East coast inshore fishery harvest strategy: 2021–2026

Queensland Government

Business area 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
0.01	September 2020	Draft harvest strategy for consultation
1.00	June 2021	Approved harvest strategy

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Interpreter statement

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Contents

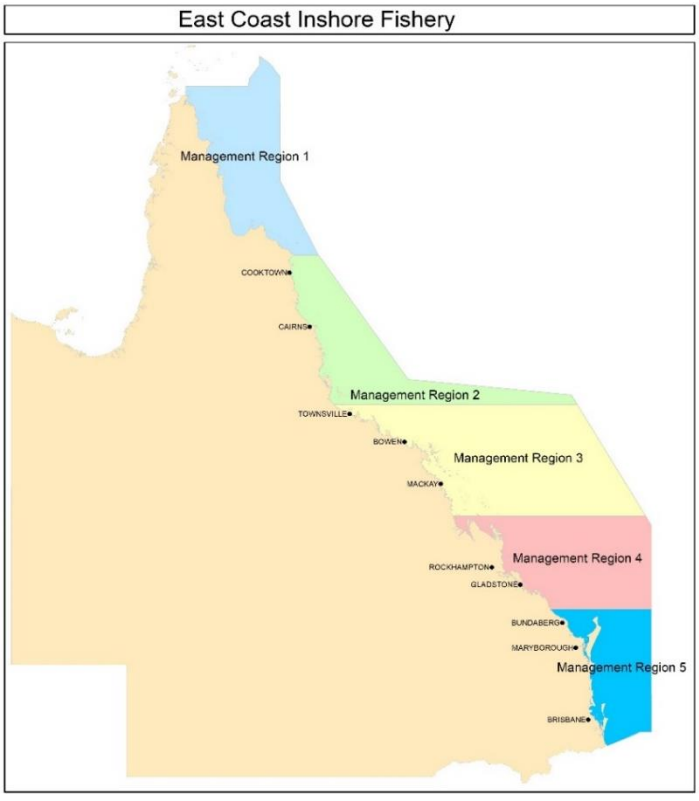
What the harvest strategy is trying to achieve

This harvest strategy has been developed in line with the *Queensland harvest strategy policy* to manage Queensland's east coast inshore fishery (ECIF) resources. While most target stocks in this fishery are healthy, many need some rebuilding to achieve the biomass targets set in the *Queensland Sustainable Fisheries Strategy: 2017–2027*. Further data on some target species is needed to inform how to meet those biomass targets, however, they still need to be managed effectively while this information is collected (e.g. king threadfin, black jewfish). To address a range of ecological, social and economic issues this harvest strategy has been developed to allow management of stocks at a regional scale.

The aim of this harvest strategy is to manage fishing mortality through setting of sustainable catch limits at a level that allows the stock to achieve biomass targets. The decision rules are designed to set catch limits at levels appropriate for achieving the spawning biomass of 60% (for species that drive fishing behaviour in this fishery) and to maintain catch shares amongst sectors. For species where biomass estimates are not available, and those that are not driving fishing behaviour, precautionary catch limits and triggers have been designed to allow for controlled expansion of fishing, and optimising economic yield while monitoring changes in catch and effort within historic catch levels. 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 ECIF is a complex, multi-species, multi-gear fishery that harvests approximately 100 species along the east coast of Queensland. It is split into five management regions, with the target species ranging throughout the different regions of the fishery. The ECIF is the most diverse fishery in Queensland, with commercial, recreational, charter and Aboriginal and Torres Strait Islander fishers accessing these fish stocks.



The commercial fishery comprises a diverse range of fishing operations that use net and hook and line gear to target regionally important species. There are differences in target species between the south (management region 5), which accesses large catches of sea mullet, whiting, flathead, bream and school mackerel, and the north (management regions 1–4), which primarily targets barramundi, king threadfin and grey mackerel.

Recreational and charter fishers use hook and line, cast nets, small seine nets (bait nets), spears and spear guns. The recreational and charter components of the fishery target species for food and sport.

Fishing is also an important customary activity for Aboriginal peoples and Torres Strait Islanders. Traditional fishing satisfies a personal domestic or non-commercial communal need in accordance with the traditional laws and customs of the Traditional Owners of the area being fished.

Stocks covered by the harvest strategy

Approximately 100 species are harvested in the ECIF, which are classified into three tiers:

- **Tier 1** – These are the key species identified as driving fishing behaviour within the fishery. These species are subject to individual transferrable quotas (ITQs) and a total allowable commercial catch (TACC), and are managed regionally. For recreational fisheries, these species have in-possession and size limits.
- **Tier 2** – These species are of high commercial and recreational importance, and are typically targeted and co-caught species within the fishery. These species are subject to a competitive TACC and are managed regionally. For recreational fisheries, these species have in-possession and size limits.
- **Tier 3** – All other species are monitored using catch triggers to ensure that increasing or shifting fishing pressure does not present an unacceptable level of risk. For recreational fisheries, some of these species will have in-possession and size limits, while all others are captured by the general in-possession limit.

The stock structure of tier 1 and 2 species range from those with broad distribution along the east coast of Queensland (i.e. grey mackerel, spotted mackerel and school mackerel), to those that extend into adjacent management jurisdictions (i.e. tailor, yellowfin bream, sea mullet and several shark species into New South Wales). There are also several species within the fishery that may have complex and/or finer scale stock structure (i.e. barramundi and king threadfin). Table 1 outlines the fish stocks covered by this harvest strategy and their associated tiers. Species may transition between management tiers if required (e.g. shift in fishing pressure towards tier 2 or 3 species).

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

Feature	Details
Target species	Current tier 1 and 2 species (barramundi (*Lates calcarifer*), king threadfin (*Polydactylus macrochir*), grey mackerel (*Scomberomorus semifasciatus*), school mackerel (*Scomberomorus queenslandicus*), whiting (*Sillago spp.*), sea mullet (*Mugil cephalus*), black jewfish (*Protonibea diacanthus*), sharks and rays, tailor (*Pomatomus saltatrix*), yellowfin bream (*Acanthopagrus australis*), dusky flathead (*Platycephalus fuscus*), spotted mackerel (*Scomberomorus munroi*))
Other species	Tier 3 (all other species)

Management units for the harvest strategy

There are five management regions (Table 2), as defined in the Fisheries (Commercial Fisheries) Regulation 2019, which reflect the management units for this harvest strategy.

These management regions were primarily based on stock boundaries, noting that the fishery has many species with differing and/or unknown stock boundaries. Other considerations when defining the management regions were:

- alignment with logbook gridline
- allowing commercial fishers to maintain business flexibility
- minimising social conflict
- avoiding boundary lines through major population centres.

Table 2: ECIF management regions and associated tier 1 species

Region	Boundary	Tier 1 species
Management region 1	Latitude 10°30’ south, north of Cape York, to 15°00’ south, just north of Cooktown	Grey mackerel Barramundi King threadfin
Management region 2	Latitude 15°00’ south, just north of Cooktown, to 19°00’ south, near Balgal Beach	Grey mackerel Barramundi King threadfin
Management region 3	Latitude 19°00’ south, near Balgal Beach, to 22°00’ south, between Carmilla and Clairview	Grey mackerel Barramundi King threadfin
Management region 4	Latitude 22°00’ south, between Carmilla and Clairview, to 24°30’ south, Baffle Creek	Grey mackerel Barramundi King threadfin
Management region 5	Latitude 24°30’ south, Baffle Creek, to the Queensland–New South Wales border	School mackerel Grey mackerel Barramundi King threadfin Whiting

Summary of management information

A summary of management arrangements for the ECIF are set out in Table 3. 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 3: Summary of management arrangements for the ECIF

Feature	Details
Commercial access	Primary commercial fishing licence with one or more of the following fishery symbols: N1, N2, N4, N10, N11, K1–K8, L1, L2, L3, S
Relevant fisheries legislation	*Fisheries Act 1994* Fisheries (General) Regulation 2019 Fisheries (Commercial Fisheries) Regulation 2019 Fisheries Declaration 2019 Fisheries Quota Declaration 2019
Other relevant legislation	*Great Barrier Reef Marine Park Act 1975* and Great Barrier Reef Marine Park Regulations 2019 (Cwlth) *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)

Feature	Details
	Nature Conservation Act 1992 and Nature Conservation (Animals) Regulation 2020
Working group	East coast inshore fishery working group meetings are held regularly throughout the year Terms of reference and communiques are available at fisheries.qld.gov.au
Gear	The following apparatus are permitted for use: • commercial – set mesh gillnets, haul (seine) nets, tunnel nets, small mesh gillnets, cast nets, hook and line apparatus • recreational – recreational hook and line apparatus plus cast, dip and seine nets, spearfishing gear (excluding hookah/SCUBA) Refer to fisheries legislation for specific gear requirements and rules
Main management methods	**Commercial** • Primary management method is species-specific ITQ and competitive TACC limits, otherwise known as a prescribed commercial catch. • Size and in-possession limits • Spatial and temporal closures • Limited entry • Vessel restrictions • Gear restrictions **Recreational** • Size and in-possession limits • Combined boat limits • Spatial and temporal closures • Gear restrictions
Fishing year	1 January – 31 December
Stock status	Stock status is assessed using the nationally agreed Status of Australian Fish Stocks (SAFS) classification framework – the SAFS stock status for tier 1 and 2 species are as follows: • barramundi listed as '**sustainable**' (2020) • blacktip shark listed as '**sustainable**' (2020) • dusky flathead listed as '**sustainable**' (2020) • grey mackerel listed as '**sustainable**' (2020) • king threadfin listed as '**sustainable**' (2020) • sand whiting listed as '**sustainable**' (2020)

Feature	Details
	• school mackerel listed as '**undefined**' for north-east stock, '**negligible**' for central stock and '**sustainable**' for south-east stock (2020) • sea mullet listed as '**sustainable**' (2020) • spotted mackerel listed as '**sustainable**' (2020) • tailor listed as '**sustainable**' (2020) • yellowfin bream listed as '**sustainable**' (2020) All other species are listed as 'undefined' or are yet to be assessed under SAFS. *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' under SAFS, this does not mean that the biomass is meeting the targets set out in the *Queensland Sustainable Fisheries Strategy: 2017–2027*. For more specific species biomass estimates, consult the relevant stock assessment for that species.
Accreditation under the *Environment Protection and Biodiversity Act 1999*	Part 13: Accredited (expires 10 December 2021) Part 13A: Accredited for ocean beach fishery only (expires 1 May 2024) Visit environment.gov.au

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 this fishery is to:

- maintain the target species in the ECIF at, or returned to, a target spawning biomass level that aims to maximise economic yield (MEY) for the fishery.

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

- minimise and mitigate any unacceptable ecological risks arising from fishing-related activities
- maximise economic performance of the commercial sector
- monitor the broader social and economic benefits of the fishery to the community
- consider potential impacts of localised depletion
- maintain appropriate sectoral allocations for ECIF resources.

Catch shares

This harvest strategy aims to maintain the existing catch shares between sectors. The existing resource allocation arrangements set out in Table 4 ensure that catch shares among sectors are maintained in response to changes in the total allowable catch (TAC). Catch shares will be established if a species is escalated to a higher level of management (i.e. requiring a TAC).

These resource allocation arrangements may be updated if new information becomes available (e.g. from the statewide recreational fishing survey) that indicate the defined sectoral proportions are no longer consistent with effective management of the fishery. An update of the resource -sharing arrangements would only be undertaken to ensure that catch shares are based on reliable information for all sectors and only approved resource reallocations would adjust the catch shares established in the harvest strategy.

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 have no 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. In line with the *Aboriginal and Torres Strait Islander commercial fishing development policy* to provide opportunities for communities to take part in fishing-related business, a combined tier 1 and 2 species catch limit of 10 tonnes is available to access through Indigenous fishing permits issued in accordance with section 54 of the Fisheries (General) Regulation 2019.

Table 4: Resource allocation arrangements for the ECIF

Species	Tier	Commercial fishing	Recreational fishing* (including charter)
Grey mackerel**	1	90%	10%
Barramundi**	1	65%	35%
King threadfin*	1	50%	50%
Whiting**	1	75%	25%
School mackerel**	1	85%	15%
Sea mullet**	2	99%	1%
Shark and ray#	2	99%	1%
Hammerhead shark##	2	100%	0%
Yellowfin bream**	2	55%	45%
Tailor**	2	45%	55%
Dusky flathead**	2	35%	65%
Black jewfish***	2	TBC	TBC
Spotted mackerel**	2	55%	45%

* Recreational average harvest from the 2013–14 recreational fishing survey compared to 2017 commercial catch
** Catch share was established from the most recent stock assessment data.
*** Prior to 2017 when swim bladder value increased, commercial and recreational catch were approximately the same. Noting strict management arrangements recently implemented for this species a fixed catch share has not been set, and shares will be discussed when a stock assessment is completed.
# Shark and ray includes a large species complex and catch is assumed to be predominantly commercial.
Hammerhead shark are no take species for recreational fishers.

Managing the performance of the fishery

Performance indicators and reference points for target species

Suitable performance indicators have been selected to describe fishery performance in relation to the objectives, with associated reference points identified to established acceptable performance. The primary performance indicator used to evaluate the status of ECIF species is stock biomass. Stock biomass is assessed periodically and is compared to the associated reference points.

The default biomass reference points identified in this harvest strategy are:

- a target reference point (B*targ*) of 60% unfished spawning biomass being the relative biomass level the harvest strategy aims to achieve for tier 1 species and some tier 2 species within the fishery – this is also considered a proxy for achieving maximum economic yield (B*mey*)
- a limit reference point of 20% of the unfished spawning biomass (B*lim*) being the biomass level that the harvest strategy aims to avoid. If there is evidence that a stock is more susceptible to fishery depletion due to conservative life history characteristics, a higher limit reference point (e.g. 30%) may be considered. If the stock is assessed to be below B*lim*, the risk to the stock is unacceptably high and the stock is defined as 'overfished'.

As individual fish stocks in a multi-species fishery are likely to be different in their biological and economic characteristics, the biomass levels that support MEY may vary by species. The ECIF is a multi-species fishery with high species co-catch and there are multiple species for which the distribution of stocks overlaps with adjacent management jurisdictions (i.e. Northern Territory or New South Wales). Due to these complexities, attaining a consistent biomass target for all species in the ECIF is unlikely to be achievable without causing adverse consequences, such as a fishery closure or increased discard mortality.

To avoid this, the strategy provides for a B*targ* level for tier 2 species of between 50% and 60% of unfished spawning biomass where 60% may be impracticable. This approach is consistent with the *Queensland harvest strategy policy*, and the proposed biomass level of 50–60% (as a relative abundance proxy for MEY) is defined by Punt *et al*.[1] Determining a multi-species MEY level in this fishery has been identified as a research priority for informing future management.

The decision rules for setting TAC limits 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 overleaf). The decision rule considers the current biomass level of the stock for determining the TAC to achieve the B*targ*.

The TAC is calculated by applying the rate of fishing mortality to achieve B*targ* to the current spawning biomass level. As a result, the TAC represents the total catch from all sectors (including discards) that can be harvested over the following two years to move the biomass level towards the target level. A discount factor may also be applied to account for uncertainty and to reduce the risk of a fishery not achieving its objectives.

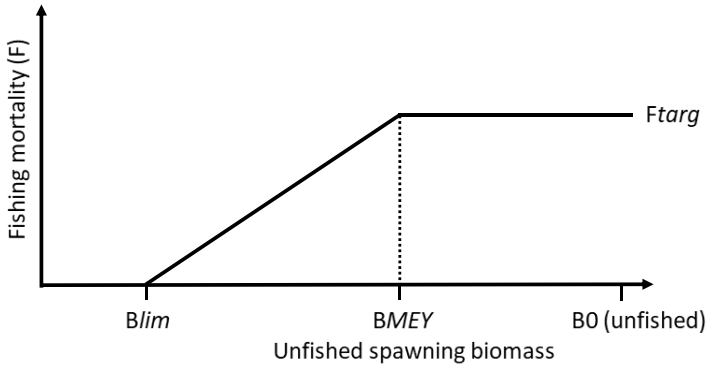


Figure 1: The 'hockey stick' approach – B*lim* is limit reference point, B*mey* is the biomass at MEY, B0 is the unfished biomass, F is fishing mortality and F*targ* is the level of fishing mortality to achieve B*mey*.

[1] Punt AE et al. 2014 'Selecting relative abundance proxies for BMSY and BMEY', *ICES Journal of Marine science*, 71: 469–483

The tier 1 and 2 species TACC for each management region are then calculated from the TAC using the catch shares in Table 4. As there are many different stocks among the species caught in the fishery, the stock boundaries sometimes do not align with the management region boundaries. From a practical perspective, management region TACC calculations need to also account for stocks that cross multiple management regions or management regions with multiple stocks within them. The approach that has been taken is to apportion the TACC within a stock to each logbook grid according to reported commercial logbook catch during the period 2013–2017
(i.e. calculate a 'grid TACC'). The grid TACC is then summed according to the management region to give a regional TACC. This process is repeatable for all stocks with known stock boundaries.

If the spawning biomass of a stock falls below B*lim*, targeted fishing of the stock must cease and a rebuilding strategy be developed with an objective to rebuild the spawning biomass above B*lim* within a biologically reasonable timeframe (e.g. based on mean generation time[2]) and as informed by the *Queensland Harvest Strategy Policy*. If the fishery is unable to avoid catching the species while targeting other species, a low level of fishing mortality may be accepted through a nominal incidental catch limit, and additional management measures should be considered to support rebuilding.

To pursue the objectives of the fishery, the harvest strategy also constrains all sectors to their allocated catch share. If new information on recreational or charter harvest indicate that the sectors harvest has increased outside of their allocated catch share for any TAC species, decision rules are triggered to constrain harvest to within this share. Adjustments to the recreational fishing limits may also be undertaken if large changes are made to the TAC for a species.

Tier 3 species management

For tier 3 species, or regions in which tier 1 and 2 species are not managed under a TACC, trigger reference points are used to monitor fishing mortality.

An annual catch level of 20 tonnes per species has been determined as a default point at which increasing catches may present an increased risk to the sustainability of tier 3 species. Given this, catch triggers have been developed where species may be subject to assessment and/or management action if increases in fishing mortality are detected above the triggers. The triggers will be used to detect shifts in fishing effort by comparing annual catches against the average catch level from the reference period of 2013–2017. This reference period represents a stable period in the fishery, which includes weather events (such as cyclones), fishing effort and number of licences, and has been evaluated for its use as a reference period using retrospective analysis.

[2] a generation is defined as the average age of full maturity for the fish species.

Management of target species

1.0 Decision rules for the commercial sector for tier 1 and 2 species

The decision rules provide guidance to set the TACC for tier 1 and 2 species. The decision rules use the outputs of stock assessments and aim to achieve B*targ* at 60% of unfished spawning biomass as a proxy for MEY for tier 1 species, and a proxy of between 50% and 60% for tier 2 species. See Appendix A.

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 at or below B*lim*, there will be no targeted fishing permitted for that species, and a rebuilding strategy will be developed to increase the stock biomass to above B*lim* within a biologically reasonable timeframe and as informed by the *Queensland Harvest Strategy Policy*.

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*

1.6 The TAC should not exceed the level of fishing mortality required to maintain a stock at maximum sustainable yield (MSY) at equilibrium.
AND

1.7 While the hockey stick approach is the default harvest control rule, alternatives may be considered to better pursue the objectives of this strategy.

2.0 Decision rules for the recreational and charter sector for tier 1 and 2 species

The below decision rules have been designed to maintain catch shares between sectors. If a new estimate of recreational or charter harvest indicate that either sector have increased their catch outside of their allocated catch share for any tier 1 or 2 species, then management action will be taken to constrain them within this share.

2.1 If a recreational harvest estimate is no more than 10% 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 10%, 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 result in an increase or decrease to the commercial catch share by 10% or more, the recreational in-possession limit will be adjusted to ensure catch shares match allocated proportions.

Notwithstanding that:

2.4 If a stock is below B*lim* and a stock assessment recommends a TAC of zero, no targeted fishing for the species will be permitted for all sectors.

3.0 Rules for managing the total commercial fishing mortality (retained and non-retained) of east coast inshore species

The harvest strategy contains the below rules to discourage non-retention (e.g. discarding, high grading) of species with a TACC. These rules provide guidance for additional management that may be required to account for excess levels of fishing mortality. Monitoring of non-retention will be progressed through a combination of fishery-dependent reporting and independent monitoring as required.

3.1 If the reported non-retained catch is found to be at a level that increases the fishing mortality for a species above the amount that will allow the stock to rebuild to the target biomass levels, management changes will be considered to reduce non-retention – including minimum quota holdings, regional closures, gear restrictions and other penalties to discourage fishing once a TACC is reached.

3.2 If the reported total harvest (retained and non-retained) for any tier 1 or 2 species exceeds any regional TACC by less than 1%, then no additional management action is required.

3.3 If the reported total harvest for any tier 1 or 2 species exceeds any regional TACC by between 1% and 5%, then the TACC for the following year will be reduced by the amount that the TACC was exceeded.

3.4 If the reported total harvest for any tier 1 or 2 species exceeds any regional TACC by more than 5%, then the TACC for the following year will be reduced by two times the amount that the TACC was exceeded.

Management of secondary and by-product species

4.0 Decision rules for tier 3 species and tier 1 and 2 species in management regions that are not managed under a TACC

The secondary and by-product species in this fishery are classified as tier 3 species and do not have TAC limits. Some tier 1 and 2 species (mullet, whiting, flathead and yellowfin bream) do not have TACCs in all regions as they represent a different species, stock or have negligible catches. The harvest control rules below monitor effort shift to ensure there is no unacceptable levels of fishing pressure for tier 3 species or regions where tier 1 and 2 species are managed under a TACC.

4.1 If the annual harvest of any species is less than 1.5 times the average historical reference period (2013–2017) or the annual catch of any species is less than 20 tonnes, then no management action is required.

4.2 If the annual harvest of any species is greater than 1.5 times the average historical catch (reference period 2013–2017) and the annual catch of any species is more than 20 tonnes, an assessment (e.g. ecological risk assessment [ERA] or stock assessment) will be undertaken to determine whether there is unacceptable risk to the stock if ongoing catch levels continue.

4.3 If the annual harvest of any species exceeds greater than two times the average historical catch (reference period 2013–2017) and the annual catch of any species is more than 20 tonnes, then an assessment (e.g. ERA or stock assessment) will be undertaken and an interim competitive TACC for the species will be set at the average of the previous three years catch level.

5.0 Break-out rules for secondary and by-product species

5.1 If a biomass estimate is available through a stock assessment for secondary or by-product species that indicates a reduction in fishing mortality is required to achieve B*targ* or avoid B*lim* , then management action must be taken (e.g. catch limits, trip limits, size limits or spatial/temporal closures) to pursue the fishery objectives.

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 (ERAs) identify and measure the ecological risks of fishing activity and identify issues that must be further managed under harvest strategies. The decision rules below are in place to minimise and mitigate high ecological risks from fishing-.

6.1 If an ERA identifies fishing impacts that result in an unacceptable level of risk to any ecological component, a review is triggered to investigate the reason for the increased risk and appropriate management action taken to reduce the risk to an acceptable level.

Level 2 ERAs were completed for the ECIF in July 2021, highlighting a number of high risk protected species associated with interaction with netting apparatus used in this fishery. A *Protected species management strategy for the east coast inshore fishery* has been developed to manage these risks. The strategy includes rules for adjusting management to reduce the ecological risk from fishing, as well as mitigation measures to prevent or reduce interactions with protected species.

Fisheries Queensland developed the *Ecological risk assessment guideline* to assess ecosystem impacts of fishing activities. Future risk assessments will be undertaken in line with the guideline to assess 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 B*mey* (around 60% of unfished spawning biomass) to support the most economically efficient use of the resource, improve the fishing experience for all sectors and promote resilience to adverse environmental conditions (e.g. floods, cyclones and bleaching). The harvest strategy rules have been set up to maintain the key stocks to this target biomass level.

The objectives and performance indicators in Table 5 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 5: Social and economic indicators for the ECIF

Objective	Performance indicators	Management actions
Maximise economic performance of the commercial sector	Potential indicators to monitor include: • 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	Consider regulatory and non-regulatory options Adjust management as needed Options may include minimum quota holding, latent effort review etc.
Enhance the broader social and economic benefits of the fishery to the community	Potential indicators to monitor include: • 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) • income generated (crew plus profit – gross value added) • proportion of catch sold locally • fish prices • number of platforms / number of active licences / total capacity	Consider regulatory and non-regulatory options Adjust management as needed
Wildlife Trade Operation (WTO) accreditation under the *Environment Protection and Biodiversity Act 1999*	Number of conditions and recommendations met as required through the WTO accreditation process	Amend fisheries legislation and regulation as required to align with best practice to get and maintain accreditation

Data collection, validation and assessment

Fishery-dependent information

Commercial catch and effort data are obtained from compulsory logbook returns and real-time landing reports. Catch and effort data is used to determine the standardised commercial catch rate for key species. Commercial catch rates are standardised according to gear, season and location along with a range of other potential influencing variables. ECIF logbooks can be found at business.qld.gov.au. Charter operators also record catch information in compulsary logbooks, which is included as recreational harvest.

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

Monitoring of non-retained catch will be progressed through a combination of self-reporting and independent monitoring.

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.

Surveys of recreational fishers at boat ramps and the statewide recreational fishing and keen angler logbook program data help provide important information on recreational harvest.

Fisheries Queensland conducts biological monitoring on a range of important species. Sampling focuses on collecting length, sex and age data. Collecting this information from commercial catches, as well as similar information from the recreational sector, helps Fisheries Queensland develop a clear picture of the whole fishery for each species.

Scientific assessment of stock

Fisheries Queensland conducts regular stock assessments on key species. Species with stock assessments relevant to the ECIF are:

- barramundi
- grey mackerel
- sea mullet
- king threadfin
- bream, whiting and flathead
- school mackerel
- spotted mackerel
- tailor.

For current, updated and new stock assessments visit era.daf.qld.gov.au and search by species name.

Information and research priorities

Key information and research priorities have been identified in Table 6 to help meet the objectives of this harvest strategy. These will be updated as required.

Table 6: Information and research priorities for the ECIF

Project description	Explanation of need	Priority
Black jewfish	Stock assessment, biological information, post-capture survivability, stock structure and monitoring	High
Threatened, endangered, and protected species interactions	Better understand fishery interactions with threatened, endangered, and protected species mitigation methods – including spatial information to inform strategies to reduce the risk of interactions	High
King threadfin	Stock assessment, post-capture survivability and stock structure	High
Determine multi-species MEY	Important for setting appropriate biomass target reference points to pursue triple bottom line objectives	High
School mackerel	Updated biological monitoring	Medium
Grey mackerel	Updated biological monitoring	Medium
Shark depredation	Better understand the scale and impact of shark depredation on target fish stocks	High
Scalloped hammerhead	Stock assessment, stock structure and monitoring	High

Schedule of performance monitoring, assessment and review

Annual performance monitoring and assessment

The performance of the ECIF will be reviewed against this harvest strategy annually. This review will include convening the east coast inshore working group to provide operational advice on the fishery's performance.

The primary performance measure is spawning biomass, which will be used to review species TACs approximately every three years. In the intervening years, a review of standardised catch rate information will also inform fishery performance and if management action is required between scheduled stock assessments.

Table 7 outlines planned assessments and management review timeframes for tier 1 and 2 species (i.e. TAC setting), while monitoring of relevant fisheries and biological data will be undertaken annually for all species. Table 7 summarises the key review and decision points for this fishery.

While harvest strategies provide certainty and transparency in terms of management decisions in response to fishery information, there must be flexibility to allow new information or changing circumstances to be considered.

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 and additional management action may be taken.
- If the chief executive is satisfied that (1) indicators for the stock suggest 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), 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 stock assessment will be delayed.

Table 7: Schedule of performance monitoring, assessment and review (current as at July 2021)

	Year 1 (2021)	**Year 2 (2022)**	**Year 3 (2023)**	**Year 4 (2024)**	**Year 5 (2025)**
Assessment and monitoring activity	Review of relevant fisheries and biological monitoring data and scheduled stock assessments for: • sea mullet • spotted mackerel • king threadfin	Review of relevant fisheries and biological monitoring data and scheduled stock assessments for: • dusky flathead • sand whiting • grey mackerel • shark species • black jewfish	Review of relevant fisheries and biological monitoring data and scheduled stock assessments for: • barramundi • yellowfin bream • tailor • school mackerel	Review of relevant fisheries and biological monitoring data and scheduled stock assessments for: • sea mullet spotted mackerel • king threadfin	Review of relevant fisheries and biological monitoring data and scheduled stock assessments for: • dusky flathead • sand whiting • grey mackerel • shark species • black jewfish
Management activity	Review of TAC decision scheduled for assessment species Monitoring catch levels	Review of TAC decision scheduled for assessment species Monitoring catch levels	Review of TAC decision scheduled for assessment species Monitoring catch levels	Review of TAC decision scheduled for assessment species Monitoring catch levels	Review of harvest strategy, assessment and TACC decision Monitoring catch levels

Harvest strategy review

This harvest strategy will remain in place for a period of five years, after which time it will be fully reviewed in accordance with the *Fisheries Act 1994*. The harvest strategy may also be subject to further review and amendment as appropriate within the five-year period if any 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 strategy is not working effectively and the intent of the 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 (B*mey*)	The average biomass which corresponds to maximum economic yield
Biomass limit reference point (B*lim*)	The point beyond which the risk to the stock is regarded as unacceptably high
Biomass target (B*targ*)	The desired biomass of the stock
Bycatch	A species that is incidentally either: • 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 Bycatch can include protected species
By-product	Any part of the catch that is kept or sold, but is not the target species By-product makes some contribution to the value of the catch in a fishery but less than that of key commercial species
ECIF	East coast inshore fishery
Ecological risk assessment (ERA)	An assessment process that evaluates the relative risk posed by fishing on species, habitats and communities within a fishery
F	Fishing mortality
F*targ*	Fishing mortality target
Individual transferable quota (ITQ)	Amount of catch or effort allocated to an individual fisher or company
Maximum economic yield (MEY)	Sustainable level of harvest that allows net economic returns (profit) to be maximised
Maximum sustainable yield (MSY)	The maximum average sustainable annual fishing mortality that can occur on a stock over an indefinite period under prevailing environmental conditions
SAFS	Status of Australian Fish Stocks
Total allowable catch (TAC)	The harvest limit set as an output control on fishing for all fishing sectors
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

Appendix A: Decision rules for target species