy overview

The reef line fishery is one of the first fisheries to have an approved harvest strategy under the *Queensland Sustainable Fisheries Strategy 2017–2027*. The harvest strategy sets out reference points and decision rules to determine appropriate levels of harvest based on the status of stocks and risk to target and secondary species.

Stock assessment results inform the total allowable catch (TAC) for one target species at this stage—common coral trout. The TAC is set based on the estimated level required to return and maintain common coral trout stocks (factored up to include all coral trout species) to the target reference point of 60% of unfished spawning biomass using the ‘hockey stick’ harvest control rule (see Figure 1).

Currently all other species caught in the fishery are considered ‘secondary species’, which are monitored through catch triggers. If a catch trigger is exceeded, a stock assessment will inform future management and an interim competitive total allowable commercial catch (TACC) may be implemented to reduce further risk to the species.

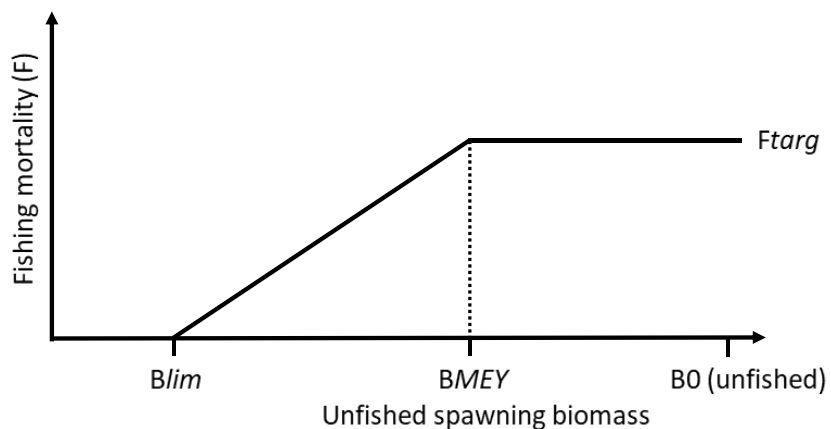


Figure 1: The ‘hockey stick’ rule applies to stocks with a stock assessment—*Blim* is the limit reference point, *Bmey* is the biomass at maximum economic yield, *B0* is the unfished biomass at 100%, *F* is fishing mortality and *Ftarg* is the level of fishing mortality for *Bmey*

The harvest strategy also aims to ensure that each sector (commercial, recreational and charter) does not exceed their allocated catch share. If the TACC is adjusted to manage the commercial harvest, management action may be triggered to align the recreational and charter sector harvest to within their share.

Harvest strategy targets and reference points

Species	Stock assessment	Reference point
Coral trout	2022	60% biomass
Red throat emperor	2021	60% biomass
Other species	Intermittent	Catch trigger
Red emperor	2022	60% biomass
Saddletail snapper	2021	60% biomass
Crimson snapper	2021	60% biomass

Where biomass estimates are not available for secondary species, the following reference points will trigger review and potential management action:

- if the annual commercial harvest exceeds 20 tonnes for an individual species; and
- if the annual commercial harvest has increased to 1.5 or 2 times above levels from the 2011–2015 average.

Performance indicators

- Coral trout biomass is at **60%** of unfished levels.
- To maintain 60% biomass, a TAC of **1140 tonnes** of coral trout is indicated.
- Recreational/charter sector coral trout harvest **did not exceed** their allocated share.
- Stock assessments of secondary species (red emperor, saddletail snapper and crimson snapper) indicate management action is required and public consultation will be undertaken in 2022.

Primary species: coral trout

Assessment

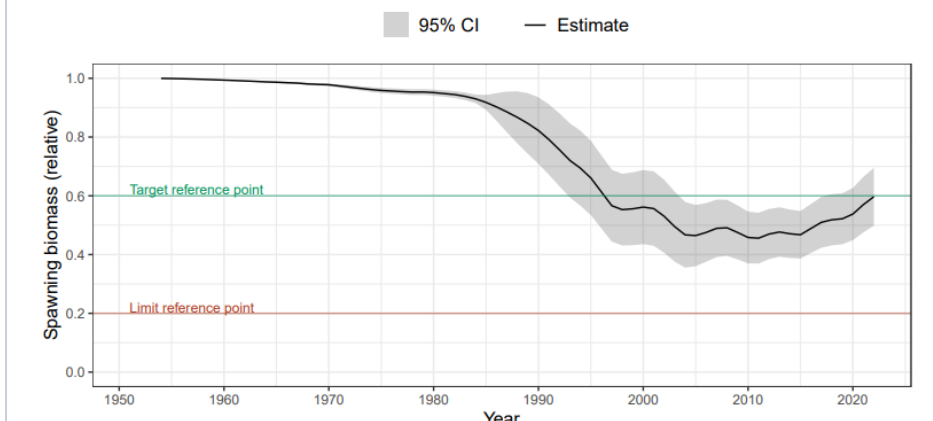
The 2022 stock assessment estimated that common coral trout abundance at the start of 2022 was most likely at 60% of unfished biomass, which is the harvest strategy target biomass level (Figure 2).

To reach and maintain the target of 60% biomass, the stock assessment 'hockey stick' harvest control rule resulted in an all sector recommended biological harvest of 1199 tonnes of common coral trout. A discount factor of 9% to account for scientific uncertainty was then applied to get a TAC of 1091 tonnes for common coral trout. The TAC for common coral trout is then scaled up by 4.5% to provide an 'all trout' species TAC of **1140 tonnes**.

Management outcome

Applying the sectoral allocation specified in the harvest strategy of 80% commercial and 20% recreational to the TAC results in a TACC of 912 tonnes and a recreational and charter catch share of up to 228¹ tonnes for the 2022-23 and 2023-24 fishing seasons.

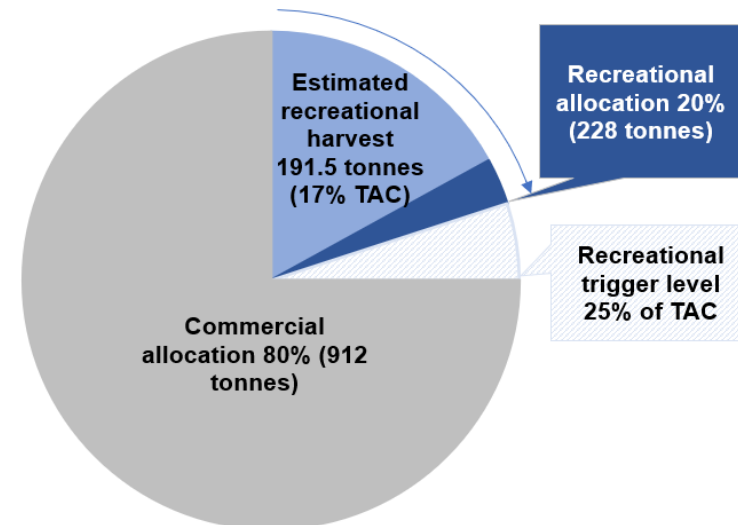
Figure 2: Current and predicted biomass trajectory for common coral trout, showing biomass, reference points and confidence intervals for 2022.



The recreational and charter sector did not exceed their catch share of 20% (with 5% buffer). As a result, it is within the prescribed reference point (Figure 3).

¹ Note the most recent (2019-20) recreation and charter harvest estimate for coral trout is 191.5 tonnes. This is based in the estimate of 87, 537 recreationally harvested fish reported using the 2019 [State-wide Recreational Fishing Survey data](#), excluding

Figure 3: Applying the harvest strategy catch shares to coral trout TAC of 1140 tonnes



Ongoing economic issues, including increased operating costs and variable export market access were noted as challenges for commercial fishing businesses. At the same time, increased scrutiny around the operation of fisheries within the Great Barrier Reef World Heritage Area and risks to fishing access and maintaining export approvals under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* were also considered. In balancing the issues and risks, it has been decided to delay the harvest strategy decision rules for the 2022–23 fishing season.

The TACC will remain at 963 tonnes in the 2022-23 fishing season.

Note: For more information on how the harvest strategy decision rules were applied to coral trout in 2022, see the diagram on page 4.

Secondary species: red throat emperor

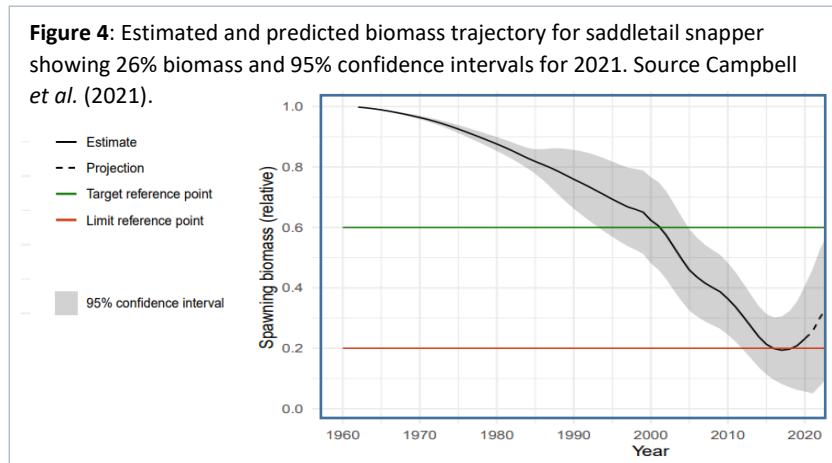
Red throat emperor was assessed in 2021 and no change is expected until a new assessment is completed in future. for more information see the [Reef Line Management Advice for 2021](#).

charter catch, multiplied by the conversion factor of 1.565 kg (based on average recreational common coral trout size measured during [Boat Ramp Surveys from 2019-2021](#)), plus 54.4 tonnes reported in charter fishing logbooks.

Secondary species: red emperor, saddletail snapper and crimson snapper

The first Queensland east-coast stock assessments for red emperor, saddletail snapper and crimson snapper were discussed at the March 2022 Reef Line Fishery Working Group meeting. The outcome of these stock assessments identifies that each of the three species require some level of rebuilding to meet the 60% biomass reference point for a target species. The working group provided advice regarding potential future management arrangements for these species, including size and possession limit changes, total allowable commercial catch limits, seasonal closures, gear restrictions and other management tools.

Recognising the need for additional consultation on how best to manage these species, a discussion paper is proposed to be developed for release later in 2022 seeking feedback from all stakeholders on potential options to manage these species, with an aim to consider consultation feedback and implement any changes from 1 July 2023 for the 2023-24 fishing season.



The objective of the harvest strategy is to

“Maintain all species in the reef line fishery at, or returned to, a target spawning biomass level that aims to maximise economic yield (MEY) for the fishery...”

The harvest strategy also specifies that the target biomass of 60% applies to secondary species where a stock assessment is completed. The harvest strategy policy was reviewed in 2021 and the new policy states

“For a multispecies fishery, MEY may require balancing each species biomass, catch rates, and profit levels in the fishery. As individual fish

stocks in a multispecies fishery are likely to be different in their biological, fishing and economic characteristics, the biomass and effort levels that support MEY will vary according to species. ... This may require setting harvest rates to achieve maximum economic return across species in the fishery. Therefore, the target biomass level (B_{TARG}) of some secondary or byproduct species may need to be set higher or lower than the 60% level, but never below the B_{MSY} .”

Figure 5: Current and predicted biomass trajectory for red emperor, showing 58% biomass, 95% confidence intervals and scenario ranges for 2022. Source: Sumpter *et al.* (2022)

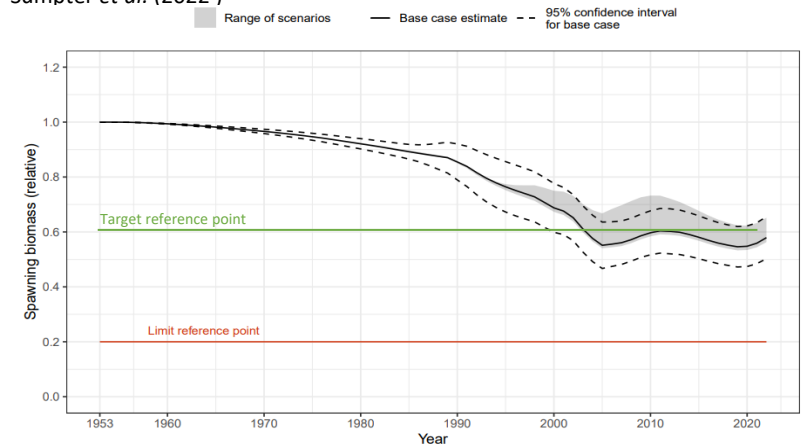
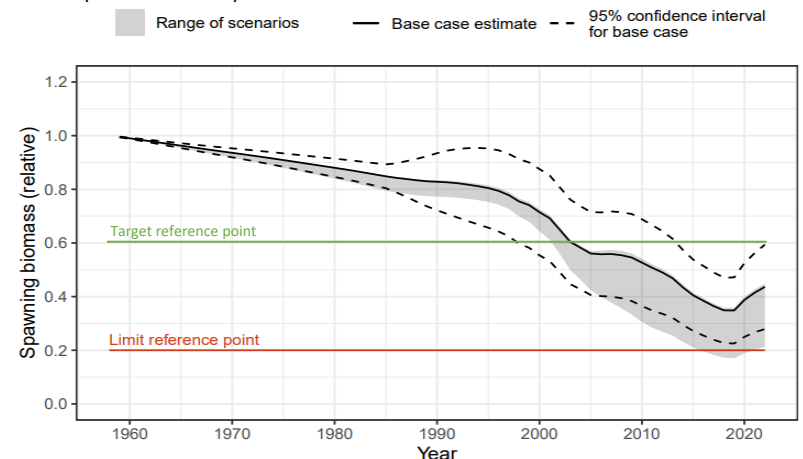


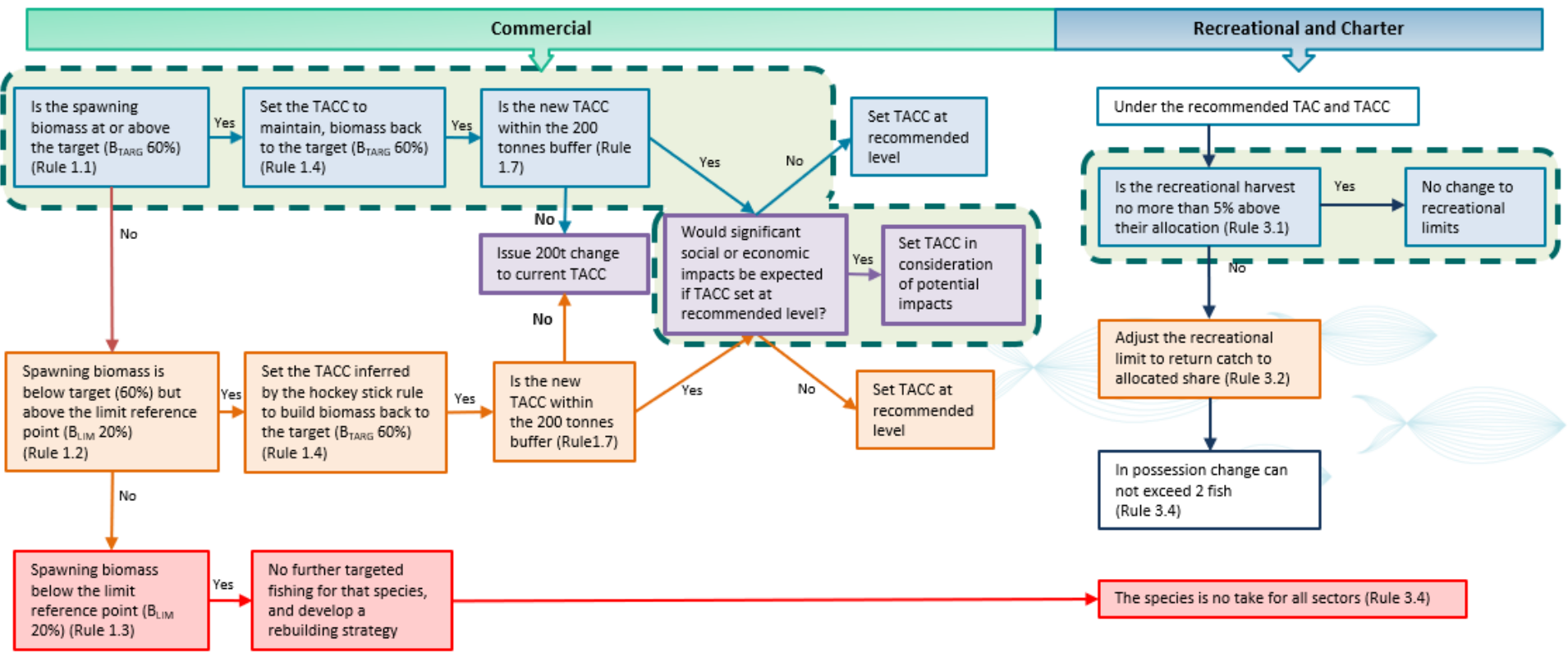
Figure 6: Current and predicted biomass trajectory for crimson snapper, showing 44% biomass, 95% confidence intervals and scenario ranges for 2022. Source (Fox *et al.* 2021)



Management advice Reef line fishery 2022

Coral trout decision rules

Applicable coral trout decision rules for 2022 outlined in green.



More information

- 13 25 23
- fisheriesmanagers@daf.qld.gov.au
- fisheries.qld.gov.au

