Saucer Scallop Rebuilding Strategy 2025 –2030

For the East Coast Otter Trawl Fishery (Central, Southern Inshore, and Southern Offshore A & B Regions)

Purpose

This rebuilding strategy outlines the Queensland Department of Primary Industries' continued commitment to a science-driven approach to restore and maintain the saucer scallop southern stock to sustainable levels while allowing commercial fishing when appropriate. Aligning with the *Queensland Harvest Strategy Policy* and acknowledging the current uncertainty surrounding all saucer scallop stocks in Queensland, this strategy prioritises ecological sustainability of the resource whilst maintaining economic benefits for regional communities to promote the long-term viability of Queensland's East Coast Otter Trawl Fishery (ECOTF).

Background

The Queensland Ballot's Saucer Scallop (*Ylistrum balloti, formerly Amusium balloti*) is a marine bivalve mollusc, mainly found between latitudes of 22° South and 27° South. Historically, saucer scallop was a significant component of the East Coast Otter Trawl Fishery, Queensland's most valuable fishery, where scallop harvest peaked at over 1800 tonnes (meat-weight) in 1993.

This species of scallop is a largely sedentary broadcast spawner that forms spatially distinct population aggregations where the habitat is suitable. In general, these aggregations are reproductively connected, however there is some evidence to suggest that saucer scallops on the fishing ground east of K'gari, Fraser Island (southern offshore trawl regions), are less connected to those on the fishing grounds between Yeppoon and Hervey Bay. In addition, saucer scallops north of Yeppoon are a recently recognised separate genetic stock from that south of Yeppoon.

There have previously been five saucer scallop stock assessments conducted in Queensland, all focusing on the southern trawl regions. The latest stock assessment, published in 2023 indicated that the biomass in 2022 was estimated to be 15% unfished biomass (95% confidence interval 10–25%). This assessment was built on previous assessments that estimated the unfished biomass at 5–10% in 2016, 22% in 2018 and 15% in 2022 respectively.

As a result of the continued trend in the stock assessment findings, the saucer scallop fishery in southern inshore and central trawl regions were closed in September 2021 to promote immediate recovery of the stock to above the limit reference point of 20%.

Objectives

To enable the rebuild of the southern saucer scallop stock, the short-term objectives to guide the management of saucer scallops within the ECOTF are to:

1. protect the biomass of saucer scallops by ensuring spawning biomass is maintained above the limit reference point of 20% and increases towards the interim target reference point of 40% within 5 years.
2. enable some harvest of saucer scallops in all regions (where appropriate) to support industry, using the best available science.
3. implement flexible, science-based management measures informed by ongoing monitoring and research.
4. ensure the fishery meets national and international standards to maintain export approvals and sustainable management within the Great Barrier Reef Marine Park.

Key Rebuilding Actions

Prior to these rebuilding actions within the strategy being implemented, the Department will use the latest fishery-independent survey information on saucer scallops to determine the status of the southern saucer scallop stock and whether the fishery can be sustainably opened or should remain closed to rebuild. For detail on how this information will be used, refer to the Monitoring and Evaluation section for more detail.

The key actions the Department will perform to support the management (and rebuild when appropriate) of all saucer scallop stocks are through:

1. Total Allowable Commercial Catch (TACC) controls

- establishing regional reportable TACC limits based on the best available survey density and any supporting scientific information.
- implementing a regional competitive TACC system to enable equitable access to the resource, with the ability to control excess fishing harvest by making the species no-take when reached.

2. Temporal fishing closures

- prioritising the protection of critical spawning and larval-settlement periods by restricting the take of scallop to short, scientifically informed seasons.

3. Fishing effort limitation

- limiting fishing to one region per trip when taking saucer scallop to support the TACC system and reduce some pulse-fishing risk caused by concentrated fishing pressure.
- enabling the take of saucer scallop in all regions simultaneously (when southern inshore trawl region allows it), to minimise pulse-fishing risk on viable scallop beds.
- further restricting the take of saucer scallop in central and southern inshore trawl regions using an in-possession (trip) limit until long-term sustainability of the stocks are sufficiently evidenced.

4. Enhanced monitoring and information sharing

- conducting of annual fishery-independent (scallop) surveys by industry with co-investment from government.

- informing industry of juvenile (0+) scallop hotspot locations to reduce the risk of impacting future stocks.
- encouraging the use of electronic reporting tools (e.g. Qld eFisher app) to improve data accuracy of harvest and discards while at-sea.
- enabling the electronic or Automatic Integrated Voice Recognition (AIVR) system quota reporting of saucer scallop from all regions when product is landed, to inform TACC usage.

5. Compliance

- Updating regional TACCs hourly through departmental (FishNet) website and the Qld eFisher app, with further direct notifications to all T1 (and T2 in southern offshore) operators when the TACC is at 75% and 100% utilisation.
- ensuring compliance with fisheries legislation through targeted at-sea and shore based patrols by the Queensland Boating and Fisheries Patrol (QBFP) to be conducted throughout the trawl fishery season.

Implementation framework

Phase 1: Immediate actions (2025 – 2027)

- maintain the closure of the southern inshore trawl region until the weight-of-evidence demonstrates appropriate recovery of the southern stock indicative of being above limit reference point. The weight-of-evidence indicates that southern inshore region cannot open to fishing in 2026 and requires rebuild.
- maintain the six scallop replenishment areas in southern inshore trawl region to support focused refugia for saucer scallop aggregating beds.
- implement updated management arrangements from 1 March 2026 for all regions, noting a competitive TACC only for southern offshore region.
- restrict fishing in central and southern inshore trawl regions (when possible) to a small, sustainable harvest contingent with equitable access for the fleet from 1 March 2026 (through adaptive TACC and trip limits).
- review harvest strategies by November 2026 and if appropriate, adjust TACCs or closures as needed to ensure progress toward the relevant target reference points.

Phase 2: Reassessment and adjustments (2028 onwards)

- conduct an assessment using any new available scientific information and survey data on the recovering southern stock and northern stock.
- pending assessment outcomes, review the effectiveness of TACCs, spatial and temporal closures, and other measures where appropriate.

Phase 3: Long-term sustainability (2028–2030)

- maintain adaptive management measures until the stock consistently exceeds limit reference point.
- develop long-term strategies for stock maintenance and economic optimisation.

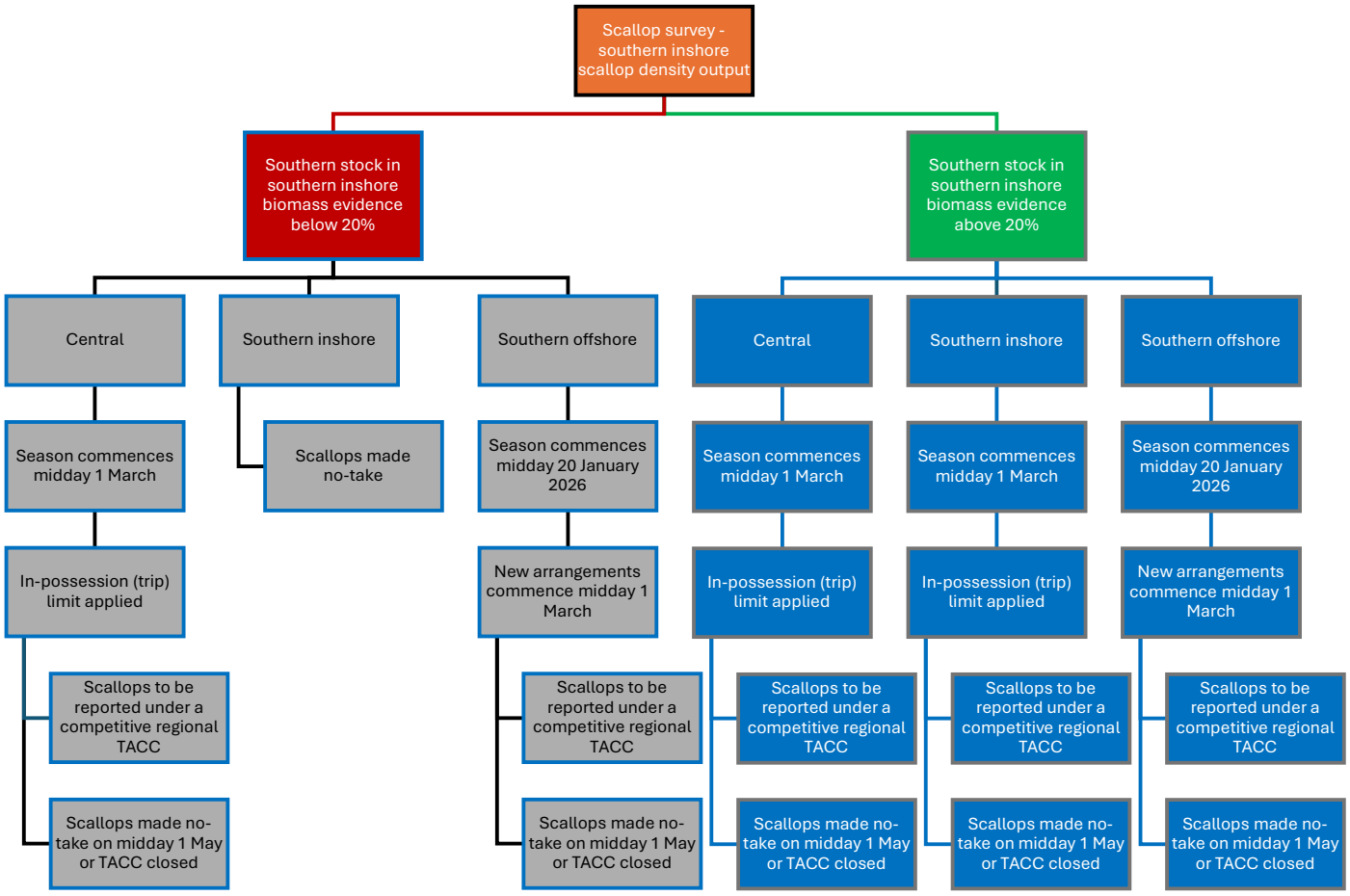

Figure 1: Decision tree to support Phase 1 of rebuilding strategy implementation and the continued use of the southern inshore scallop survey density output.

Monitoring and Review

The Department is committed to supporting the annual monitoring and setting of sustainable saucer scallop harvest limits by trawl region. In addition, after more information has been collected on the northern and southern stock, the Department will support an assessment or evaluation of the management framework to ensure the management strategy to enable the rebuild is the most effective.

Monitoring and evaluating the southern stock

With the main harvesting regions of the fishery remaining closed since September 2021 and an absence of fishery independent otter trawl survey data for 2023 and 2024, the Department recognises an opportunity exists to trial a new form of stock monitoring and harvest setting arrangement, consistent with other jurisdictions.

As a priority, the fishery will be assessed annually to determine if the southern stock in the southern inshore trawl region has shown adequate rebuild above the limit reference point (20%) to open this region of the fishery. One of the key pieces of evidence needed is to determine if the stock has rebuilt to a suitable level to open the fishery will be by modelling the survey densities against a limit biomass reference point density derived from the stock assessment model from O'Neill *et al*., 2020.

To achieve this, the southern inshore trawl region will be analysed using calibrated numbers of scallop from all survey and targeted sites. Statistical methods will be maintained from previous work (French et al 2021) and a generalised linear model will be used to generate the final indices from the survey. The modelled survey density indices may differ slightly from the survey density as additional explanatory factors are applied; moon phase, time of night, year by strata interaction and swept area.

Two key realignments of the reference points will also be completed (catchability rescaling removed and differences in survey data standardisations) to ensure comparability to the modelled survey densities. Standard error estimates of the 2025 survey mean and the stock assessment modelled reference points will be used to predict the value where the modelled survey mean density would give a 90% certainty that it was above the limit reference point.

Determination of the limit biomass B_{20} and interim target B_{40} reference points for densities of 1 plus aged saucer scallops will be calculated for the southern inshore region using the stock assessment model from O'Neill *et al*., 2020. Until a new formal assessment is conducted, this approach will be followed and results published through an annual fishery independent survey report of the saucer scallop stock.

Adaptive management framework

In complementing the annual monitoring of the southern stock and building information for a future assessment of the northern stock, the Department will be implementing an adaptive management framework. This framework will respond to the observed surveyed densities of each trawl region to guide potential fishery yields and ensure a successful rebuild over the lifetime of this strategy.

To determine potential fishery yields and inform harvest limits, the application of a 'survey biomass method' calculation considered the following:

- commercial legal sized density (≥ 9 cm shell height, numbers per hectare) using known growth and natural mortality rates
- fishing area (hectares) of reported scallop areas
- size of scallop when fishing opens to determine shell weight (t)
- target harvest rate (fraction of scallop to exploit) fixed at 0.21 for Central and Southern inshore
- uncertainty adjustment informed by the *Queensland Harvest Strategy Policy*.

The target harvest rate (percentage of scallops that can be harvested) will be applied at 0.21 for central region and southern inshore (when possible). This rate represents a sustainable yield take for the southern inshore when the biomass is considered above the limit reference point. This reference point would have produced a recommended biological catch that would not have exceeded fishing mortality at maximum sustainable yield, aligning with the best available information (O'Neill *et al*., 2020).

The proposed target harvest rate for the southern offshore region will be set at 1.0 and acknowledges the reduced connectivity to the southern inshore and central regions, as well as the stock-recruitment relationship which yields significant sporadic abundance of the stock.

An uncertainty adjustment will also be applied to the setting of the TACC limits in line with the *Queensland Harvest Strategy Policy* which provides guidance on best practice for dealing with scientific uncertainty in establishing recommended harvest levels with regards to informed risk.

These target harvest rates and scientific uncertainty adjustments will remain in place until new published information can inform an update.

Performance Indicators

Performance indicators will be used by the Department to assess the success of the rebuilding strategy on an annual, two- and three-yearly basis. Where a specific performance indicator has not been met, the Department will be recommended to follow a particular action identified in the following table:

Performance indicator	Recommended action for non-performance
Harvest Compliance	
1.1 no concerning trend of observed non-compliance of saucer scallop quota reporting for the fishery	licence condition to be written restricting the take of saucer scallop by operator
1.2 no concerning trend of observed non-compliance of saucer scallop in-possession (trip) limits for the fishery	for the applicable region, the in-possession limits will be reduced by 20% for the following year
Stock monitoring	
2.1 each year trawl industry undertakes fishery independent (scallop) surveys that is adequate to inform a seasonal and regional TACC setting arrangement	the regional prescribed TACC limit should be set to 0 kg
Stock Status	
<u>southern stock</u> 1.1 spawning biomass shows evidence of exceeding 20% (limit) and progressing toward 40% (target) by 2028	the TACC for southern inshore and southern offshore trawl regions should be set to 0 kg.
<u>northern stock</u> 1.2 spawning biomass shows evidence of exceeding 20% (limit) and progressing toward 60% (target) by 2028	the TACC for central trawl regions should be set to 0 kg.

Review and conclusion of the strategy

In addition to the performance indicators measuring the rebuild of the stock more regularly, an interim review of the rebuilding strategy will look to commence in 2028 to determine if the strategy objectives have been met and the strategy is effective. A formal review will commence in 2020 to assess whether the strategy can be concluded.

The review of the rebuilding strategy and adaptive management framework within will focus on ensuring alignment with the most updated published scientific knowledge, key fishery social and economic considerations and contemporary management objectives.

Any review of the management of the fishery will involve targeted consultation with the East Coast Otter Trawl Fishery working group and will include consideration of interests from the relevant state and federal agencies.

Prior to this planned review, the rebuilding strategy may also be subject to further review and amendment as appropriate within the five-year period if any of the following circumstances arise:

- there is new information that substantially changes the status of the fishery
- drivers external to management of the fishery increase the risk to fish stock/s
- it is clear the strategy is not working effectively, and the intent of the rebuilding strategy is not being met.