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State of the fisheries: Status reports of the fisheries and aquatic resources of Western Australia 2024/25

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Status reports of the fisheries and aquatic resources of Western Australia 2024-25

State of the fisheries



Status reports of the fisheries and aquatic resources of Western Australia 2024-25

State of the Fisheries

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CHIEF FISHERIES SCIENTIST STATEMENT

This edition of the State of the Fisheries continues the tradition of annually reporting on the status of exploited fish and their habitats in Western Australia. Critically, the reports provide overviews of the science outcomes that underpin management of fishing activities across the state.

Scientifically assessing the status of fish resources and potential impacts on ecosystems is inherently challenging; I acknowledge and thank the dedicated fisheries science teams and various support staff for again producing outstanding, robust scientific results that are summarised herein. I similarly acknowledge (i) the fisheries management team who use the science outcomes in policy development and to adjust regulatory settings; and (ii) the compliance team for ensuring regulations are enforced.

While fisheries science is a highly applied branch of science directed towards policy and regulation, maintaining close links to the academic world is paramount for ensuring our science is contemporary with best practice global standards, and as such, to develop and maintain preeminent approaches to the monitoring and assessment of fish stocks and the science to inform management. In this regard, the Department of Primary Industries and Regional Development's (DPIRD) fisheries science team strives to maintain collaborative networks with other national and international specialists around the world.

Additionally, science staff pursue the publication of their scientific work in independent, peer-reviewed science journals to ensure additional rigour around the work undertaken.

Addressing emerging challenges—such as climate change (including discussions around both adaption and mitigation), strengthening our engagement with Aboriginal communities, supporting initiatives like Fish Aggregating Devices and artificial reefs, and contributing to ecosystem-based management – requires a deliberate shift in focus. It's essential to strike a balance between maintaining current business-as-usual approaches and actively exploring innovative ways of working in a cohesive manner. For instance, positioning the science team to effectively and proactively adopt new technologies, particularly machine learning and other artificial intelligence approaches demands more than passive interest – it requires sustained, strategic effort. These evolving challenges and opportunities won't be met without dedicated attention and purposeful action.

Strategically, working towards future directions must occur at the same time as the core science tasks that deliver world-class science outcomes for management. In turn, this dictates that fisheries science in Western Australia needs to continually evolve to meet contemporary community expectations, and to ensure that world-class management is based on world-class assessments of our state's aquatic resources.

Dr Stephen Newman
A/Chief Fisheries Scientist

November 2025

EDITOR'S OVERVIEW

The *Status Reports of the Fisheries and Aquatic Resources of Western Australia* (*SRFAR*) provides an annual update on the state of the fish stocks and other aquatic resources of Western Australia (WA). These reports outline the most recent assessments of the cumulative risk status for each of the aquatic resources (assets) within WA's six bioregions using an Ecosystem Based Fisheries Management (EBFM) approach. The Department of Primary Industries and Regional Dveelopment's (DPIRD) risk based EBFM framework is the WA Government's basis for management of all of WA's aquatic resources.

Assets examined in each bioregion include the meso-scale ecosystems and aquatic resources, along with the associated fisheries. A summary at the start of each chapter displays the stock and fishery performance levels, along with the current performance and risk levels for each of the other EBFM outcomes (bycatch, listed species interactions, habitat, ecosystem, social, economics, and governance). Summary resource level statistics are also provided after the fishery performance levels. Major external drivers, such as climate change and coastal development are examined to determine their impact on WA's aquatic resources.

The 2024-25 financial year saw a continuation of the outstanding results achieved in fisheries management to ensure the continued sustainability of WA's aquatic resources. These results outline how WA's fishing sectors and aquaculture industries make a unique contribution to the primary industries of WA.

This year, 89% of our fish stocks were assessed as not being at risk or vulnerable through exploitation (fishing); this includes those classified as **sustainable – adequate**. This indicates that there are challenges for some fisheries.

Two resources were classified as **sustainable – recovering**, indicating that management actions taken to date have resulted in these resources recovering at acceptable rates. These include the dusky and sandbar shark stocks that support the Temperate Demersal Gillnet and Demersal Longline Fishery, and the Gascoyne Demersal Scalefish Managed Fishery.

Sandy sprat (whitebait), Perth herring, and Southern garfish (Perth metropolitan zone) from the West Coast Nearshore and Estuarine Scalefish Resource are **environmentally limited** with highly restricted management arrangements.

Greenlip Abalone of the Abalone Managed Fishery and fish resources supporting the West Coast Demersal Scalefish Managed Fishery, the South Coast Demersal Scalefish, the Northern Demersal Fishery and the Pilbara Demersal Scalefish Fisheries are considered **inadequate** as a result of exploitation, with management actions either implemented or being progressed to assist stock recovery.

A number of fisheries have undertaken independent third-party certification to demonstrate sustainable fishing and management. These include the Marine Stewardship Council (MSC) certified fisheries of Western Rock Lobster, West Coast Deep Sea Crab, West and South Coast Abalone (Roe's abalone), Shark Bay Prawn, Exmouth Gulf Prawn, Pearl Oyster (silverlip pearl oyster), Octopus, Abrolhos Islands Scallop, enhanced Greenlip Abalone, and Sea Cucumber (Pilbara deep-water redfish and Kimberley sandfish). These fisheries all contribute significant economic and social value to WA.

Many staff at DPIRD have contributed to the production of this report, along with stakeholders who contribute to managing WA's aquatic resources. The ongoing involvement of our Aboriginal, commercial, recreational, and aquaculture stakeholders in specific research projects and monitoring programs remains critical. Logbook data, voluntary participation in recreational fishing surveys, the provision of biological samples, access to vessels and sharing of information are integral to aquatic resource management in WA. The input from other science groups located within WA, plus those from other parts of Australia and internationally is also acknowledged.

This volume provides the public, fishers, and other stakeholders with a starting reference source for information regarding the aquatic resources of WA. It meets the reporting requirements of DPIRD, including the need to report on Key Performance Indicators (KPIs) to Parliament in 2025 (see Overview).

The status of key species can also be found in the Status of Australian Fish Stocks (SAFS) reports at http://fish.gov.au.

This year's *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2024/25* is directly accessible on DPIRD's website (https://library.dpird.wa.gov.au/an_sofar/), where users are encouraged to download relevant sections for personal use. If quoting from the document, please give appropriate acknowledgment using the citation format provided at the front of the report.

HOW TO USE THIS VOLUME

To obtain full benefit from the information provided in this edition of the *Status Reports of the Fisheries and Aquatic Resources of Western Australia*, the various terms and headings used in the text, the fishery status overview table (which also appears in DPIRD's *Annual Report* 2024-25 to Parliament) and the ecological resource level reports are described below.

The terms and headings are a combination of the reporting structures first outlined in the National Ecologically Sustainable Development (ESD) reporting structure (Fletcher et al. 2002), the Ecosystem Based Fisheries Management (EBFM) framework (Fletcher et al. 2010; 2012) and the Resource Assessment Framework (DoF, 2011). The terminology used in the reports has now been updated to be consistent with the MSC criteria, and where possible, that used within the national *Status of Key Australian Fish Stocks reports* (Roelofs et al. 2024).

In addition to the explanations provided below, acronyms are expanded at their first occurrence in each section of the text.

ECOSYSTEM BASED FISHERIES MANAGEMENT

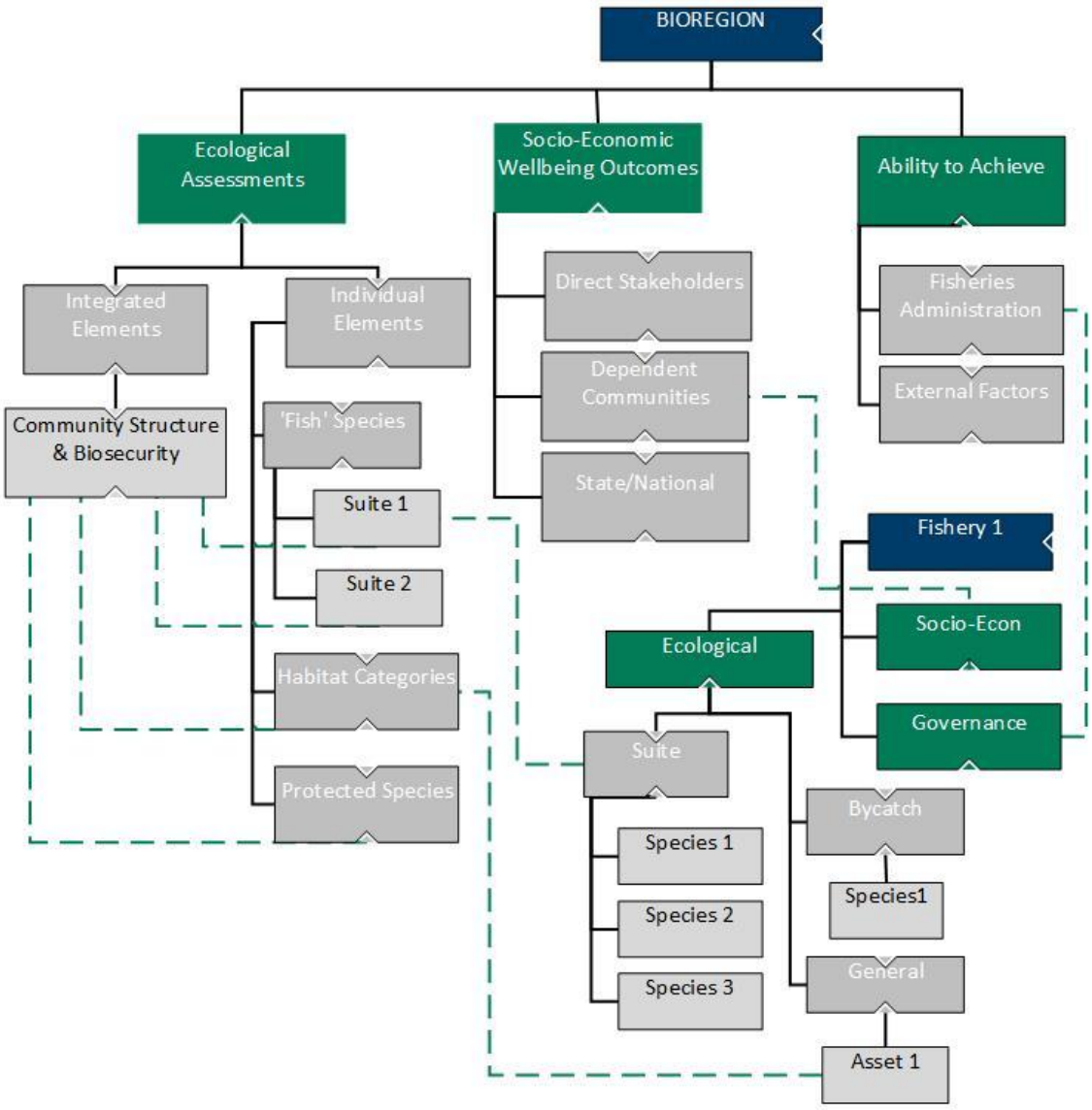
As outlined above DPIRD has fully adopted EBFM, which is a risk-based management approach. EBFM recognises the social, economic and ecological values at a regional level and the links among individual exploited fish stocks, effects on habitats and protected species (which collectively form the broader marine ecosystem), to ensure the sustainable management of all fisheries resources into the future. EBFM provides a mechanism for assessing and reporting on the regional level risk status of all WA's aquatic resources and therefore the effectiveness of the aquatic resource management arrangements in delivering community outcomes.

Given the potential complexity of the EBFM approach, we use a practical, stepwise, risk-based approach to integrate all the fishery level assessments and management systems into a form that can be used for aquatic resource management planning by DPIRD (Introduction Figure 1).

Each set of bioregional level risks is made up of individual ecological risks at a species or stock level, and social and economic risks at a fishery level. The consolidation process into broader asset categories utilises the branch structure of the EBFM component trees. Each of these represents groups of 'like risks' that can be managed collectively. For example, the status of an entire suite (e.g. demersal finfish) is evaluated based on the risk status of several indicator species, which have been chosen to be representative of the more vulnerable species within the suite (Newman et al. 2018).

A similar process is applied to consolidate the items across the other EBFM components. Furthermore, the assessment of ecosystem status recognises that community structure and biodiversity within an ecosystem can be effectively assessed as the 'integrated' sum of the status of the 'individual' ecological elements.

Finally, as we manage the set of ecological assets to generate economic and social benefits for the community, each of the ecological assets is used as the unit to integrate its associated ecological, social, and economic values and risks using a simple multi-criteria function. The shifts in these priority scores among years for each of the 80 regional level ecological assets is integral for the annual planning cycle used for assigning priorities for all aquatic resource management related activities across DPIRD (see Fletcher et al. 2010; 2012 for full details).



INTRODUCTION FIGURE 1.
The high level EBFM component tree framework showing how each of the fishery level issues are mapped into cumulative, regional-level individual assets and outcomes. Furthermore, the component tree shows how ecosystem elements are composed of the integrated set of individual elements.

BIOREGIONS

WA has an extensive coastline that extends approximately 12,890 km (~20,780 km including islands) from the Northern Territory border through to the South Australian border. In addition, the WA coastline encompasses a very broad latitudinal range from approximately 10˚S to 40°S. The extensive coastline length and broad latitudinal range in WA means that the state has highly diverse fish and invertebrate fauna, including tropical and temperate species. Hutchins (2001) estimated that there were at least 3,000 species of fishes in WA waters.

The extensive range of species occurring in WA interact with an assortment of fisheries and fishing methods. Intrinsically, the monitoring and assessment of fisheries and target species (indicator species where applicable) within WA is an ongoing challenge. To address this challenge, DPIRD has divided the coastline into four marine bioregions (Introduction Figure 2). Bioregions are based on broad ecological areas to facilitate monitoring, assessment, and management. These bioregions are:

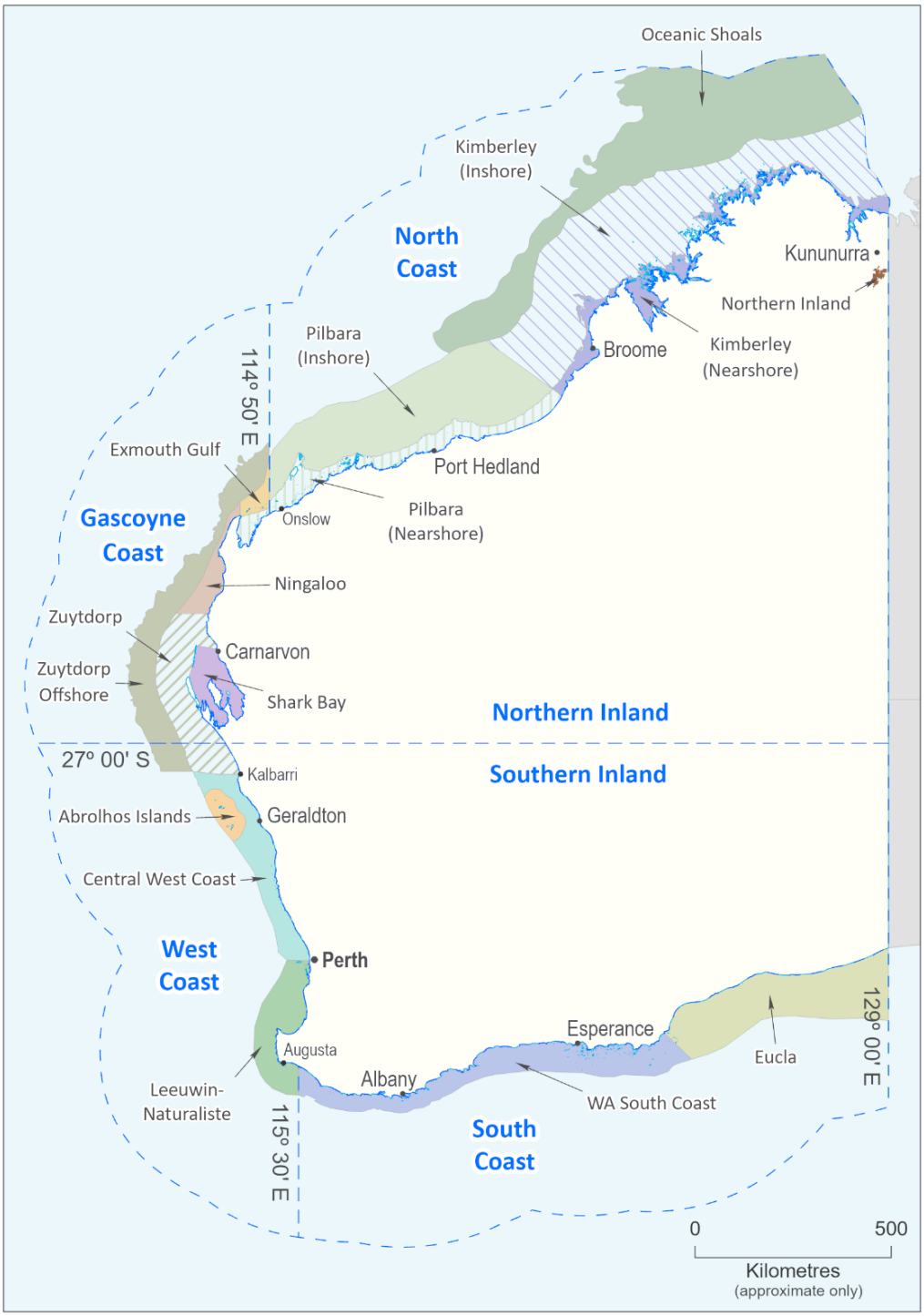
- The North Coast bioregion (extending from the Northern Territory border south and west to a point just west of Onslow), which includes both the Pilbara and Kimberley regions.
- The Gascoyne Coast bioregion (from essentially Onslow south to south of Shark Bay).
- The West Coast bioregion (from south of Shark Bay to east of Augusta).
- The South Coast bioregion, (from east of Augusta to the South Australian border).

In addition to the marine bioregions, there are also two inland bioregions: the Northern Inland bioregion and the Southern Inland bioregion. A single commercial fishery operates within the

Northern Inland bioregion. In contrast, there are no commercial wild harvest fisheries in the Southern Inland bioregion.

Each individual bioregion has an introductory 'About the bioregion' section outlining the main features of its aquatic environment plus the major commercial and recreational fisheries and aquaculture industries that operate in the area.

Important cultural values and resources, whether exploited or not, will also be highlighted. This section also outlines the current cumulative risk status of each of the high-level, ecological resources/assets located within each bioregion (see Introduction Figure 2).



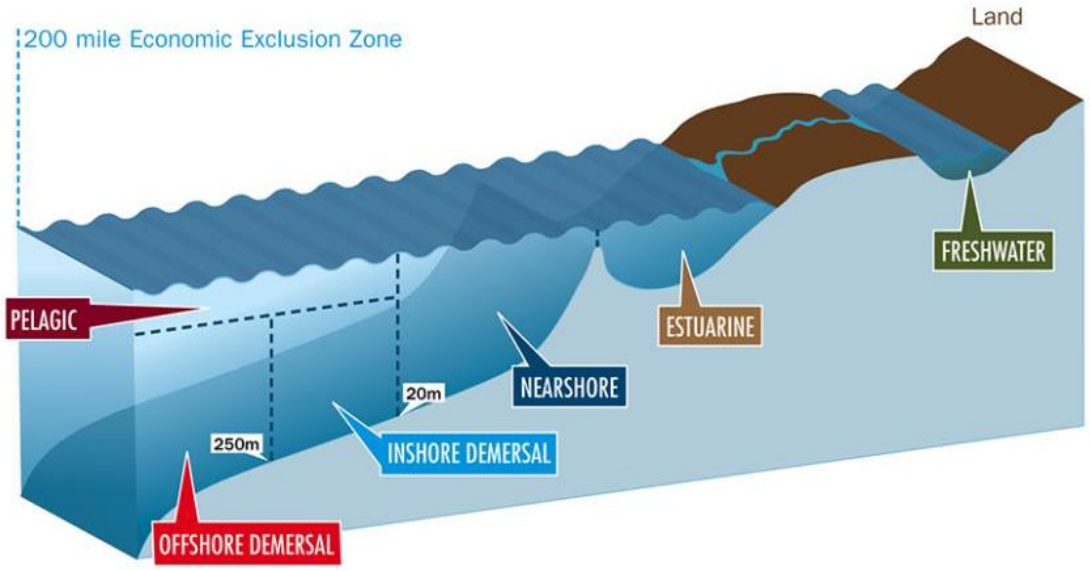
INTRODUCTION FIGURE 2.
Boundaries of the four marine bioregions, the two inland bioregions, and the Integrated Marine and Coastal Regionalisation of Australia (IMCRA) ecosystems in Western Australia. The bioregions are based on broad ecological areas to facilitate monitoring, assessment, and management.

SUITES

The total number of fish species within each bioregion is in the order of hundreds of species. To enhance and refine approaches to the monitoring and assessment of fishery resources, each bioregion has been further divided into five ecological suites based on broad habitat and depth criteria (Introduction Figure 3). These suites are defined as follows:

- Estuarine suite, defined as estuarine waters up to the mouth of a river.
- Nearshore suite, defined as nearshore waters extending from the beach to a depth of 20 metres.
- Inshore Demersal suite, defined as inshore waters between depths of 20 metres and 250 metres.
- Offshore Demersal suite, defined as offshore waters from the 250-metre isobath to the edge of the Exclusive Economic Zone (200 nautical miles).
- Pelagic suite, defined as pelagic waters or open ocean waters, which includes the pelagic fishes that occupy primarily the open waters 'above' the Inshore Demersal and Offshore Demersal suites.

These suites are applicable to both finfish species and other asset categories such as invertebrate resources and habitats. These ecological suites are broadly consistent within areas where major fisheries operate within a bioregion. As such, the sub-division of a bioregion into these suites categorises fish species into ecological groups that are vulnerable to similar fisheries. For example, in each of the four marine bioregions there are multiple gears (sometimes resulting in separate fisheries) that target and capture inshore demersal scalefish (i.e. in depths of 20–250 m). Similarly, multiple fisheries within the West Coast bioregion operate in depths of less than 20 m, targeting fish within the nearshore suite. Therefore, assigning each fish species within each bioregion to a single suite allows multiple species, and the fisheries that they support, to be assessed, monitored, and managed. However, during discussions around allocation either among fisheries and/or sectors, negotiations may take place with stakeholders about the assignment of specific species to a single suite. This is a result of the suites being broadly representative of habitats; however, catches of a single species may be reported from multiple habitats. Thus, the allocation of a species to a single suite within a bioregion is generally made based on the suite where most of the catches of a species are reported. While there are some exceptions, species assigned to a single suite within a bioregion are generally acceptable to all stakeholders.



INTRODUCTION FIGURE 3.
Schematic representation of each of the five suites used to characterise species within each of the marine Bioregions of Western Australia.

RISK ASSESSMENT

DPIRD's objective is to manage the sustainability of the community's aquatic ecological resources and assets to generate economic and/or social outcomes. Risks associated with each individual ecological asset and community outcomes were therefore examined separately using qualitative risk assessments (consequence x likelihood) (modified from Fletcher 2015). This enables the analysis of risk (using a five-year time horizon) for

objectives related to captured species, habitat and community structure/ecosystem sustainability, plus social and economic outcomes to be completed in a practical and consistent manner.

The internationally accepted definition of risk is "effect of uncertainty on objectives" (ISO, 2018). Uncertainties are therefore explicitly incorporated into assessments to enable each risk assessment to be completed with whatever data are available.

All risk scoring considers the current level of management activities and controls already in place or planned. The management and reporting implications for each of the different risk categories are defined (Introduction Table 1).

INTRODUCTION TABLE 1.
Links between the Risk Category and the likely reporting and management response.

Risk Category	Description	Likely Reporting and Monitoring Requirement	Likely Management Action
Negligible	Acceptable; not an issue	Brief notes – no monitoring	Nil
Low	Acceptable; no specific control measures needed	Full notes needed – periodic monitoring	None specific
Medium	Acceptable; with current risk control measures in place (no new management required)	Full performance report – regular monitoring	Specific management and/or monitoring required
High	Not desirable; continue strong management actions OR new / further risk control measures to be introduced in the near future	Full performance report – regular monitoring	Increased management activities needed
Severe	Unacceptable; major changes required to management in immediate future	Recovery strategy and detailed monitoring	Increased management activities needed urgently

SEASON REPORTED

Individual fishery production figures relate to the latest full year or season for which data were available. Therefore, statistics in this volume generally refer either to the 2023-24 financial year or the 2024 calendar year, whichever is more appropriate.

In contrast, sections on DPIRD activities in the areas of fishery management, new compliance activities and research summaries may include information up to June 2025.

ECOLOGICAL ASSETS

Captured Fish

Commercial Fishing

There is a legislative requirement for information to be submitted by various sectors of the fishing industry including commercial fishers, fish processors, charter operators and aquaculture producers.

Monthly returns or daily/trip returns are provided that include information on the composition, quantity and location of catch and fishing effort that was used. Monthly returns from fish processors request quantity and price paid for fish products.

Recreational Fishing

DPIRD implemented an integrated survey design to monitor recreational fisheries in a cost-effective way in 2011-12 (Ryan et al. 2013). These surveys provide estimates of catch and effort by boat-based recreational fishers at statewide and bioregional levels. These surveys utilise the Recreational Boat Fishing Licence as the sampling frame to contact fishers and multiple survey methods to validate estimates by enabling comparisons across the various methods.

The statewide survey of boat-based recreational fishing has been repeated biennially or triennially between 2011-12 and 2023-24. The most recent (sixth) survey was undertaken from 1 September 2023 to 31 August 2024 with post-enumeration surveys from September to December 2024. Estimates of catch and effort at statewide and bioregional levels from 2023-24 are presented in Ryan et al. (2025) and provide information for the recreational sector throughout this report.

Stock Assessment Methodologies

Each of the stock assessment reports now clearly identifies the types of data and assessment method(s) that have been used to determine the status of stocks. The specific methods used for monitoring and assessment vary among

resources and indicator species and are influenced by many factors including the level of ecological risk; the biology and the population dynamics of the relevant indicator species; the type, size, and value of the fishery exploiting the species; data availability and historical level of monitoring.

The analyses that can be applied for assessing stock status vary according to data availability and resourcing. At one end of the spectrum, are relatively simple simulation (i.e. Catch-MSY) models applied to catch data only, but requiring relatively strong assumptions regarding stock productivity and stock depletion levels. At the other end are highly complex age and/or size-structured integrated stock assessment models, which use all available catch, effort, biological, compositional data (and sometimes also tagging data). Regardless of assessment level, where possible, model-based assessment analyses are used to produce quantitative estimates of key performance indicators (fishing mortality and spawning biomass), compared against internationally accepted biological reference points (i.e. relating to $B_{MSY,}$ expected spawning biomass required to achieve long-term maximum sustainable yield, MSY). Stock assessments are categorised into five levels (Introduction Table 2).

INTRODUCTION TABLE 2.
Levels and descriptions of the categories of assessment methods.

Level	Description
Level 1	Catch data and biological/fishing vulnerability. Catch-MSY analysis (if sufficient data).
Level 2	Level 1 and nominal or standardised fishery-dependent effort. Simple biomass dynamics models, depletion analysis (if sufficient data), or performance-indicator reference levels based on historical catch and/or CPUE time series.
Level 3	Levels 1 and/or 2 plus fishery-dependent biological sampling of landed catch (e.g. average size; fishing mortality, etc. estimated from representative samples). Equilibrium assessment models (e.g. catch curve and per recruit analysis).
Level 4	Levels 1, 2 and (data-permitting) 3 plus reliable/informative abundance time series (e.g. spawning stock and/or recruitment indices from standardised fishery-dependent and/or fishery-independent data). Empirical analyses (e.g. stock-recruitment-environment relationships), dynamic stock assessment models (e.g. state-space production model, age-structured production model, statistical catch-at-age model without abundance information).
Level 5	Levels 1, 2, 3 and 4 plus dynamic, integrated stock assessment model (incorporating biological information, catch, abundance and compositional data, and potentially other information e.g. from tagging).

While there are five different categories of quantitative analysis methodologies, all stock assessments undertaken by DPIRD now take a Weight of Evidence (WoE) risk-based approach (Fletcher, 2015). This requires specifically considering each available line of evidence both individually and collectively to generate the most appropriate overall assessment conclusion. The lines of evidence include outputs that are generated from each available quantitative method, plus any qualitative lines of evidence such as biological and fishery information that describe the productivity and vulnerability of the species/stock, and information from fishers, stakeholders and other sources. The strength of the WoE risk-based approach is that it explicitly shows which lines of evidence are consistent or inconsistent with a specific consequence level and therefore, where there are uncertainties. This assists in determining the overall risk level and directs areas of further research.

Breeding Stock Status

The assessments of breeding stock for captured species are undertaken using a number of techniques (see above) to determine if the stock is considered to be at an adequate level or not. Stock status levels are defined as:

Sustainable-Adequate: reflects levels and structure of parental biomass for a stock where annual variability in recruitment of new individuals (recruits) to the stock is considered to be mostly a function of environmental effects on recruit survival, not the level of the egg production.

Sustainable-Recovering: reflects situations where the egg production has previously been depleted to unacceptable levels by fishing or some other event (e.g. marine heatwave) but is now considered to be recovering at an acceptable rate due to the implementation of effective management actions and/or natural processes.

Inadequate: The indicator(s) reflects that the stock status is (are) below the threshold or limit level(s) and management actions to support recovery have not yet been implemented; or the management actions are not yet confirmed as operating effectively to reasonably assume that they are generating a sufficient rate of recovery. This outcome includes situations where excessive fishing pressure (catch), or in combination with some external event, has led to the breeding stock biomass falling to levels where there is now a high risk of future recruitment levels being measurably reduced. This is equivalent to MSC's point of recruitment impairment.

Environmentally Limited: This indicates situations where the stock is at unacceptable levels due primarily to environmentally driven impacts (e.g. marine heat wave impacts), not from fishing activities.

By-Catch and Listed Species

These last two categories include those species caught during a fishing operation that are not retained. This covers the potential impact on unwanted 'bycatch' species and also any captures or interactions with listed species, which includes Endangered, Threatened and Protected (ETP) species. In each case, an explanation is provided of the situation and the level of risk to the stock from fishing operations. This section does not include release of target species for reasons such as under size or over bag limits. These issues are covered in individual assessments of retained species.

Habitat and Ecosystem Effects

These two categories refer to the potential impacts generated by the direct physical interactions of fishing gear with the sea floor and by the removal of animals from the ecosystem (food chain effects). Each fishery or resource is considered in terms of its potential/relative effects on habitat and the food chain with an outline of the assessment of current ecological risk (negligible, low, medium, high, or severe) provided.

DPIRD is conducting periodic ecological risk assessments across the various resources. These ecological risk assessments involve workshops with a broad range of stakeholders and provide risk scores based on available scientific monitoring, research information and expert knowledge on species, fishing activities, fishery regulations, and management.

Social Effects

DPIRD has categorised the different level of social amenity generated by each aquatic asset. Note that by definition, there is no asset that has no social amenity (Introduction Table 3).

INTRODUCTION TABLE 3.
Levels and descriptions of the categories of social amenity.

Social Amenity	Description
Level 1	No recreational fishing for the asset and no specific broader community interests.
Level 2	Some caught recreationally and/or some interest to specific sections of the community.
Level 3	Locally important to recreational sector and/or it has some importance to the broader community.
Level 4	Major catch by recreational sector in the region and/or generates major interest for some of the general community.
Level 5	Primary recreational target across the region and/or iconic for general community.

Economic Effects

DPIRD has categorised the different levels of Gross Value of Product (GVP) for commercial fisheries into six levels to measure their relative economic importance (Introduction Table 4). This provides a mechanism for reporting on all fisheries including those where the small number of operators would not allow specific values to be provided. It also covers situations where specific GVP values may not be available.

INTRODUCTION TABLE 4.
Levels of relative economic importance.

Economic Value	Description
Level 0	Nil
Level 1	< $1 million
Level 2	$1 – 5 million
Level 3	$5 -10 million
Level 4	$10 - 20 million
Level 5	> $20 million

Governance Systems

Harvest Strategy

A *Harvest Strategy Policy* (DoF, 2015) for the aquatic resources of WA provides the framework for developing harvest strategies for each resource. Each harvest strategy establishes clear and specifically articulated reference levels and associated management actions designed to achieve each of the agreed objectives, both for the resource and all relevant fishery sectors.

To ensure a holistic and integrated approach, the *Harvest Strategy Policy* for WA covers target species abundance, and incorporates social and economic considerations including sectoral allocations, plus the management of unacceptable risks to other ecological resources.

Annual Catch (or Effort) Tolerance Range

To minimise management interventions and provide greater certainty for when management adjustments may be required, a target catch, or effort range has been determined for each of the major commercial fisheries. This indicator provides an assessment of the success of DPIRD's management plans and regulatory activities in keeping fish catches at appropriate levels (including those in a recovery phase). This identifies whether the stock is being subjected to overfishing.

To calculate this range, as outlined in the *Harvest Strategy Policy*, a tolerance level establishes for each fishery what range of deviation in annual catch or effort is considered acceptable to meet stock-based objectives and/or to meet any sectoral allocations (e.g. as developed by Integrated Fisheries Management determinations). These annual tolerances take into account natural variations in recruitment to a fished stock. Examination of tolerances will determine when a review and/or intervention is required.

The catch or effort for each major fishery is assessed annually and if catch or effort remains inside an acceptable range it is defined as having acceptable performance. Where annual catch or effort for a fishery/sector falls outside a range and the rise or fall cannot be adequately explained (e.g. environmentally induced fluctuations in recruitment levels; low market demand or prices), a management review or additional research to assess the underlying cause may be required.

Annual catch tolerance range: For many commercial and recreational fisheries in WA, management plans seek to directly control the amount of fishing effort applied to stocks, with the level of catch taken providing an indication of the effectiveness of a plan. Where a plan is operating effectively, the catch by a fishery should fall within a projected catch tolerance range.

Annual effort tolerance range: For quota-managed fisheries, the measure of success for

management arrangements is firstly that the majority of the Total Allowable Catch (TAC) is achieved, but additionally, that it has been possible to take this catch using an acceptable amount of fishing effort.

If an unusually large (or smaller) expenditure of effort was expended to achieve a TAC, or an industry fails to achieve a TAC by a significant margin (i.e. outside of tolerance levels), this may indicate that the abundance of a stock is significantly lower (or higher) than was anticipated. For these reasons, appropriate tolerance ranges of fishing effort required to achieve a TAC have also been incorporated for assessing the performance of quota-managed fisheries.

External Audits

Many of WA's significant fisheries achieved environmental certification for more than a decade under the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Where relevant, this report includes specific performance measures needed to meet any EPBC Act requirements. Similarly, the majority of WA's most valuable fisheries have achieved MSC certification. This report provides a valuable input to the annual audit process for these fisheries.

External Factors

'External factors' refers to known factors outside of the direct control of fishery legislation that impact on aquatic resources or activities. An understanding of these factors, which are typically environmental (cyclones, ocean currents, climate change, changes in rainfall) but which may also include other factors (e.g. market factors, coastal development) is also necessary to interpret changes in catch and/or effort to fully assess the performance of a fishery.

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OVERVIEW OF THE STATUS OF KEY ECOLOGICAL RESOURCES (ASSETS) IN EACH BIOREGION

Captured Species (Fisheries and Stocks)

Annual Weight of Evidence stock assessments, including analyses of trends in catch and fishing activity, are used to determine the status of each of WA's aquatic resources and fisheries and are presented in detail in the rest of this document. This section provides an overview of the outcomes of DPIRD's management systems by collectively examining the status of all the commercial and recreational fisheries and harvested fish stocks in WA (Overview Table 1). The material presented in this section is based on the analyses and text presented in the Key Performance Indicators (KPI) section of the DPIRD's *Annual Report 2024-25*.

OVERVIEW TABLE 1 (overleaf).
Breeding stock status, catch and effort ranges for WA's major commercial and recreational fisheries. The information underpins the four KPIs measuring the effectiveness of DPIRD's management plans and regulatory activities in:

- ensuring the sustainability status of WA's aquatic resources;
- the success of keeping fish catches (or effort) at appropriate levels for:
    - commercial fisheries
    - recreational fisheries; and
- ensuring that sustainably managed commercial fisheries provide benefits to WA as a result of significant local sales and export earnings from fish and fish products.

The term 'sustainable' is given where the breeding stocks are considered adequate as well as breeding stocks that are recovering. Terms 'inadequate' or 'environmentally limited' include where additional actions need to be taken or confirmation is required to ensure the breeding stocks are either adequate or are now recovering. The term 'overfished' is only given where breeding stocks are inadequate due to exploitation (i.e. overfishing) that have been identified but for which definitive management actions are yet to be fully implemented.

An acceptable catch or effort range may be determined for each of the major commercial and recreational fisheries. Commercial ranges 'under revision' or 'under development' are not assessed. Recreational ranges 'not developed' or 'under revision' are not assessed however 'not formal' ranges are assessed.

Acronyms:

NA – Not applicable

Q – Quota management

TAC – Total Allowable Catch

TACC – Total Allowable Commercial Catch

TARC – Total Allowable Recreational Catch

MSC – Certified by Marine Stewardship Council

CI – Confidence Interval

SE – standard error.

Assessment level (and method):

Level 1 – Catch data and biological/fishing vulnerability

Level 2 – Level 1 plus fishery-dependent effort

Level 3 – Levels 1 and/or 2 plus fishery-dependent biological sampling of landed catch (e.g. average size, fishing mortality, etc. estimated from representative samples)

Level 4 – Levels 1, 2 or 3 plus fishery-independent surveys of relative abundance, exploitation rate, recruitment

Level 5 – Levels 1 to 3 and/or 4 plus outputs from integrated simulation, assessment model

Resource	Fishery	Assessment level	Breeding stock assessment	Catch (and effort) range	Catch, effort and catch rate for season reported[1,2]	Catch (or effort or catch rate) level acceptable and explanation if needed
West Coast bioregion						
Western Rock Lobster	West Coast Rock Lobster Managed Fishery (MSC)	Annual: Level 5	Sustainable: Adequate	Commercial: 7,411 t (TACC: 2023-24) Recreational: 527 t (TARC: 2023-24)	Commercial: 7,403 t. Recreational - licensed: 424–514 t (95% CI); Charter: 20 t	Acceptable. Commercial: Catch close to TACC. Recreational: Catch within acceptable range on a five-year rolling average.
Statewide Abalone	Abalone (Roe's) Managed Fishery (MSC)	Annual: Level 4	Sustainable: Adequate	Commercial: 70.7 t (Q) (530–640 days) Recreational: 22–26 t Perth Metro area	Commercial: 20.4 t (216 days) Recreational: 16 – 20 t Perth Metro area; 23.3 – 27.9 t Other	Acceptable. Commercial: Catch was below TACC due to commercial economic decisions (low value, overseas market issues and high fishing costs). Recreational: Perth Metro catch range below TARC range due to weather condition effect on fisher effort and catch rate.
Statewide Cephalopod	Octopus Interim Managed Fishery (MSC)	Annual: Level 2	Sustainable: Adequate	Commercial: 500–1,000 t Recreational: Not formal	Commercial: 716 t Recreational: 0–1 t (95% CI, boat only in 2023-24)	Acceptable. Commercial: Catch is within catch range and performance indicator is above target level. Recreational: Catch levels are considered a negligible risk to stocks.
South Coast and West Coast Scallop	Abrolhos Islands and Mid-West Trawl Managed Fishery South Coast Trawl Fishery South West Trawl Managed Fishery	Annual: Level 4 Annual Level 2 Annual Level 1	Sustainable: Adequate Sustainable: Adequate Sustainable: Adequate	Commercial: 95–1,830 t Recreational: NA Catch range to be developed. Catch range to be developed.	Commercial: 478.3 t Commercial: Not reportable Commercial: Not reportable	Acceptable. Scallop survey index declined markedly to just above the limit level. Acceptable. Commercial catch within historical range. Acceptable. Commercial catch within historical range.

Resource	Fishery	Assessment level	Breeding stock assessment	Catch (and effort) range	Catch, effort and catch rate for season reported[1,2]	Catch (or effort or catch rate) level acceptable and explanation if needed
West Coast Estuarine and Nearshore Scalefish and Invertebrates	Cockburn Sound Crab Managed Fishery	Annual: Level 4	Sustainable: Adequate	Commercial: Closed. Recreational: Partially closed (northern extent open).	Commercial: 0 t Recreational: 0.5 t	Acceptable. Commercial: NA. Recreational: The majority of CS has remained closed since 2014, and stock levels have stabilised. This indicates that the stock is likely at a carrying capacity which is substantially below that recorded in the 2000s. This change is a result of changes in the environment.
West Coast Estuarine and Nearshore Scalefish and Invertebrates	West Coast Estuarine Managed Fishery (Area 1 Swan Canning, Area 2 Peel Harvey (MSC), Area 3 Hardy Inlet)	Annual: Levels 1 and 2 Periodic: Level 3 to 4 sea mullet, yellowfin whiting	Sustainable: Adequate – crabs/ sea mullet/ yellowfin whiting	Commercial: 36 – 72 t (Peel Harvey crab) <150 t sea mullet (Peel Harvey), <12 t yellowfin whiting (Peel Harvey) Recreational: Informal (Peel Harvey crab) Not formal (finfish)	Commercial: 48 t (Peel Harvey crab) 91.6 t (sea mullet Peel Harvey), 10.4 t (yellowfin whiting Peel Harvey). Other West Coast Estuarine crab fisheries not reported due to confidentiality requirements. Recreational: 13–23 t (95% CI, boat only in 2023-24, crabs in Perth Metro Zone)	Acceptable. Commercial: Catch of crabs and finfish within acceptable ranges. Recreational: Catch levels are not considered a risk to stocks.
West Coast Estuarine and Nearshore Scalefish and Invertebrates	Cockburn Sound Fish Net Managed Fishery South West Beach Seine West Coast Nearshore Open Access Net Fishery South West Coast Salmon Managed Fishery West Coast Beach Bait Managed Fishery	Annual: Levels 1 and 2 Periodic: Level 3 – sandy sprat, southern garfish Periodic: Levels 3 to 5 Herring – 2024 Salmon – 2023	Sustainable: Adequate - whiting/ salmon (State)/ tailor/herring (State) Environmentally Limited – sandy sprat/ southern garfish	Commercial: <25 t (informal sandy sprat), <2 t (informal, southern garfish - metro). Recreational: Not formal	Commercial: 4 t (sandy sprat), 0.3 t (southern garfish -WCB) Recreational: 43–70 t (95% CI, boat only in 2023-24, top 10 species)	Acceptable. Metro Zone Garfish fishery closed from June 2017 to February 2024. Declines in southern garfish and sandy sprat consistent with an environmentally limited stock. Recreational: Catch levels are not considered a risk to stocks.

Resource	Fishery	Assessment level	Breeding stock assessment	Catch (and effort) range	Catch, effort and catch rate for season reported[1,2]	Catch (or effort or catch rate) level acceptable and explanation if needed
Statewide Small Pelagic Scalefish (Purse Seine)	West Coast Purse Seine Managed Fishery and development zones	Annual: Level 1	Sustainable: Adequate	Commercial: 0–5700 t (Q) Recreational: NA	Commercial: 420 t (all species) Recreational: <1 t (boat only in 2023-24)	Acceptable.
South Coast and West Coast Demersal Scalefish	West Coast Demersal Scalefish Fishery	Annual: Level 1 Periodic: Level 5 Snapper and WA dhufish – 2025 Level 3 Baldchin groper – 2025	Inadequate	Commercial: <220 t* Recreational (including charter): <155 t* *Total removals, including retained catch + post-release mortality (PRM)	Commercial: 291 t* (282 t catch + 9 t PRM) in 2024 Recreational + charter (144–207 t 95% CI, boat only in 2023-24, top 15 species): 217 t* (196 t catch + 21 t PRM) in 2023-24	Not acceptable . Total removals of the demersal suite by the commercial sector in 2024, and by the recreational sector in 2023-24, were above their respective sectoral recovery benchmarks in place for those years. Note that further revisions to these recovery benchmarks were made in mid-2024.
Gascoyne Coast bioregion						
Shark Bay Invertebrate	Shark Bay Prawn Managed Fishery (MSC)	Annual: Level 4	Sustainable: Adequate	Commercial: 1,350-2,150 t Recreational: NA	Commercial: 754 t	Acceptable. Commercial: Western king and brown tiger prawn catches below their acceptable range in part due to additional in season measures implemented to protect breeding stocks, including reducing the total number of fishing nights, implementing area closures, and reducing the fleet headrope allocation by 50% from 2022 levels.
Northern Invertebrates	Exmouth Gulf Prawn Managed Fishery (MSC)	Annual: Level 4	Sustainable: Adequate	Commercial: 436–1347 t Recreational: NA	Commercial: 662.7 t	Acceptable
Shark Bay Invertebrate	Shark Bay Scallop Managed Fishery	Annual: Level 4	Sustainable: Adequate	Commercial: Quota 871.5 t (371 t Denham Sound and 500 t northern Shark Bay) Recreational: NA	Commercial: 849.5 t (349.5 t Denham Sound, 500 t northern Shark Bay)	Acceptable. Commercial: Quota season to 30 April 2024. 94% and 100% of quotas were achieved for Denham Sound and northern Shark Bay, respectively.

Resource	Fishery	Assessment level	Breeding stock assessment	Catch (and effort) range	Catch, effort and catch rate for season reported[1,2]	Catch (or effort or catch rate) level acceptable and explanation if needed
Shark Bay Invertebrate	Shark Bay Crab Managed Fishery	Annual: Level 4	Sustainable: Adequate	Commercial: 500 t (Q) Recreational: Not formal	Commercial: 446.5 t Recreational: 0–2 t (95% CI, boat only in 2023-24)	Acceptable. Commercial: Quota not fully attained due to effort restrictions on the trawl fleet, which limited their capacity to obtain their allocation. The stock is currently above the indicative target level. Recreational: Catch levels are stable.
Gascoyne Nearshore Scalefish	Shark Bay Beach Seine and Mesh Net Managed Fishery	Annual: Level 2 Periodic: Level 3 Yellowfin whiting – 2014	Sustainable: Adequate	Commercial: 235–335 t Recreational: NA	Commercial: 125 t	Acceptable. Commercial: Catch below the acceptable range due to ongoing very low levels of effort.
South Coast and West Coast Crustacean	West Coast Deep Sea Crustacean Managed Fishery (MSC)	Annual: Level 5 (crystal crab) Level 2 (champagne crab and giant crab)	Sustainable: Adequate	Commercial: Crystal crab 123.2 t (Q); Champagne crab 20 t (Q); Giant crab 1 t (Q); 60,000–105,000 pot lifts Recreational: NA	Commercial: Crystal crab 121.9 t; Champagne crab 0.0045 t; Giant crab 0.83 t (80,150 pot lifts)	Acceptable. Commercial: TAC achieved and integrated model indicates that overall biomass is above provisional target levels. Relatively low levels of champagne crab catch are market driven.
Gascoyne Demersal Scalefish	Gascoyne Demersal Scalefish Managed Fishery	Annual: Level 1 Periodic: Level 5 Snapper – 2024 Level 3 Goldband snapper 2022	Sustainable: Recovering – Snapper Sustainable: Adequate – Goldband snapper	Commercial: Snapper 59.1 t (Q) Other demersals 227 t (Q) Recreational: Not formal	Commercial: 44 t Snapper, 113 t Other demersals in 2023-24. Recreational 36–71 t (95% CI, boat only in 2023-24, top 15 species in oceanic waters): Charter: 53 t in 2023-24	Acceptable. Commercial: Acceptable. Recreational: Acceptable. Snapper spawning biomass recovering following management action in 2018.
Gascoyne Demersal Scalefish	Inner Shark Bay Demersal (Snapper)	Annual: Level 1 Periodic: Level 5 – 2015	Sustainable: Adequate	Commercial: 3.8 t Eastern Gulf (EG) 3.8 t Denham Sound (DS) 1.2 t Freycinet Estuary (FE) Recreational: 11.2 t EG 11.2 t DS 3.8 t FE	Commercial: <0.5 t in 2024 Charter: 0.1 t EG 0.6 t DS 0.7 t FE in 2024 Recreational: 3–18 t (95% CI boat only, snapper) in 2023-24	Acceptable. Commercial: NA Recreational: Acceptable. Recreational harvest of snapper (boat only, from statewide survey) is a combined estimate across the 3 stocks.

Resource	Fishery	Assessment level	Breeding stock assessment	Catch (and effort) range	Catch, effort and catch rate for season reported[1,2]	Catch (or effort or catch rate) level acceptable and explanation if needed
North Coast bioregion						
Northern Invertebrates	Onslow Prawn Managed Fishery	Annual: Level 1	Sustainable: Adequate	Commercial: 60–180 t Recreational: NA	Commercial: Not reportable	Acceptable. Commercial: Below catch range; low effort in 2024.
Northern Invertebrates	Nickol Bay Prawn Managed Fishery	Annual: Level 1	Sustainable: Adequate	Commercial: 90–300 t Recreational: NA	Commercial: Not reportable	Acceptable. Commercial: Within catch range.
Northern Invertebrates	Broome Prawn Managed Fishery	Annual: Level 1	Sustainable: Adequate	Commercial: 55–260 t Recreational: NA	Commercial: Not reportable	Acceptable. Commercial: Below catch range; very low levels of effort in 2024.
Northern Invertebrates	Kimberley Prawn Managed Fishery	Annual: Level 1	Sustainable: Adequate	Commercial: 240–500 t Recreational: NA	Commercial: 68 t	Acceptable. Commercial: Below catch range; low levels of effort in 2024.
Northern Estuarine and Nearshore Scalefish and Invertebrates	Kimberley Gillnet and Barramundi Managed Fishery	Annual: Level 2	Sustainable: Adequate	Commercial: 33–44 t (barramundi). Recreational: NA	Commercial: 68 t (total) 40 t (barramundi) Recreational: 11–26 t (95% CI, boat only in 2023-24, top 10 species)	Acceptable. Commercial: Catch is within the acceptable range. Recreational: Catch levels considered appropriate.
Northern Demersal Scalefish	Northern Demersal Scalefish Managed Fishery	Annual: Level 2 Periodic: Level 3 & 5	Inadequate: red emperor. Sustainable: Adequate - goldband snapper	Commercial: 903–1,332 t Catch range review is in progress. Recreational: NA	Commercial: 1,378 t (total) 436 t (goldband snapper) 151 t (red emperor) Recreational: 48–82 t (95% CI, boat only in 2023-24, top 15 species) Charter: 16.6 t	Not acceptable. Commercial: Not acceptable. Catch above total catch range. Recreational: Acceptable (Catch levels are combined for Kimberley and Pilbara). Red emperor relative biomass breached the threshold reference levels in 2024.

Resource	Fishery	Assessment level	Breeding stock assessment	Catch (and effort) range	Catch, effort and catch rate for season reported[1,2]	Catch (or effort or catch rate) level acceptable and explanation if needed
Northern Demersal Scalefish	Pilbara Fish Trawl (Interim) Managed Fishery	Annual: Levels 1 and 2 Periodic: Level 3 & 5	Inadequate: red emperor, goldband snapper	Commercial: 940–1,416 t Recreational and charter: 35.5 t (benchmark species for PDSR)	Commercial: 1,876 t (all species) Recreational and Charter (North Coast bioregion - NCB): 28 t (benchmark species)	Not acceptable. Commercial: Not acceptable. Catch above total catch range. Recreational: Acceptable. Catches below benchmark in NCB. Recovery plan for indicator species was implemented in 2024. Red emperor across PDSR (113 t) was below their recovery benchmark in 2024.
Northern Demersal Scalefish	Pilbara Demersal Trap Managed Fishery and Pilbara Line Fishery	Annual: Levels 1 and 2 Periodic: Level 3 & 5	Inadequate: red emperor, goldband snapper	Commercial: 241–537 t (trap) 36–127 t (line) Recreational and charter: 35.5 t (benchmark species for PDSR)	Commercial: Not reportable. Recreational and Charter (NCB): 28 t (benchmark species)	Acceptable. Commercial: Total catches were within catch ranges. Recovery plan for indicator species was implemented in 2024. Red emperor across PDSR (113 t) was below their recovery benchmark in 2024.
Statewide Large Pelagic Scalefish	Mackerel Managed Fishery	Annual: Level 2 Periodic: Level 3 - 2023	Sustainable: Adequate	Commercial: 246–430 t (Q, Spanish Mackerel) Recreational: Not formal	Commercial: 194 t Recreational: 81–121 t (95% CI, boat only in 2023-24, top 15 species)	Acceptable. Commercial: Overall catch is below the target range, Area1 is within the range, low effort.. Recreational: Catch levels remain appropriate. Charter/FTO: Catch is within historical range.
Northern Shark	Northern Shark Fishery	No assessment	NA	<20 t (sandbar)	0	NA. No reported fishing activity since 2008-09.
Pearl Oyster (*P. maxima*)	Pearl Oyster Wildstock Fishery (MSC)	Annual: Level 4	Sustainable: Adequate	Commercial 1,090,895 oysters (Q) (14,071–20,551 dive hours) Recreational: NA	Commercial: 1,052,201 oysters (8,987 dive hours)	Acceptable. Commercial: Catch and catch rates at record highs.

Resource	Fishery	Assessment level	Breeding stock assessment	Catch (and effort) range	Catch, effort and catch rate for season reported[1,2]	Catch (or effort or catch rate) level acceptable and explanation if needed
Statewide Hand Collection	Western Australian Sea Cucumber Fishery (MSC)	Annual: Level 2	Sustainable: Adequate	Commercial: Sandfish (Kimberley) 0–100 t Sandfish (Pilbara) 0–80 t Redfish 0–150 t Recreational: NA	Commercial: Sandfish (Kimberley): 0 t Sandfish (Pilbara): 0 t Redfish (Pilbara): 410.5 t Redfish (Gascoyne): 1.9 t	Acceptable. Overall breeding stocks acceptable for redfish and one sandfish stock. Closures implemented in 2023 for Pilbara sandfish fishery to promote recovery. Pilbara redfish catch above catch range with performance indicator above target level. Catch range under review.
South Coast bioregion						
South Coast and West Coast Crustacean	South Coast Crustacean Managed Fishery	Annual: Level 5 (western rock lobster, Zone 1) Level 4 (crystal crab, Zone 2; southern rock lobster, Zones 3 and 4)	Sustainable: Adequate	Commercial: Quota Zone 1 (western rock lobster) – 35 t Zone 2 (crystal crab) – 6.53 t Zone 3 (southern rock lobster) – 16 t Zone 4 (southern rock lobster) – 14 t	Commercial: Zone 1: 6.5 t (western rock lobster) Zone 2: 5.9 t (crystal crab) Zone 3: 13.8 t (southern rock lobster) Zone 4: 5.4 t (southern rock lobster)	Acceptable. Commercial: Catch of all species in all zones were within their TACCs. Some recent reduced catches have been market driven
Statewide Abalone	Abalone (Greenlip/ Brownlip) Managed Fishery (MSC)	Annual: Level 4	Inadequate	Commercial: 32.2 t (Q) (3,440–5,270 hours) Recreational: Not formal	Commercial: 24.1 t (728 hours) Recreational: 11.6 – 17.2 t	Acceptable. Commercial: Catch is below TACC due to commercial industry decisions. Area 2 remains closed to Brownlip abalone fishing and Area 3 remains closed to Greenlip abalone fishing for the 2025 season. Recreational: A formal catch range needs to be developed.

Resource	Fishery	Assessment level	Breeding stock assessment	Catch (and effort) range	Catch, effort and catch rate for season reported[1,2]	Catch (or effort or catch rate) level acceptable and explanation if needed
South Coast Estuarine and Nearshore Scalefish and Invertebrates	South Coast Estuarine Managed Fishery South Coast Salmon Managed Fishery South Coast Nearshore Net Managed Fishery (including herring g-net exemption)	Annual: Levels 1 and 2. Periodic: Levels 3 to 5 Herring – 2024; Salmon – 2023; Cobbler –2018	Sustainable: Adequate Cobbler (Wilson Inlet), Herring (State), Salmon (State) Mullets/Bream/ Whitings	Commercial: <40 t cobbler (Wilson Inlet – informal). <300 t herring (state – informal), <70 t herring (g-net exemption). Salmon under revision. Recreational: Not formal	Commercial: 13.7 t cobbler (Wilson Inlet), 132 t herring (state), 213.4 t salmon (state), 20.5 t blue swimmer crab (South Coast estuaries). Recreational: scalefish 11–25 t (95% CI, boat only in 2023-24, top 10 species)	Acceptable. Commercial: Catch of scalefish and crabs within acceptable ranges. Stock abundance of blue swimmer crabs in the South Coast bioregion is strongly influenced by the strength of the warm, southward flowing Leeuwin Current and overall water temperatures, resulting in highly variable catch and effort. Recreational: Catch levels are not considered a risk to stocks.
Statewide Small Pelagic Scalefish (Purse Seine)	King George Sound Purse Seine (Zone 1)	Annual: Level 1	Sustainable: Adequate	Commercial: 2,162 t (Q) Recreational: NA	Commercial: 1,020 t	Acceptable
Statewide Small Pelagic Scalefish (Purse Seine)	Wider Albany, Bremer Bay and Esperance Purse Seine (Zones 2, 3 and 4)	Annual: Level 1	Sustainable: Adequate	Commercial: 3,521 t (Q) Combined Recreational: NA	Commercial: 815 t	Acceptable
South Coast and West Coast Demersal Scalefish	Temperate Demersal Gillnet and Demersal Longline Fishery (TDGDLF) Joint Authority Southern Demersal Gillnet and Demersal Longline Fishery	Annual: Level 1 Periodic: gummy, whiskery, dusky and sandbar sharks: Level 5 – 2024	Sustainable: Adequate– Gummy, whiskery and sandbar sharks Sustainable: Recovering – Dusky shark	Commercial: shark 725–1,095 t Recreational: NA	Commercial: 669 t (key species only) 831 t (total sharks and rays)	Acceptable Commercial: Catch of the total shark and ray species is within acceptable catch ranges.
South Coast and West Coast Demersal Scalefish	South Coast Line and Trap Managed Fishery, South Coast Estuarine Managed Fishery, TDGDLF	Annual: Level 1 Periodic: Level 3 – 2024	Inadequate: Snapper, bight redfish and western blue groper. Adequate: Blue morwong, hapuku	Commercial: Not formal. Recreational: Not formal	Commercial: 184 t Recreational: 36–71 t (95% CI, boat only in 2023-24, top 10 species). Charter: 4 t (top 10 species).	Not acceptable: Snapper, bight redfish, hapuku, western blue groper.

Resource	Fishery	Assessment level	Breeding stock assessment	Catch (and effort) range	Catch, effort and catch rate for season reported[1,2]	Catch (or effort or catch rate) level acceptable and explanation if needed
Northern Inland Bioregion						
Northern Inland Freshwater Scalefish and Invertebrates	Lake Argyle Silver Cobbler Fishery	Annual: Level 1	Sustainable: Adequate	Commercial: 93–180 t Recreational: NA	Commercial: Not reportable.	Acceptable. Commercial: Catch is below the target level due to low levels of effort.
Southern Inland Bioregion						
South and West Coast Inland Freshwater Resource	South West Recreational Freshwater Angling Fishery; Recreational Marron Fishery	Annual: Level 1	Sustainable: Adequate	Commercial: NA Recreational: 50,000–100,000 (marron) 50,000–120,000 (fish)	82,435 marron (74,680 – 90,191 95% CI) 64,616 fish (50,503 – 78,729 95% CI)	Acceptable. Catch (marron) has been within the acceptable range since 2003. Review of the inclusion of fish catch estimates is required as this is a stocked (put and take) fishery.

1. Commercial and recreational catch figures supplied for latest year/ season available.
2. Where there are three or less licences operating in the fishery annual catch levels are not reported due to confidentiality requirements

KEY PERFORMANCE INDICATORS

A. Denham, E. Lai, S. Hesp and K. Ryan

Percentage of clients satisfied with the department's management of recreational fishing

Description

This KPI helps stakeholders to understand the DPIRD's role and effectiveness in facilitating the development of the social amenities that regional communities and industries need to grow and create jobs. Specifically, it focuses on the department's recreational fishing management activities.

Recreational fisheries provide social and economic benefits for the Western Australian community. These may include social benefits such as spending time with family or friends and/or economic benefits such as the sale of tackle, boats and other gear, and economic support for boating and tourism industries based on fishing. The level of participation in recreational fishing is a measure of the use of this community resource and influences the estimation of satisfaction through the level of community knowledge of resource management issues.

The KPI is reported as client satisfaction regarding DPIRD's recreational fishing initiatives and used to monitor, evaluate and improve the effectiveness of the department's programs, activities and functions.

Calculation

The information used to assess DPIRD's performance against this effectiveness indicator is derived from an annual telephone-based community survey.

This survey is conducted to assess the understanding and satisfaction of the community on DPIRD's management strategies and examine the key aspects of fishing and appreciation of the aquatic environment by the community.

An external research company contracted by DPIRD conducted the community survey between mid-February and March 2025. Survey respondents were asked about their experiences and views for the 12-month period prior to their interview date. From a total of 3,845 in-scope respondents (Western Australian residents aged 18 years and older), 702 interviews were completed which comprised:

- 561 respondents from major cities
- 61 respondents from inner regional areas
- 80 respondents from outer regional/remote/very remote areas or who were migratory residents.

As part of the community survey, respondents were asked to rate DPIRD in its management of recreational fishing. Rating options were measured on a 5-point Likert scale comprised 'very poor', 'poor', 'fair', 'good' or 'very good'. Only respondents who were aware the department (either DPIRD, or DPIRD Fisheries or the Department of Fisheries) was responsible for a management area were asked to rate DPIRD's performance for that management area.

Satisfaction rates were calculated as the proportion of respondents who ranked management of a particular area as 'fair', 'good' or 'very good'. Responses of 'unsure' were excluded from the calculation.

The KPI calculation is the 2024-25 satisfaction weighted to reflect the estimated resident population based on January 2025 Labour Force Survey estimates from the Australian Bureau of Statistics, with the survey providing estimates for the 2024-25 financial year.

Results

KPI TABLE 1: KEY EFFECTIVENESS INDICATOR 4 RESULTS

2021-22 Actual	2022-23 Actual	2023-24 Actual	2024-25		Variance	
			Target	Actual	2023-24	Target
86%	83%	89%	85%	88%	-1%	+3%

Analysis

The level of participation in recreational fishing is a measure of the use of this community resource and is based on the Estimated Resident Population of aged 5 and older at 30 June 2024 (Australian Bureau of Statistics).

The number of people in WA who participated in recreational fishing at least once in the previous 12-month period was rounded to 698,000 (95% confidence interval (CI) [609,000, 788,000]). The participation rate of 25% is slightly lower than the participation rate

of last year, but lies within the 95% confidence limits for recent annual participation rate.

The estimation of satisfaction through the level of community knowledge of resource management issues is based on the community survey data. DPIRD was given a satisfaction rate of 88% (95% CI [84.1%, 92.0%]) by the community on managing recreational fishing activities in 2024-25. This rate was similar to those reported for recent years, ranging 86–90% since 2011-12. Given the high level of satisfaction achieved over recent years and significant management changes that are underway, ongoing annual increases are difficult to attain. A tolerable range of ±5% around the target level has been set based on the variability in satisfaction over the past decade.

DPIRD's 2024-25 target satisfaction rating by the broader community is 85% compared to the actual 88%. The maintenance of community satisfaction near the target level is noteworthy given the significant management changes that continued in 2024, including extended closures for boat-based recreational fishers in the West Coast bioregion to assist recovery of demersal scalefish stocks in this region.

Proportion of fish stocks identified as not being at risk or vulnerable through exploitation

Description

This KPI helps stakeholders to understand DPIRD's role and effectiveness in ensuring the long-term sustainability of natural resources on which WA fishing relies and impacts.

DPIRD undertakes annual assessments of fisheries that are subject to management. These assessments have been used to determine the sustainability status of the state's most significant commercial and recreational fisheries.

Calculation

Performance is measured as the proportion of all fisheries (that have sufficient data) for which the breeding stocks of each of the major target or indicator species:

- are being maintained at levels that ensure catches could be sustained at desirable levels, given effort levels and normal environmental conditions; or
- are recovering from a depleted state at an appropriate rate following management intervention.

The indicator is derived from annual assessments and trends in catch and fishing activity. The calculation of the proportion of fish stocks identified as not being at risk or vulnerable through exploitation is:

[number of stocks maintained or recovering]

divided by

[total number of stocks].

Results

KPI TABLE 2: KEY EFFECTIVENESS INDICATOR 6.3 RESULTS

2021-22 Actual	2022-23 Actual	2023-24 Actual	2024-25		Variance	
			Target	Actual	2023-24	Target
96%	96%	93%	95%	89%	-4%	-6%

Analysis

Aquatic resource status assessments are based on all information up to and including the most recent fishing season. Because aquatic resources have various levels of available information, resource status is based on all available data using a risk-based weight-of-evidence assessment approach.

Status updates were undertaken during March–June with 46 resource and fishery combinations reviewed for 2024-25. The one fishery not examined is northern shark which has not operated since 2009.

Of the 45 assessments, 36 were considered to have adequate breeding stock levels and a further 2 fisheries (the Temperate Demersal Gillnet and Demersal Longline Fishery [TDGDLF] and the Gascoyne Demersal Scalefish Fishery) had breeding stocks considered to be recovering at acceptable rates. The TDGDLF targets relatively long-lived species so recovery is expected to take decades to complete.

Of the 7 remaining fisheries, 2 were identified as having stocks that are environmentally limited: the Cockburn Sound Fish Net Managed Fishery (garfish) and the South West Beach Net Fishery (whitebait).

Five fisheries (the Abalone Managed Fishery, the West Coast Demersal Scalefish Fishery [WCDSF], the South Coast Demersal Scalefish Fishery [SCDSF], the Pilbara Demersal Scalefish Fishery [PDSF] and the Northern Demersal Scalefish Fishery [NDSF]) have stocks that are considered inadequate as a result of exploitation. Management actions have already been implemented to assist stock recovery in the Abalone Managed Fishery and the WCDSF. Discussions are underway regarding management considerations in the SCDSF, PDSF and NDSF.

DPIRD's 2024-25 target for the proportion of fish stocks not at risk from fishing was 95%. For the 2024-25 reporting period, the proportion of the assessed groups identified as not being at risk or vulnerable through exploitation is 89%, which is below the target level. Due to reasons explained above, DPIRD considers it has not met this indicator.

Percentage of commercial and recreational fisheries where acceptable catches (or effort levels) are achieved

Description

This KPI helps stakeholders to understand DPIRD's role and effectiveness in ensuring the long-term sustainability of natural resources on which WA fishing relies and impacts. It provides an assessment of the success of DPIRD's management plans and regulatory activities in keeping fish catches at appropriate levels (including those in a recovery phase).

Where management is operating effectively, annual catches by each fishery should vary within an acceptable range. The extent of this range reflects the degree to which normal environmental variations affect the recruitment of juveniles to the stock that cannot be 'controlled' by fishery management. Additional factors may result in ongoing changes to the amount of effort expended in a fishery, which will in turn influence the appropriateness of acceptable catch ranges for individual fisheries.

Calculation

For most fisheries in WA, each management plan seeks to directly control the amount of fishing pressure applied to stocks, with the level of catch taken providing an indication of the effectiveness of the plan. Where the plan is operating effectively, the catch by the fishery should fall within an acceptable range.

For quota-managed fisheries, the measure of success of management arrangements is that the majority of the Total Allowable Catch (TAC) is achieved and that it has been possible to take this catch using an acceptable amount of fishing effort.

If an unusually large expenditure of effort is needed to take the TAC, or fails to achieve the TAC by a significant margin, this may indicate that the abundance of the stock is significantly lower than anticipated. For these reasons, an appropriate range of fishing effort to take a TAC has also been incorporated for assessing the performance of quota-managed fisheries.

Acceptable levels of catch are also determined for each of the major recreational fisheries.

The KPI shows the percentage of commercial and/or recreational fisheries achieving acceptable catches or effort levels (i.e. the number of days taken to achieve the catch). The calculation of the proportion of fisheries achieving acceptable catches or effort levels is:

[number of fisheries achieving acceptable levels]

divided by

[total number of fisheries].

Results

KPI TABLE 3: KEY EFFECTIVENESS INDICATOR 6.4 RESULTS

2021-22	2022-23	2023-24	2024-25		Variance	
Actual	Actual	Actual	Target	Actual	2023-24	Target
90%	92%	87%	90%	89%	+2%	-1%

Analysis

Fisheries catch and effort information are provided by commercial and charter fishers through mandatory returns and recreational fisheries through surveys. Fisheries catch and effort data are dependent on the fishers' accuracy and completeness of data reporting, which is based on the most recent fishing season or most recent survey estimate.

Status updates were undertaken during March–June and for the purpose of this indicator, of the 46 resource and fishery combinations, comparisons between actual catches (or effort) with acceptable ranges have been undertaken for 37 commercial fisheries and an additional 20 have been identified as having a 'material' recreational catch share. A relatively high number of fisheries were not assessed due to a combination of ongoing

environmentally induced stock issues or poor economic conditions resulting in minimal or no material levels of catches during this reporting period. Over time, if the sectoral share of a fishery or stock changes markedly for various reasons (e.g. fishery development and/or expansion, changes to allocation and/or access rights), it may be appropriate to expand the indicator to include reference to fisheries or stocks for which there are other 'material' sectoral shares (e.g. customary fishing).

Of the 20 assessed recreational fisheries, only 6 currently have formal acceptable catch ranges developed and another 14 were assessed based on non-formal ranges related to resource sustainability. Estimates of recreational catch available from data collected in periodic surveys (including the most recent statewide survey of boat-based recreational fishing conducted in 2023-24 and additional annual surveys) had levels for 18 fisheries that were within acceptable catch ranges and 2 that were unacceptably above or below the acceptable catch range. These included demersal scalefish species, which were unacceptably above or below their acceptable catch ranges for the recreational sector within the WCDSF and SCDSF.

Of the 37 commercial fisheries, 13 were primarily catch-quota managed, with 24 subject to effort-control management. Of the 13 individually transferable catch-quota managed fisheries, 3 operated within and 10 were acceptably below. In the 24 effort-controlled fisheries, 13 were within and 7 were acceptably below their catch ranges. Catch/effort above or below their acceptable ranges were determined acceptable due to adequate resource sustainability. Four fisheries (WCDSF, SCDSF, PDSF and NDSF) had stocks that were unacceptable for their formal or informal catch ranges.

In summary, 18 of the 20 recreational fisheries and 33 of the 37 commercial fisheries (51 of the 57 fisheries overall) assessed were considered to have met their performance criteria.

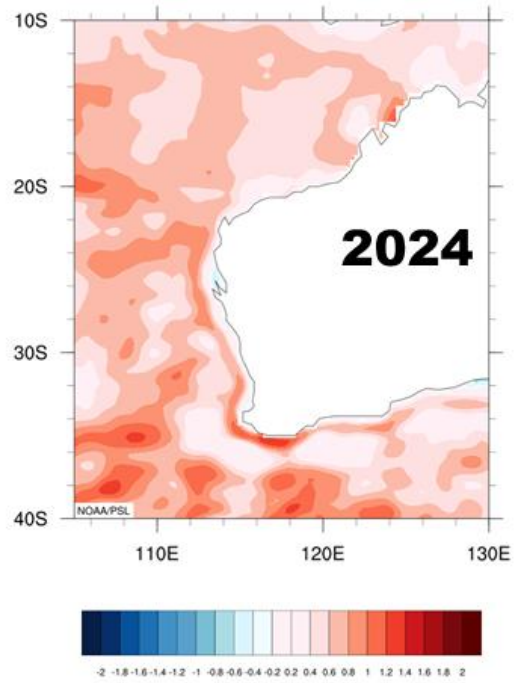
DPIRD's 2024-25 target is 90% for all major recreational and commercial fisheries. For the 2024-25 reporting period, the percentage of fisheries where acceptable catches are achieved is 89%, which is below the target level. Due to reasons mentioned above, DPIRD considers it has not met this performance indicator.

WA OCEAN CLIMATE SUMMARY 2024

A. Chandrapavan and G. Jackson

Globally, 2024 was the warmest year on record since 1850. For WA, daily mean sea surface temperatures (SSTs) since March 2024 tracked in the upper historical range (1982-present), with the overall mean SST of 22.79°C making it the warmest ocean year in the past 40 years (CLIMATE CHANGE OVERVIEW FIGURE 1 & 5).

Across the bioregions, 2024 ranked in the top 5 for the Gascoyne and South Coasts with North and West Coasts in the top 10 years (CLIMATE CHANGE OVERVIEW TABLE 1).



CLIMATE CHANGE OVERVIEW FIGURE 1. Mean annual sea surface temperature (SST) anomaly for 2024. Data from NOAA High-resolution Blended Analysis.

ENSO

2023-24 El Niño and 2024-25 La Niña events

The strong 2023-24 El Niño event (and positive Indian Ocean Dipole (IOD)) that developed during September 2023 officially ended around April 2024. The remainder of 2024 saw the ENSO slowly transition towards a weak La Niña phase. This short-lived event formed in late 2024, peaked around January 2025 and ended by March 2025. (CLIMATE CHANGE OVERVIEW FIGURE 4).

Leeuwin Current

The Leeuwin Current (LC) system, which can be up to several hundred kilometres wide along the West Coast, flows most strongly in autumn/winter (April to August), and has its origins in ocean flows from the Pacific through the Indonesian Archipelago. The current is variable in strength from year-to-year, typically flowing at speeds around 1 knot, but has been recorded at up to 3 knots on occasions. The strength of the LC is inferred from the de-trended Fremantle Sea Level (dFSL) and has a strong relationship with ENSO. La Niña events are sustained by individual positive Southern Oscillation Index (SOI) values and an above-average LC strength, while El Niño events have sustained negative SOI values and a weaker LC strength (CLIMATE CHANGE OVERVIEW FIGURE 4).

The LC maintained an average to below average flow during the first half of 2024. The Fremantle tidal gauge was not operational between February and July 2024, thus a gap exists in the data series to ascertain accurate LC strength. FSL anomalies transitioned to above average strength as the ENSO transitioned to La Niña towards the end of 2024.

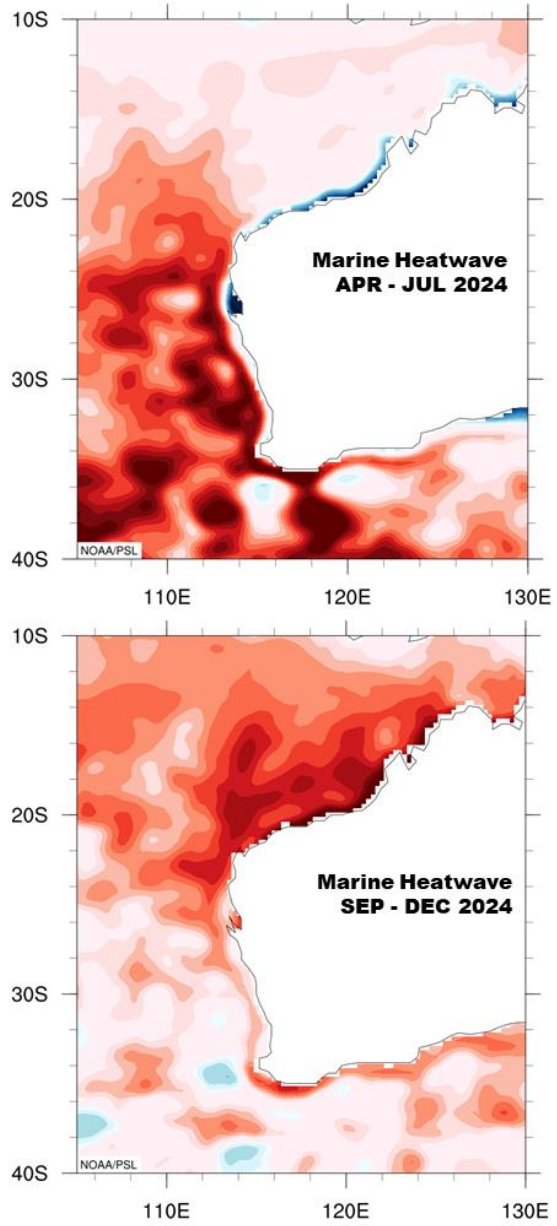
Climate Extremes

MHW conditions

A marine heatwave (MHW) is a prolonged period when the ocean is much warmer than usual at a particular location and time of year. Similarly, a marine cold spell (MCS) is when ocean temperatures are much cooler than usual. WA lies within the eastern Indian Ocean basin where major MHW and MCS events are often associated with ENSO events.

The 2023-24 summer SSTs continued into April 2024 across the south-west region. These elevated SSTs and anomalies of 1 – 3 °C above average reached strong MHW status by the beginning of May, starting in the Gascoyne region and moving southwards but remaining offshore along the continental shelf. Towards the end of May, the LC had further strengthened and moved closer on to the shelf waters, raising the water temperature of the nearshore regions of the West and South Coast bioregions. The drivers of this MHW event were likely to be the combination of anomalously warm winter air temperatures, low wind conditions and the strengthening of the LC (typical for this time of year) (CLIMATE CHANGE OVERVIEW FIGURE 2).

Above average SSTs dominated most of the bioregions throughout 2024. Elevated ocean temperatures also persisted in the subsurface depths which likely gave rise to the marine heatwave conditions that began during early September 2024 across the NCB. This was the beginning of the intense, prolonged and statewide 2024-25 MHW event that WA experienced and second most significant MHW after the 2010-11 extreme event (CLIMATE CHANGE OVERVIEW FIGURE 2).



CLIMATE CHANGE OVERVIEW FIGURE 2. Peak SST anomaly signature from the MHW events during 2024. Data from NOAA High-resolution Blended Analysis using the same scale as in CLIMATE CHANGE OVERVIEW FIGURE 1.

Cyclones

An El Niño driven summer usually means below average cyclone activity for the Australian region, and that was the case for the 2023-24 season with 8 named systems of which 4 made landfall. Most of the TCs transitioned to tropical lows by the time they entered WA State waters (e.g. TC Olga). TC Lincoln was a long-lasting system but a short-lived cyclone that delivered significant amount of rainfall to the top end and the Gascoyne region during February 2024. TC Neville was the fifth TC of the season and the fourth to reach severe intensity (Category 4) and remained offshore.

Bioregional summaries

Water temperature is the most well measured and studied aspect of climate change impact on the ocean. Around Australia, SSTs have warmed around 1°C since 1910, however, at a more regional scale, this rate of warming varies both spatially and temporally (CLIMATE CHANGE OVERVIEW TABLE 1).

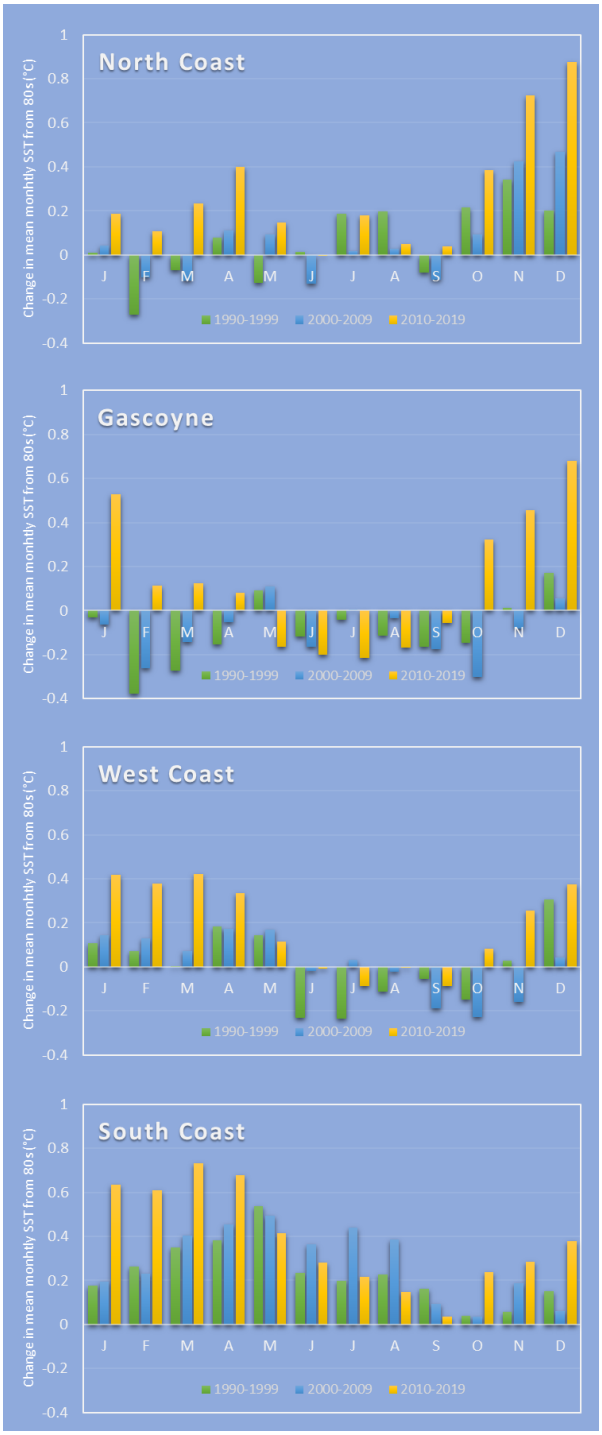
In WA, the NCB has experienced its most notable warming period between October and December, where mean SSTs are now 0.4-0.8 °C warmer than during the 1980s. The NCB during 2024 was the 8th warmest year since 1982 with an SST anomaly of 0.5°C and experienced a total of 130 MHW days (CLIMATE CHANGE OVERVIEW FIGURE 4).

For the GCB during the past decade, the greatest warming period is over the spring/summer transition, October to January, where mean SSTs are 0.3-0.7°C warmer than the 1980s. The winter period however shows a cooler trend, and this is most prominent inside the Shark Bay and Exmouth Gulf embayments, which are associated with the dynamics of the sub-tropical ridge. During 2024, the GCB was the 3rd warmest year (since 1982), with 156 MHW days and with an SST anomaly of 0.63°C (CLIMATE CHANGE OVERVIEW TABLE 1).

The greatest warming for the WCB has been during the past decade, where summer months from November to April are shown to be ~0.4°C warmer than the 1980s. During 2024, the WCB was the 6th warmest year since 1982, with 106 MHW days and an SST anomaly of 0.65°C.

The SCB is the only bioregion that has consistently shown a warming trend across all months since the 1980s, where the past decade has seen a warming of 0.6-0.7 °C between January and April, and up to 0.2°C over the winter months (CLIMATE CHANGE OVERVIEW FIGURE 4). During 2024, the SCB experienced the 2nd warmest year with an SST anomaly of 0.6°C and a total of 174 MHW days.

It is important to note that the trends discussed above are calculated over a large oceanic region and these trends do not always represent the nearshore shallower coastal regions of WA (where many of the fish stocks reside) where SSTs are strongly influenced by the local wind regime, tides, barometric pressure, and air-sea heat exchanges.



CLIMATE CHANGE OVERVIEW FIGURE 3. Decadal differences in mean monthly SSTs between the 1980s and the 1990s (green), 2000s (blue), and 2010s (orange) for the four bioregions. Data from NOAA High-resolution Blended Analysis.

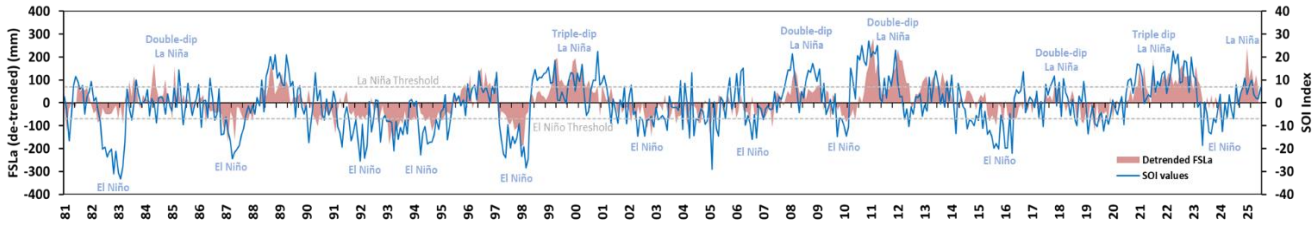
Climate Vulnerability Assessment

A risk assessment of climate change vulnerability of WA's key fishery species was first undertaken by Caputi et al. (2015). A large number of these species have wide spatial distributions along WA's coast, with many occurring at higher latitudes that experience the warming influence of the Leeuwin Current. To better understand present day climate change vulnerability at the level at which WA stocks are managed, an updated risk assessment has been recently completed with preliminary results of the biological sensitivity and future climate exposure scoring and susceptibility of stocks to climate change risk rankings presented throughout this report.

The first phase of the current risk assessment involved species biological sensitivity scoring at a stock level. Where a fishery resource comprises a suite of species, the sensitivity scoring was undertaken on key indicator species representative of that resource. The sensitivity component is based on 13 attributes relating to abundance, distribution, and phenology, with scoring undertaken for a total of 127 stocks. Scores were given to each attribute representing 'LOW (scored 1)', 'MEDIUM (scored 2)' and 'HIGH (scored 3)' levels of sensitivity to climate change. The scores from each of the three categories were averaged to obtain a mean score for each category. These three mean scores were then combined, and an overall sensitivity risk was ranked as 'NEGLIGIBLE' (mean score ≤ 4.19), 'LOW' (mean score 4.2 – 5.39), 'MODERATE' (mean score 5.4 – 6.59), 'HIGH' (mean score 6.6 – 7.79), and 'EXTREME' (mean score ≤ 7.8).

The second phase was the exposure scoring which was based on summaries of bioregional ocean climate projections for 2050 (RCP 4.5 and 8.5) (see individual bioregional overview sections for further details) on a range of climate drivers and ocean variables. This information was sourced from a range of published research, online climate projection tools and information released as part of the National Climate Risk Assessment report. The third and final phase brought together the sensitivity and exposure scoring into a climate risk assessment framework to provide the overall risk level of NEGLIGIBLE, LOW, MEDIUM, HIGH or SEVERE from climate change

All scoring was based on the available information for the species and the expertise of the relevant scientists. Scores were reviewed by an expert panel to ensure that the interpretation of the criteria was consistently applied. The complete list of sensitivity, exposure and final climate change risk rankings is provided in Appendix 5.

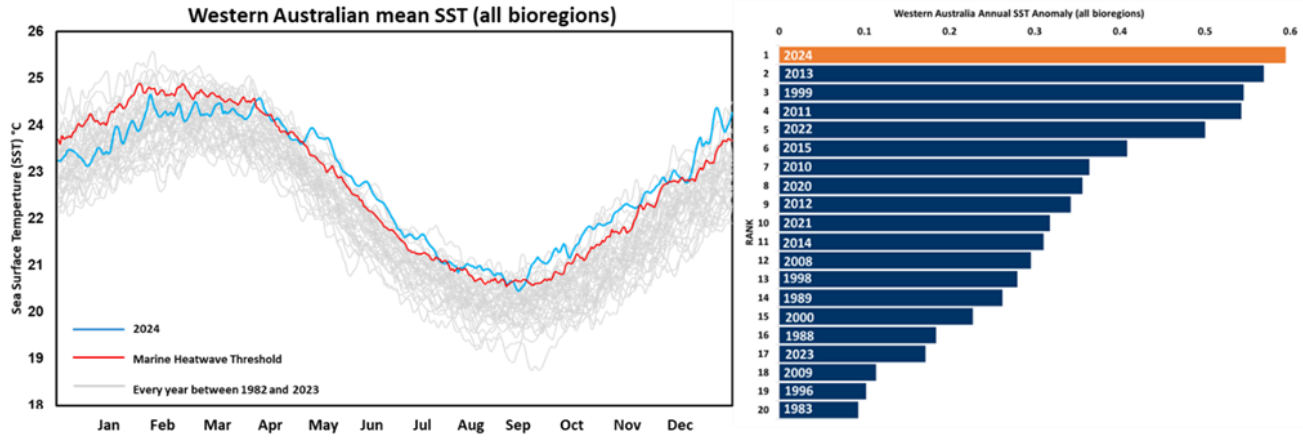


CLIMATE CHANGE OVERVIEW FIGURE 4.
The strength of the LC is inferred from the de-trended Fremantle Sea Level anomalies (FSLa) (red shaded area) and the strong relationship with the ENSO (SOI Index) (blue line). La Niña events are associated with sustained positive SOI values, and El Niño events with sustained negative SOI values.

CLIMATE CHANGE OVERVIEW TABLE 1.

2024 Bioregion	Annual Mean SST °C	Annual Mean SST Anomaly °C	Rank (out of 40 years)	Total MHW Days	Mean SST by 2050 RCP 4.5	Mean SST by 2050 RCP 8.5	MHW Days 2050 (8.5) Projection
North Coast	28.5	+0.5	8th	130	*29.1*	*29.4*	*365*
Record	*28.88 (2016)*	*+0.87*		*199 (2016)*			
Gascoyne Coast	25.59	+0.63	3rd	156	*25.7*	*26.2*	*307*
Record	*25.65 (2011)*	*+0.69*		*149 (1999)*			
West Coast	19.74	+0.65	6th	106	*19.9*	*20.3*	*345*
Record	*20.28 (2011)*	*+1.18*		*260 (2011)*			
South Coast	17.37	+0.6	2nd	174	*17.5*	*17.9*	*364*
Record	*17.39 (2011)*	*+0.63*		*196 (2011)*			

Overview of bioregional summaries of mean annual (2024) SST and anomaly (relative to 1982-2018 climatology), and the total number of marine heatwave days (mean daily SST > the 90th percentile for 5 or more consecutive days) for 2024. Projections of mean SST and MHW days for 2050 under RCP 4.5 and 8.5 are also shown for the bioregions. These analyses are based on NOAA IOSST V2 dataset for the bioregions indicated on Introduction Figure 2 and coastal and marine projections data from the https://www.climatechangeinaustralia.gov.au website.



CLIMATE CHANGE OVERVIEW FIGURE 5.
LEFT PLOT: Daily meanSST averaged over all four WA bioregions between 1982 and 2023 (grey line), 2024 year (blue line) and the MHW threshold (red line). RIGHT PLOT: A ranking of the top 20 warmest years by annual SST anomalies (relative to 1982-2018 climatology) showing 2024 as the warmest year since 1982. Data from NOAA High-resolution Blended Analysis.

ABORIGINAL FISHERIES SCIENCE

M. Travers, A. Harry, S. Ayton, J. Taylor

Aboriginal Engagement in Fisheries Science

The Fisheries Science and Assessment (FSA) branch of DPIRD is responsible for undertaking increased Aboriginal engagement and participation in projects to ensure our work supports the reconciliation and empowerment of Aboriginal people in the fisheries science that DPIRD undertakes. Fishing and caring for Country to ensure the sustainability of fisheries resources are of vital importance to Aboriginal people in WA and are central to ensuring their cultural responsibilities are upheld and food security is maintained.

During 2024-25, the DPIRD Aboriginal Engagement Science (AES) Team has continued to focus on activities and projects that build strong connections with Aboriginal people throughout WA to increase the understanding, value, and recognition of Aboriginal involvement in the sustainability of fisheries resources throughout WA. This work also provides an opportunity to better understand stocks or resources of cultural priority, recognizing these in addition to the historical focus on resources of commercial and recreational importance.

A significant role of the AES Team is to work with Traditional Owners on developing science and monitoring programs, as relevant to the Fisheries portfolio, proposed through formal marine planning (marine parks) and associated Indigenous Land Use Agreements (ILUAs). Co-developed science programs take into account local Aboriginal Lore and custom, which includes where fishing is allowed to occur according to Aboriginal seasons and what species and size of fisheries resources can be harvested.

Collaborative fisheries science activities undertaken with Aboriginal people provide important biological and fisheries independent data streams that are used for fisheries resource assessment. In 2024-25, biological data streams were focused on fish, shark and ray species of importance to the commercial, recreational, and Aboriginal fishing sectors.

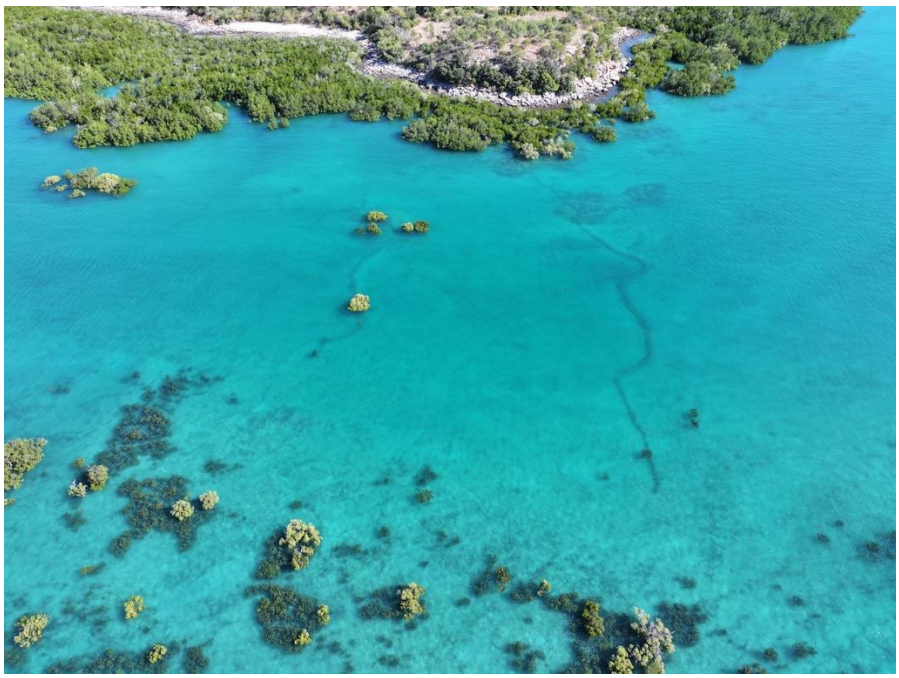
Aboriginal Science Highlights

Co-developing aquatic science and monitoring activities with the Dambimangari, Mayala, and Bardi-Jawi people as part of the management of the Buccaneer Archipelago Marine Parks (BAMPs).

Royalties for Regions funding of $4.3 million has been committed by the WA Government over four years (2023-24 to 2026-27) for DPIRD to undertake research and monitoring activities in support of aquatic science deliverables within the BAMPs to deliver the management strategies outlined in marine park management plans.

During 2024-25 DPIRD continued to engage with Traditional Owner groups in the process of co-developing prioritised research and monitoring activities to address high priority management strategies related to fisheries resources. This included planning workshops for the Bardi Jawi Gaarra and Lalang-gaddam marine parks that brought together Traditional Owners, natural resource managers, and government agencies to discuss fisheries research priorities. There has been a focus on recruitment and procurement processes to provide the resources to enable aquatic science activities to be undertaken. A BAMPs research vessel is under construction, and a Broome based Aboriginal Technical Officer position was established to support the science program.

As part of the BAMPS project in 2024-25 DPIRD undertook an ‘on country’ trip for the Bardi Jawi Gaarra marine park on the RV Djildjit (ABORIGINAL FISHERIES SCIENCE FIGURE 1). In June 2025, researchers from DPIRD joined Bardi Jawi Traditional Owners, Indigenous Protected Area (IPA) rangers, and DBCA rangers in a two-way knowledge exchange. The trip provided an opportunity to learn about the rich cultural history of Bardi Jawi people, the prominent role and importance of fisheries resources, and the aspirations of Traditional Owners for Sea Country management. During the trip, DPIRD staff learned about protocols for visiting and working on Bardi Jawi country, visiting marine park zones, culturally important areas, and existing IPA monitoring sites.



ABORIGINAL FISHERIES SCIENCE FIGURE 1.
Fish traps in the Bardi Jawi Gaarra Marine Park visited during the July 'on country' trip on the RV Djildjit.

Understanding aquatic resources in *Yawuru Nagulagun* (Yawuru Sea Country) to support fisheries and marine park management.

This program is about working with Yawuru Traditional Owners in Broome to collect data on fisheries resources of *Yawuru Nagulagun* (Yawuru Sea Country) to support fisheries management arrangements and management priorities for the Yawuru Nagulagun Marine Park and Yawuru Indigenous Protected Area.

In 2024-25 DPIRD staff worked with the Yawuru Country Managers, Murdoch University and other government agencies to support the development of the Yawuru Nagula Buru Acoustic Array. This network of acoustic receivers is the most northern acoustic array in WA and will be able to track the movements of a wide range of tagged species of marine animals including fish species of recreational, commercial and customary significance.

Activities in 2025 for this program focused on developing procedures for internal acoustic tagging of a range of nearshore fish and elasmobranchs including *walga walga* (blue threadfin), *birrala* (giant threadfin), barramundi, and sawfish (ABORIGINAL FISHERIES SCIENCE FIGURE 2). The acoustic tags, which have a battery life of up to 10 years, will enable researchers to better understand fine-scale movements of these species in Roebuck Bay which will help inform future spatial planning and understand the effectiveness of existing zoning such as the Yawuru netting accord.



ABORIGINAL FISHERIES SCIENCE FIGURE 2.
Acoustic tagging of key nearshore fish species such as barramundi (Lates calcarifer), walga walga (blue threadfin) and birrala (giant threadfin) as part of collaborative work on Yawuru Sea Country to determine connectivity of these iconic species.

From the desert to the sea with Nyangumarta Warrarn: understanding fisheries resources in Nyangumarta Sea Country.

During August and September 2024, the AES Team worked with Nyangumarta Traditional Owners to undertake surveys of fisheries resources along Eighty Mile Beach.

In 2014, Nyangumarta Traditional Owners entered into an Indigenous Land Use Agreement (ILUA) with the WA Government to create the Eighty Mile Beach Marine Park. Under this agreement, Nyangumarta contribute part of their exclusive native title area to WA's marine conservation estate, in turn providing a range of benefits to the WA Government and state through the preservation of this exceptional ecosystem. DPIRD is not a signatory to the ILUA, but does have legislative responsibility for fish, so have an important role to play in undertaking fisheries compliance, management, and science for the marine park.

Access to fish resources is a key concern for Nyangumarta people. Due to historical circumstances, Traditional Owners don't reside in their Native Title area, with most now living in Bidyadanga or further afield. This limits the ability of the community to obtain fish for food, for cultural purposes, and to undertake cultural practices. Eighty Mile Beach is a popular tourist and fishing destination, and there are also concerns about impacts of recreational fishing.

This year, DPIRD undertook gillnet surveys for culturally important giant threadfin, *Polydactylus macrochir,* with Nyangumarta Warran IPA men's and women's ranger teams, Traditional Owners, and both DBCA Nyangumarta and Ngarla rangers (ABORIGINAL FISHERIES SCIENCE FIGURE 3).

As part of an Australian Government Department of Climate Change, Energy, the Environment and Water funded project, DPIRD also undertook a Baited Remote Underwater Video Survey (BRUVS) survey of fish and habitats. Nyangumarta have a long-term goal to dedicate a Sea Country IPA and establish a marine ranger team, and this project is a first step towards that.



ABORIGINAL FISHERIES SCIENCE FIGURE 1.
Giant threadfin caught during the Eighty Mile Beach ‘salmon survey’ with Nyangumarta Traditional Owners.

WEST COAST BIOREGION



WEST COAST BIOREGION

ABOUT THE BIOREGION

The marine environment of the West Coast bioregion (WCB) between Kalbarri and Augusta is predominantly a temperate oceanic zone. However, it is heavily influenced by the Leeuwin Current, which transports warm tropical water southward along the edge of the continental shelf.

The Integrated Marine and Coastal Regionalisation for Australia (IMCRA V4.0) scheme divides this bioregion into three meso-scale regions: Abrolhos Islands, Central West Coast, and Leeuwin-Naturaliste (West Coast Bioregion Overview Figure 1).

Most of the fish stocks of the region are temperate, in keeping with the coastal water temperatures that range from 18° C to about 24° C. The Leeuwin Current is also responsible for the existence of the Abrolhos Islands coral reefs at latitude 29° S; and the extended southward distribution of many tropical species along the West Coast and even into the South Coast. Some species have appeared to form self-sustaining populations in this bioregion.

The Leeuwin Current system, which can be up to several hundred kilometres wide along the West Coast, flows most strongly in autumn/winter (April to August), and has its origins in oceanic flows from the Pacific through the Indonesian Archipelago. The current is variable in strength from year-to-year, typically flowing at speeds around 1 knot, but has been recorded at up to 3 knots on occasions. The annual variability in current strength is reflected in variations in Fremantle sea levels, and is related to *El Niño*/La Niña or Southern Oscillation events in the Pacific Ocean.

Weaker counter-currents on the continental shelf (shoreward of the Leeuwin Current), such as the Capes Current that flows northward from Cape Leeuwin as far as Shark Bay, occur during summer and influence the distribution of many coastal finfish species.

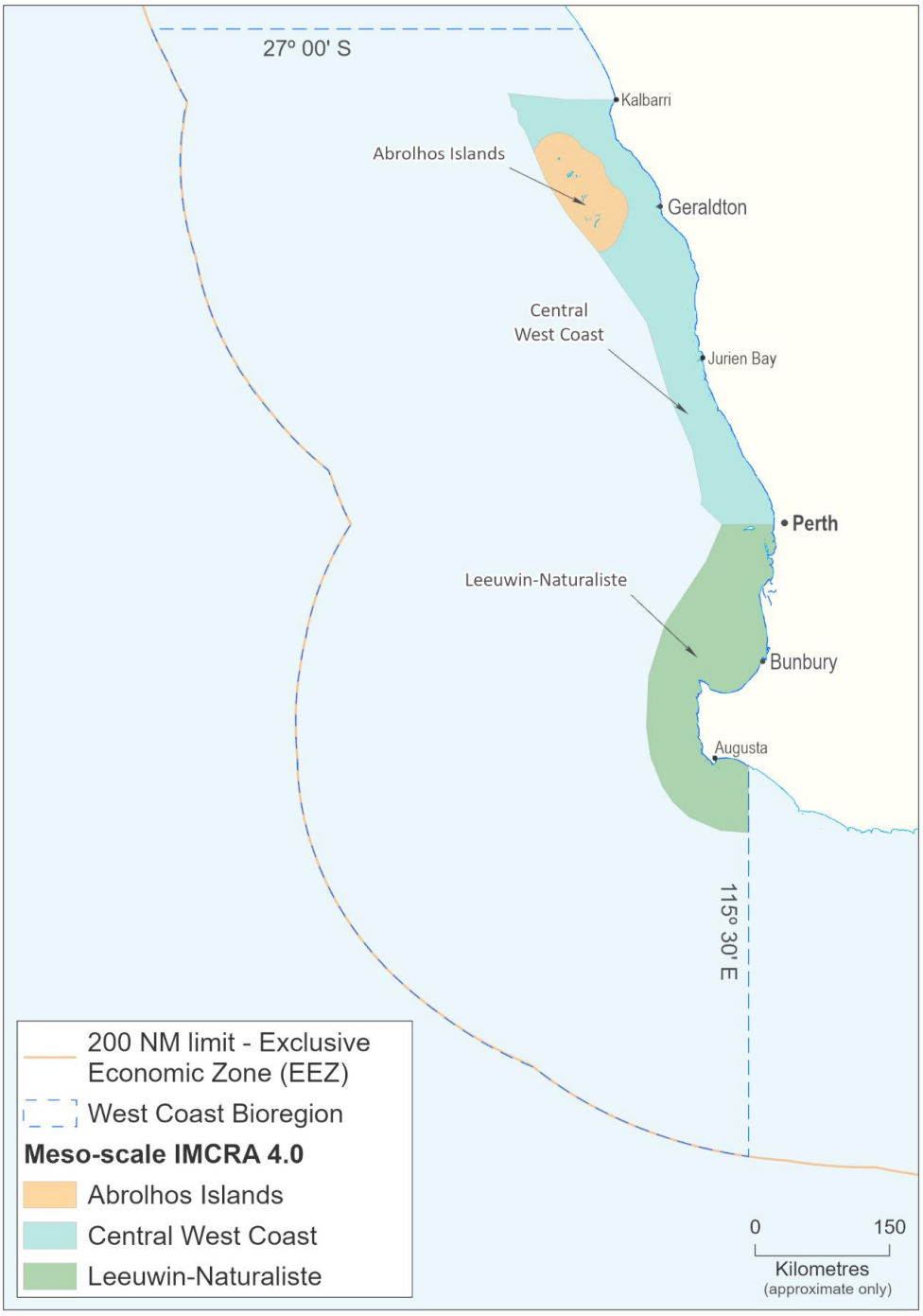
The most significant impact of the clear, warm, low-nutrient waters of the Leeuwin Current is on the growth and distribution of temperate seagrasses. These form extensive meadows in protected coastal waters of the WCB, generally in depths of less than 20 m (but up to 30 m), and act as major nursery areas for many fish species and particularly for western rock lobster.

The WCB is characterised by exposed sandy beaches and a limestone reef system that creates surface reef lines, often about 5 kilometres off the coast. Further offshore, the continental shelf habitats are typically composed of coarse sand interspersed with low limestone reef associated with old shorelines. There are few areas of protected water along the west coast, the exceptions being within the Abrolhos Islands, the leeward sides of some small islands off the midwest coast, as well as behind Rottnest (Wadjemup) and Garden Islands in the Perth metropolitan area.

The 2 significant marine embayments in the WCB are Cockburn Sound and Geographe Bay. Along the west coast, there are 4 significant estuarine systems: the Swan/Canning, Peel/Harvey and Leschenault estuaries, and the Hardy Inlet (Blackwood estuary). All of these are permanently open to the sea and form an extension of the marine environment, except when freshwater run-off displaces the oceanic water for a short period in winter and spring.

Southward of Cape Naturaliste, the coastline changes from limestone to predominantly granite and becomes more exposed to the influences of the Southern Ocean.

The ecosystem boundaries as defined by IMCRA (V4.0) in the bioregion and are depicted in West Coast Bioregion Overview Figure 1. The potential threats and risks to these ecosystems are often similar. For simplicity, risk ratings were allocated by grouping the ecosystems into two broad groups, estuarine or marine. However, if a particular ecosystem is unique and/or is exposed to different or significant threats, risk was allocated to those ecosystems separately.



WEST COAST BIOREGION OVERVIEW FIGURE 1
Boundaries of the three main IMCRA (V4.0) ecosystems in the West Coast bioregion: Abrolhos Islands, Central West Coast, and the Leeuwin-Naturaliste.

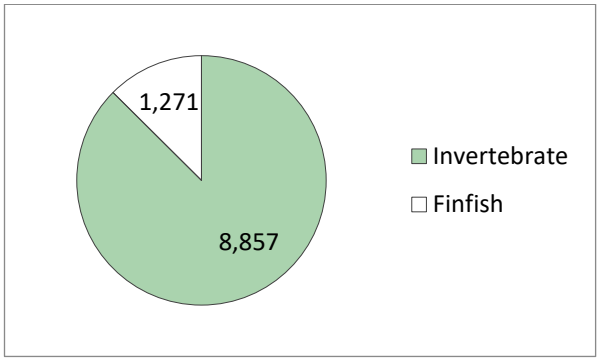
SUMMARY OF ACTIVITIES POTENTIALLY IMPACTING THE BIOREGION

Commercial Fishing

The commercial catch in this bioregion is dominated by invertebrates (see West Coast Bioregion Overview Figure 2). The principal commercial fishery in this region is the western rock lobster fishery, which has historically been Australia's most valuable single-species wild capture fishery and the first fishery in the world to achieve the Marine Stewardship Council's (MSC) certification, which it has maintained since 2000.

There are also significant commercial fisheries for other invertebrates including scallops, abalone, blue swimmer crabs and octopus that use trawl, diving and potting methods. Several of these have also achieved MSC certification, e.g. Abrolhos Islands and Mid-West Trawl Managed Fishery (scallop), Western Australia abalone, and the Western Australia Peel Harvey Estuary: commerical blue swimmer crab and commerical sea mullet. Commercial fishers also take a range of finfish species including sharks, West

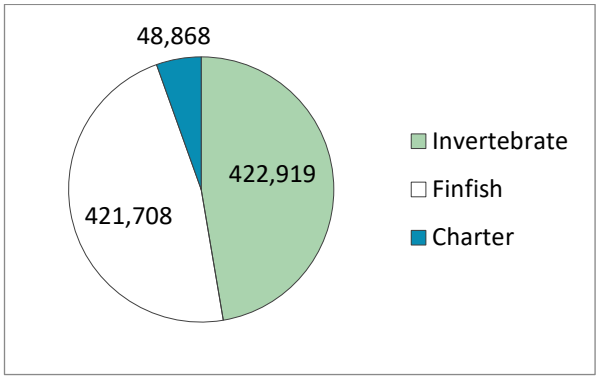
Australian dhufish, snapper, baldchin groper, and emperors using demersal line and net methods. Beach-based methods such as beach seining and near-shore gillnetting, and hand-hauled nets are used to capture whitebait, mullet, and whiting in a limited number of locations.



WEST COAST BIOREGION OVERVIEW FIGURE 2
Contribution of finfish and invertebrates to the total commercial wild fishery catch originating from the West Coast bioregion. Numbers represent total catch (tonnes)

Recreational Fishing

The WCB, which contains the WA's major population centres, is the most heavily used bioregion for recreational fishing (including charter based fishing). The range of recreational fishing opportunities includes estuarine fishing (both shore and boat-based), beach fishing, and boat fishing either in embayments or offshore. Fishing for demersal and pelagic/game species often occurs around islands, along bottom features, and out to the edge of the continental shelf. The recreational catch is dominated by invertebrates (West Coast Bioregion Overview Figure 3).



WEST COAST BIOREGION OVERVIEW FIGURE 3
Recreational catches (by number) in the West Coast bioregion. Finfish and invertebrate catches were assessed in the statewide survey of boat-based recreational fishing in 2023-24[1]. Charter boat catch is for the same period. Estimates of shore based recreational catch are unavailable.

Vessel retrievals from key boat ramps have been monitored using remote cameras for previous statewide surveys[2]. The typical seasonal pattern of vessel retrievals at Hillarys and Woodman Point was not observed during the early stages of COVID-19 restrictions from March to August 2020[2]. Activity patterns post COVID-19 travel restrictions are currently being analysed.

Aquaculture

The principal aquaculture development activity in the WCB is the emerging black pearl industry based on the production of *Pinctada margaritifera* at the Abrolhos Islands. Initiatives to expand the number of aquaculture sectors in this bioregion currently include those for seaweed, and finfish. There is growing interest in the production of seaweed for extraction of high-value products including pharmaceuticals, nutraceuticals, and for *Asparagopsis* species, the extraction of bromophores for use in ruminant feed for methane reduction. DPIRD has established a Mid-West Aquaculture Development Zone which aims to provide a platform to stimulate aquaculture investment and development in the bioregion.

Tourism

WA's capital city, Perth, is the principal gateway for more than 5.26 million visitors to WA each year and is a major international transit point for travellers arriving in Australia from Europe and Asia with 810,000 international visitors in 2024. Beach-going is among the most popular leisure activities for tourists in the WCB. Surfing, fishing, SCUBA diving and snorkelling, windsurfing, whale watching and other marine wildlife experiences are also popular tourist activities.

Shipping and Maritime Activity

The WCB contains several major port facilities, including the WA's busiest general cargo port (Fremantle), and the Royal Australian Navy's largest base (HMAS Stirling) on Garden Island. A land backed port is being developed in Kwinana (Westport), and a deep-water port at Oakajee, 24 km north of Geraldton. In addition to handling most of WA's container trade, significant quantities of non-containerised cargo pass through Fremantle, including motor vehicles, steel and machinery imports, livestock exports, and bulk commodities such as petroleum, grain, alumina, iron ore, mineral sands, fertilisers and sulphur. Two other major commercial ports at

1 Ryan KL, Lai EKM, Smallwood CB, Tate AC. 2025. Boat-based recreational fishing in Western Australia 2023-24. Fisheries Research Report No. 327. Department of Primary Industries and Regional Development, Western Australia.

2 Ryan KL, Desfosses CJ, Denham AM, Taylor SM, Jackson, G. 2021. Initial insights on the impact of COVID-19 on boat-based recreational fishing in Western Australia. Marine Policy 132: 104646.

Bunbury and Geraldton primarily export iron ore, grain, mineral sands, and alumina. Prior to COVID-19, international cruise ship visitations had increased and some cruise liners were home-based in Fremantle.

Major shipbuilding, repair, maintenance and offshore construction support industries are located at Henderson in the north-eastern corner of Cockburn Sound. Collectively, these enterprises directly employ over 2,000 people, indirectly support thousands more jobs, and generate significant economic activity.

There are a number of smaller ports (e.g. Augusta, Busselton) and a large number of public boat ramps and marinas in the bioregion.

The impacts from vessels and ships tend to be concentrated around ports and favoured anchorage areas. Impacts include physical damage to the habitat, small pollution incidents and the potential to introduce marine pest species. DPIRD has surveillance in place for marine pests in key port areas to aid in the early detection of any unwanted aquatic species from other locations.

Other Activities

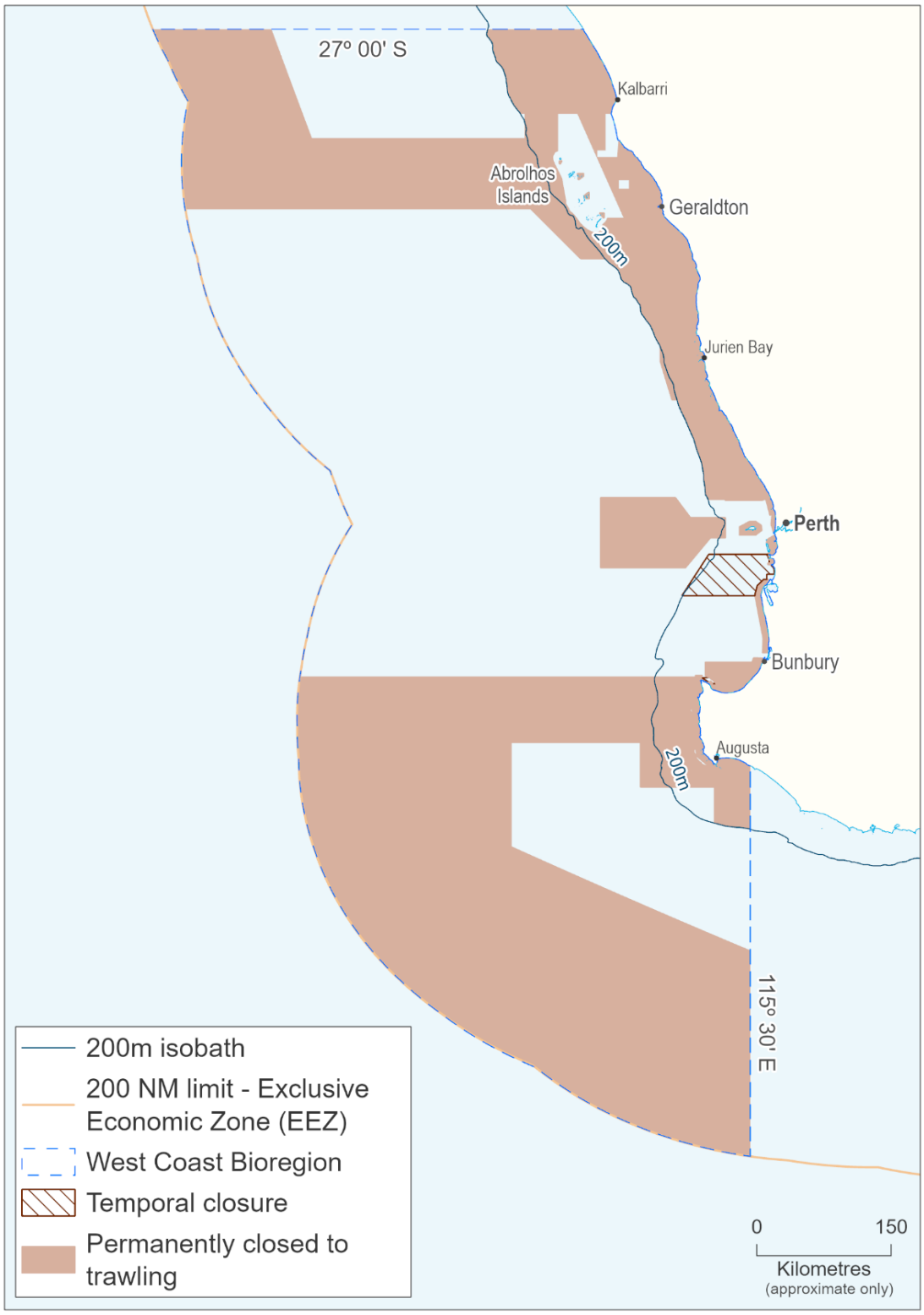
High rates of population growth and boat ownership in WA have strained recreational boating facilities around major population centres, particularly in the Perth metropolitan region. New and upgraded marinas and boat launching facilities have been completed or are planned to accommodate this demand, including at Ocean Reef and Two Rocks. Two large desalination plants at Kwinana and Binningup (22km north of Bunbury), which supply approximately half of Perth's freshwater requirements, also operate in the bioregion. Approval has been sought to develop two additional desalination plants in the metropolitan region, one of which is planned at Alkimos, which may develop if the population grows and water demands increase.

BIOREGIONAL SPECIFIC ECOSYSTEM MANAGEMENT

Within each bioregion there are a range of management measures that have been implemented to manage the potential impact of activities. Management measures specific to the WCB follow.

Spatial Closures

The marine benthic habitats and their associated biodiversity along most of the west coast are largely protected from any physical impact of commercial fishing by extensive closures to trawling. These closures inside 200 m depth were introduced in the 1970s and 1980s, in recognition of the significance of extensive areas of seagrass and reef as fish habitat (West Coast Bioregion Overview Figure 4). Demersal gillnet and longline fishing was also prohibited from waters inside the 250 m isobath between 31º and 33º south from November 2007. The extent of these areas means that most of the WCB inside 200 m depth can be classified as one of the marine protected area categories of the International Union for the Conservation of Nature (IUCN) (West Coast Bioregion Overview Table 1).



WEST COAST BIOREGION OVERVIEW FIGURE 4
Map showing areas of permanent and extended seasonal closures to trawl fishing in the West Coast bioregion. The areas permanently closed are consistent with IUCN marine protected area category IV.

WEST COAST BIOREGION OVERVIEW TABLE 1
The areas and proportions of the West Coast bioregion making up State Waters and all continental shelf waters, out to 200 m depth, which meet the IUCN criteria for classification as marine protected areas. This table does not include WA or Australina Government closures that are currently in the process of implementation. These areas will be included in future volumes, when their respective implementation processes are concluded.

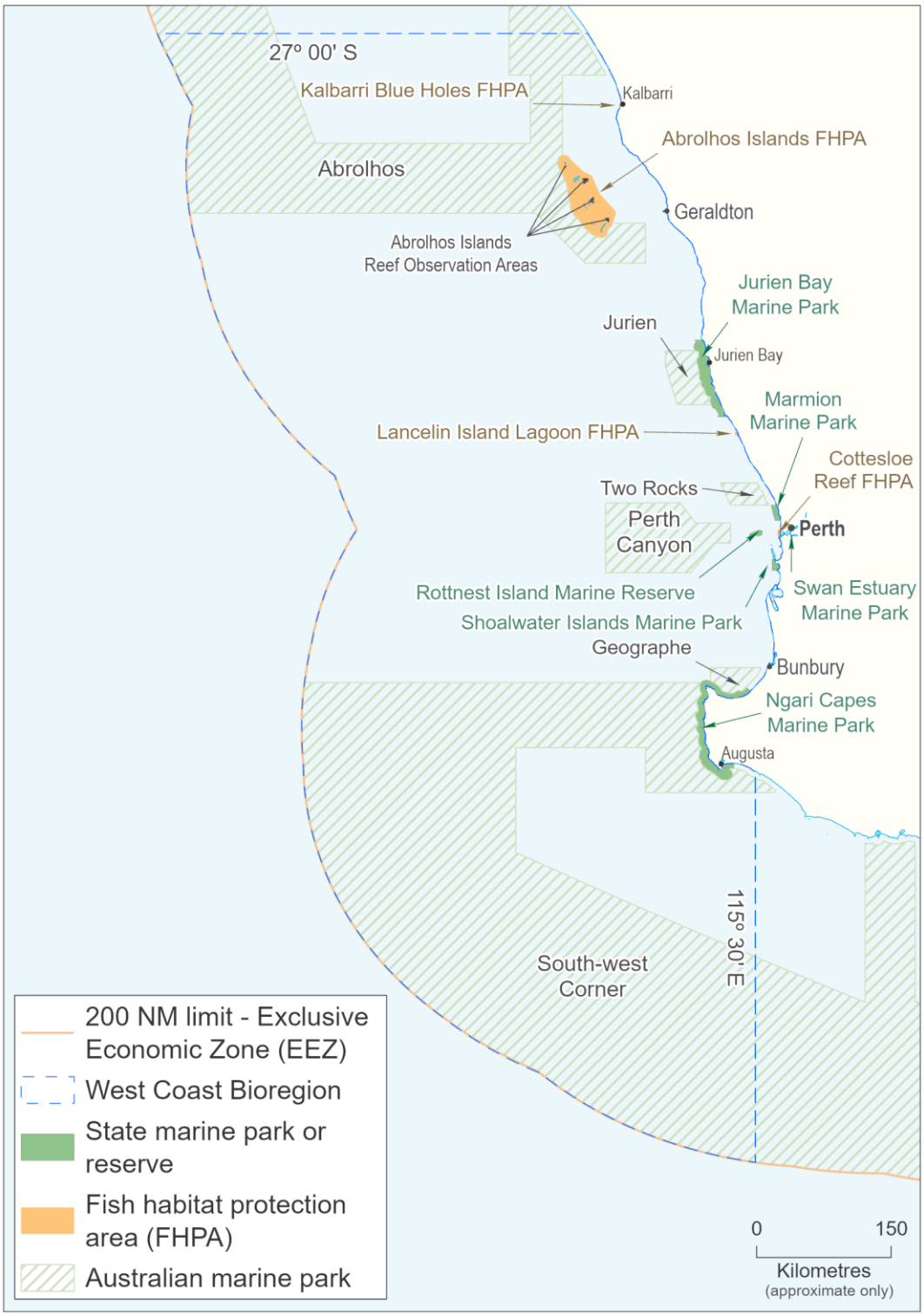
IUCN category or equivalent	State Waters only (10,088 km²)				All Waters (481,488 km² (including State Waters))			
	Fisheries		Existing MPA		Fisheries		Existing MPA	
	km²	%	km²	%	km²	%	km²	%
I	0	0	0	0	0	0	0	0
II	1	< 1	310	3	1	< 1	1,200	< 1
III	0	0	0	0	0	0	0	0
IV	4,500	40	1,900	17	33,600	7	1,900	< 1
V	0	0	11	< 1	0	0	0	0
VI	3,400	30	1,200	11	445,700	89	17,840	4

Protection of fish habitat and biodiversity is also provided by marine protected areas consistent with IUCN categories of I, II, and III along the west coast including: Fish Habitat Protection Areas (FHPAs) at the Abrolhos Islands, Lancelin Island Lagoon, Cottesloe Reef, and Kalbarri Blueholes; Reef Observation Areas within the Abrolhos Islands FHPA and closures to fishing under Section 43 of the *Fish Resources Management Act 1994* at the Busselton Underwater Observatory and around the wrecks of the *Saxon Ranger* (Shoalwater Bay), *HMAS Swan* (Geographe Bay), and *Lena* (off Bunbury).

In addition, State marine parks proclaimed under the *Conservation and Land Management Act 1984* include Jurien Bay, Marmion, Swan Estuary, Shoalwater Islands, and Ngari Capes marine parks. The Rottnest Island Marine Reserve is declared under the *Rottnest Island Authority Act 1987* (West Coast Bioregion Overview Figure 5).

In 2019, the WA Government announced the 'Plan for Our Parks' initiative to create additional marine parks and terrestrial conservation reserves. The initiative includes the expansion of the Marmion Marine Park from Trigg Point to Two Rocks,with the process is currently ongoing.

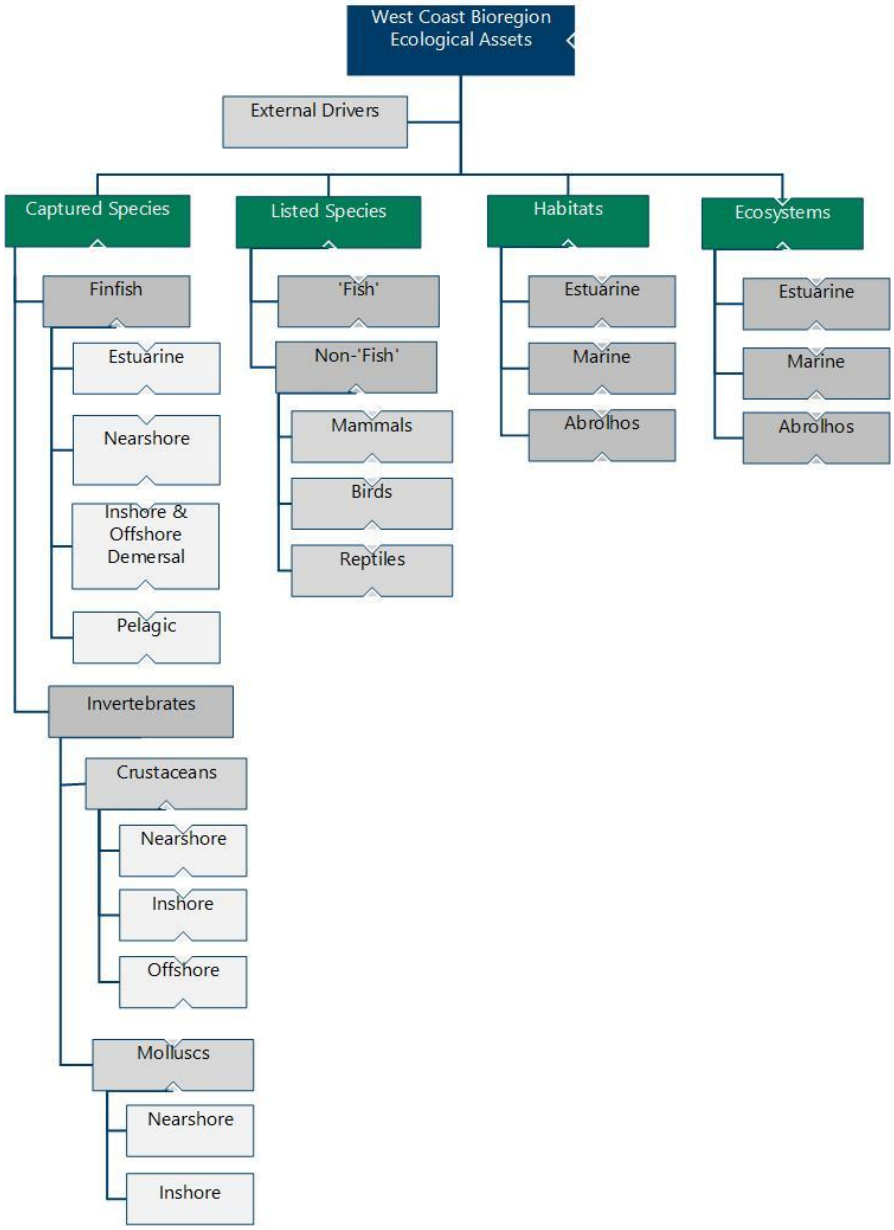
The Australian Government implemented an Australian Marine Park in Commonwealth waters between Kangaroo Island (South Australia) and Shark Bay in July 2018, which includes a network of marine parks in the WCB (West Coast Bioregion Overview Figure 5). In 2025, WA's Commonwealth marine parks are being reviewed, with a major focus on expanding the network and increasing protection through new marine parks and sanctuaries.



WEST COAST BIOREGION OVERVIEW FIGURE 5
Boundaries of the West Coast bioregion and current State and Commonwealth marine parks and reserves along the west coast.

ECOSYSTEM MONITORING AND STATUS

In order to assess the adequacy of management arrangements aimed at ensuring sustainability of the ecological assets within the WCB, DPIRD must identify and monitor trends in the condition of these resources. This is achieved through application of an Ecosystem Based Fisheries Management (EBFM) framework (see How to use this Volume for more information) to identify, in a hierarchical manner, the key ecological resources that require ongoing monitoring and assessment. The key ecological assets identified for the WCB are identified in West Coast Bioregion Overview Figure 6, and their current risk status is reported on in the following sections.



WEST COAST BIOREGION OVERVIEW FIGURE 6
Component tree showing the ecological assets identified and separately assessed for the West Coast bioregion.

External Drivers

External drivers include factors impacting at the bioregional level that are likely to affect the ecosystem as a whole and may not fall within the direct control of fisheries legislation (e.g. climate change). An understanding of these factors, which are typically environmental (e.g. ocean currents), is necessary to fully assess the performance of the ecological resource. The main external drivers identified with potential to affect the WCB include climate and introduced pests and diseases.

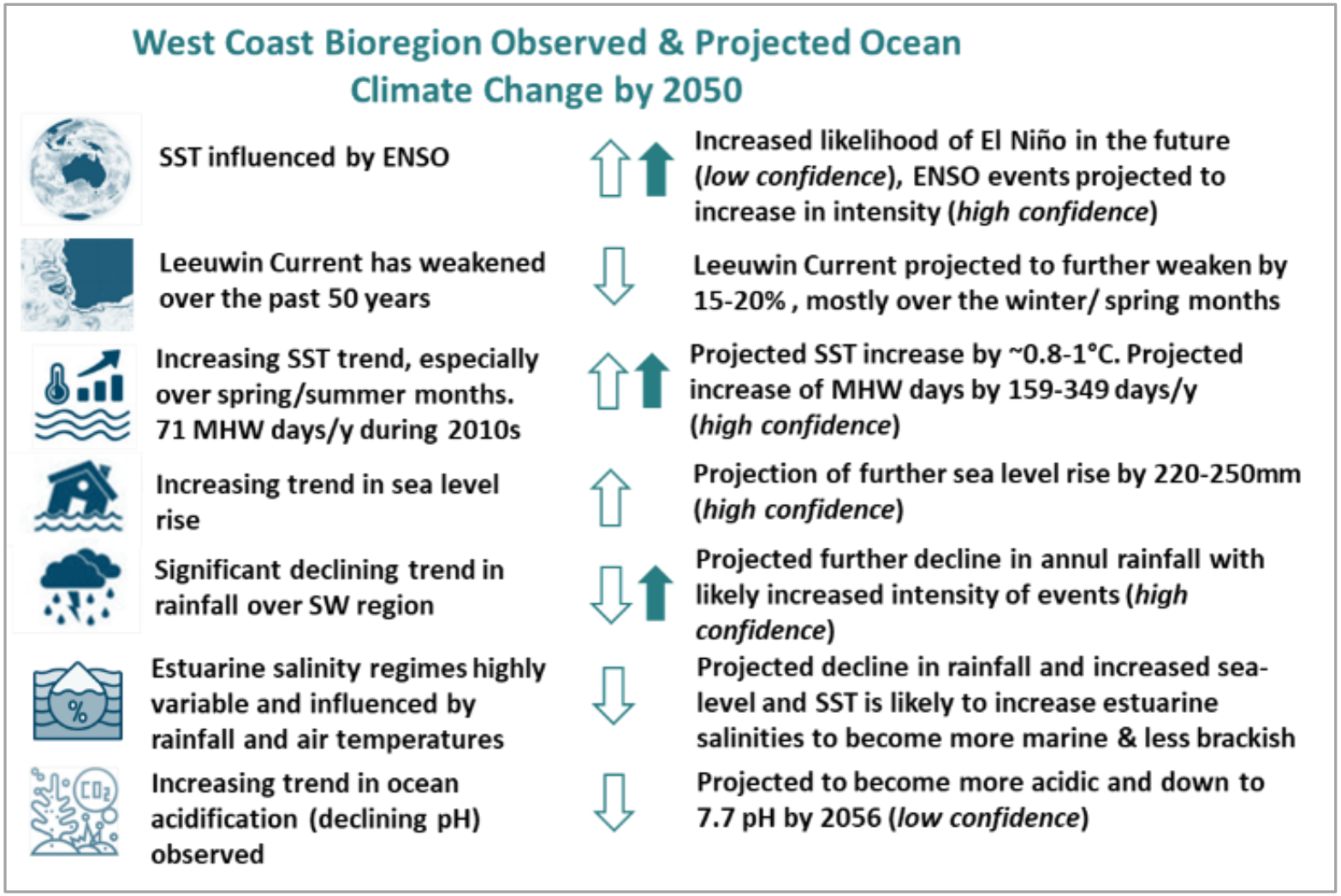
Climate change

The south west of WA is predicted to be heavily influenced by the impacts of climate change. Some climate change information has been taken into account in the rock lobster and Roe's ablalone stock assessment processes and the effects of the marine heatwave in 2010-11[1,2,3] on fisheries has been assessed.

A summary of the observed and projected bioregional predictions in key ocean climate variables is listed in South Coast Bioregion Overview Figure 7. This information supported the climate change risk assessment for the key indicator species in the managed resources from this bioregion.

1 Pearce A, Lenanton R, Jackson G, Moore J, Feng M, Gaughan D. 2011. The "marine heat wave" off Western Australia during the summer of 2010/11. Fisheries Research Report No. 222. Department of Fisheries, Western Australia. 40p.
2 Caputi N, Jackson G, Pearce, A. 2014. The marine heat wave off Western Australia during the summer of 2010/11 – 2 years on. Fisheries Research Report No. 250. Department of Fisheries, Western Australia. 40p.
3 Caputi, N. et al. 2015. Management implications of climate change effect on fisheries in Western Australia Part 1: Environmental change and risk assessment. FRDC Project No. 2010/535. Fisheries Research Report No. 260. Department of Fisheries, Western Australia. 180p.

West Coast Bioregion Overview



WEST COAST BIOREGION OVERVIEW FIGURE 7
Observed and projected changes (by 2050) in the key ocean climate drivers and variables of sea surface temperature (SST), marine heatwave (MHW) duration, mean annual sea level, annual rainfall, estuarine salinity, and ocean acidification for the West Coast bioregion (WCB). The open arrow indicates directional change or frequency while the solid arrow indicates projected change in intensity

Captured Species

FINFISH

Estuarine

Captured Species	Aquatic zone	Ecological Risk
Finfish	Estuarine	HIGH (non-fishing)

Stock status is variable among species. The stock of Perth herring is classified as environmentally limited in the WCB mainly due to external (non-fishing) factors (e.g. poor water quality, reduced water flows, water diversion, and other environmental factors).

The Peel-Harvey Estuary sea mullet fishery is MSC certified.

Nearshore

Captured Species	Aquatic zone	Ecological Risk
Finfish	Nearshore	HIGH (non-fishing)

Stocks of yellowfin whiting, Australian herring and WA salmon are classified as sustainable - adequate. After a 7 year closure, southern garfish in the Perth metropolitan zone reopened to recreational fishing and limited commercial fishing permitted to inform future stock assessments. The opening poses an acceptable (moderate) risk to the stock, which is classified as environmentally limited. Sandy sprat is classified as inadequate - environmentally limited. A new assessment is underway to evaluate changes in the sandy sprat stock since catch reductions were introduced.

Inshore and Offshore Demersal

Captured Species	Aquatic zone	Ecological Risk
Finfish	Inshore Demersal	SEVERE
Finfish	Offshore Demersal	MEDIUM

Stock assessments for key indicator species for the WCB inshore demersal suite show that fishing pressure has remained too high to allow stocks to replenish. New management measures were implemented in early 2023 to reduce catches by 50% but have not been effective at reducing fishing mortality to the level required to support recovery of the resource. Stocks of snapper and WA dhufish are unlikely to rebuild to the threshold reference level by 2030. Significant management changes will be required to ensure there are fish for the future. The stocks of deep-water indicator species are considered sustainable based on the current catch levels.

Pelagic

Captured species	Aquatic zone	Ecological Risk
Large pelagic finfish	Pelagic	MEDIUM
Small pelagic finfish	Pelagic	LOW

The capture of large pelagic fish in this bioregion is mainly by recreational anglers, who focus on samsonfish, yellowtail kingfish, mahi mahi, and tuna species. Scaly mackerel dominate the commercial catch of small pelagic fish. The stocks of pelagic indicator species are considered sustainable-adequate.

INVERTEBRATES

Crustaceans

Captured species	Aquatic zone	Ecological Risk
Crabs	Estuarine/ Nearshore	MEDIUM
Lobsters	Inshore	LOW

Recreational fishing for blue swimmer crab reopened in Cockburn Sound on 1 December 2024. However, Cockburn Sound has remained closed to the commercial sector since 2014, due to low stock levels. Biomass modelling suggests the stock level has now stabilised, albeit at a carrying capacity significantly below that recorded in the 2000s. This change is considered to be environmentally driven. All other crab stocks in this region (e.g. Swan-Canning Estuary, Peel-Harvey Estuary) are considered to be in an adequate state with acceptable fishing levels.

The stock levels of western rock lobster are currently at appropriate levels. Ongoing strong management of the rock lobster fishery has ensured that the lobster biomass and egg production are at record high levels. The Western Rock Lobster Fishery has maintained MSC certification since 2000.

Molluscs

Captured species	Aquatic zone	Ecological Risk
Abalone	Nearshore	MEDIUM
Scallops	Inshore	SEVERE
Octopus	Nearshore	LOW

The stocks of abalone are conservatively managed with strong management controls on both commercial and recreational fishers. However, the marine heat wave in 2010-11 caused the almost total loss of Roe's abalone in the Kalbarri region and that region has consequently been closed since 2011-12. A restocking project has been successful on a trial-

scale, but has not been implemented at a commercial scale to determine if restocking would recover the entire stock in the longer term.

Volatility in stock abundance is not uncommon or unexpected in scallop fisheries as they are a fecund, short-lived species Catches in these fisheries vary widely depending on the strength of recruitment. There was a notable decline in in the Abrolhos Islands and Mid-West Trawl Managed Fishery in 2024, with stocks approaching the limit reference point. A range of possible management actions are being considered for the 2025 season. The South West Trawl Managed Fishery are both considered to be sustainable-adequate.

The WCB octopus fishery is still in a growth and development phase, with annual catches likely to be no more than 20% of the total biomass. Consequently, the breeding stock is considered to be sustainable-adequate.

Listed species

A variety of endangered, threatened, and protected[1] (ETP) species can be found within the WCB, including cetaceans, pinnipeds, elasmobranchs, seahorses and pipefish, and sea/shore birds. These species are protected by various international agreements and national and state legislation. Primary pieces of legislation include the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (Cth), the *Western Australian Biodiversity Conservation Act 2016* (WA), and the *Fish Resources Management Act 1994* (WA).

Fish

Listed species	Ecological Risk
Fish	MEDIUM

Grey nurse shark (*Carcharias taurus*) are protected under State and Commonwealth legislation throughout this and all other marine bioregions. Blue groper (Rottnest Island) and baldchin groper (Abrolhos Islands FHPA between 1 November and 31 January) cannot be landed by commercial or recreational fishers in particular areas and periods.

Non-Fish

Listed species	Ecological Risk
Mammals	MEDIUM
Birds and Reptiles	HIGH

The WCB lies to the south of the distribution of most marine turtles, and as such there are minimal risks to turtles from fishing activities within this bioregion. The trawl fishery that operates around the Abrolhos Islands uses bycatch reduction devices, which are effective at minimising the capture of turtles.

Sea Lion Exclusion Devices (SLEDs) have now been implemented for rock lobster pots near Australian sea lion breeding colonies. Gillnet exclusion zones are in place around known Australian sea lion colonies. Demersal gillnet fishing effort in the WCB, which has historically been responsible for a very small number of reported sea lion captures, is now less than 10% of its peak level of the late 1980s. A recent ecological risk assessment for the Western Australian Temperate Demersal Elasmobranch Resource identified Australian sea lions as being high risk[2]. This was attributed to the potential for interaction with commercial gillnets, a lack of population modelling and fishery-independent data validation. However, as most current gillnet effort occurs on the south coast, fishing activities are deemed to pose a medium risk to Australian sea lions in the WCB.

Regulated modifications to rock lobster fishing gear configuration during humpback and southern right whales' northerly winter migration have successfully reduced entanglement rates by ~60% in recent years. Thus, risks to whales from fishing activities in the West Coast Bioregion have decreased in recent years.

Fisher et al. (2020[3]), reported a high risk score for the migratory and threatened shorebird species that inhabit Peel-Harvey Estuary during the summer months, when there is potential for feeding and roosting birds to be disturbed by recreational scoop net fishers in key areas of overlap. The impacts of recreational crabbing in Peel Harvey Estuary on migratory ETP shorebirds are being assessed in more detail.

Habitats and Ecosystems

Due to the counteracting Leeuwin and Capes Currents, the WCB has the unique characteristic of containing tropical, sub-tropical and temperate ecosystems. The key habitats occurring in depths of less than 40 m (where the vast majority of relevant fisheries resources are located and fishing activities are undertaken in this bioregion) include:

Algae: Along the WCB, algae attach to intertidal and subtidal rocky substrata and in turn, are habitat to a variety of organisms. Algal assemblages contribute to marine nutrient and

1 Note that listed species does not automatically indicate that a species is either threatened or endangered.
2 Watt M, Braccini M, Smith K, Hourston M. 2021. Ecological Risk Assessment for the Temperate Demersal Elasmobranch Resource. Fisheries Research Report No. 318. Department of Primary Industries and Regional Development, Western Australia. 110p.
3 Fisher EA, Evans SN, Desfosses CJ, Johnston DJ, Duffy R, Smith KA. 2020. Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia. 102p.

carbon cycling, and are an important food source, nursery ground, and shelter for a variety of organisms. Within the bioregion, there is a gradual transition from the subtropical flora of the Abrolhos Islands and north of Geraldton to a cold-temperate flora found along the southwest corner and south coast of WA. Macroalgae along the southwestern and southern coasts of Australia are very diverse, with a high level of endemism.

Sand: The majority of seabed of the WCB is composed of soft, unconsolidated sediments. These sediments provide an important habitat for microalgae and benthic infauna.

Seagrasses: In temperate WA, seagrasses occupy approx. 20,000 km^2 of shallow coastal waters and grow predominantly on sand from 1 to 35 m depth. They are sometimes also found also on deep rock to over 50 m depth. Seagrasses provide habitat for many fish and crustacean species, stabilise coastal sediments, and prevent coastal erosion. In addition, seagrasses are important for primary production, CO_2 uptake, and nutrient cycling. The diversity of seagrasses in temperate south-western Australia is the highest for any temperate region, with 17 species within the WCB and South Coast bioregion combined.

Corals: Due to the cool temperate waters, corals are not common in the WCB with the exception of the Abrolhos Islands, which are located offshore and are more exposed to the warm Leeuwin Current. The Abrolhos Islands are well known for their high species diversity, coral reefs and unique mixture of temperate and tropical species. Currently there are 184 recorded coral species at the Abrolhos. Elsewhere in the WCB corals occur in patches around offshore islands, usually comprising only a few species.

Sponges: In southwestern Australia, sponges are found in areas where algae are less dominant, including shallow waters, areas deeper than 30m, and caves. As they are sessile filter-feeders, sponges flourish in areas of high current, although large sponges are also found in calmer deeper waters. In areas with an absence of reef-building corals, sponges function as large epibenthos that form the three-dimensional structure of subtidal reefs, providing shelter for other organisms such as worms, crustaceans, echinoderms, molluscs, and fish.

Habitats

Habitats	Aquatic zone	Current Risk Status
West Coast	Estuarine	HIGH (non-fishing)
West Coast	Marine	MEDIUM
Abrolhos Islands	Marine	MEDIUM

The WCB is a micro-tidal, relatively high-energy area, with clear water and few rivers. The coastline is characterised by long beaches with occasional limestone cliffs and headlands, with offshore limestone islands and reef complexes. There are numerous marine protected areas in the WCB (refer West Coast Bioregion Overview Figure 5). Spatial zoning restricts activities within these areas, including the prevention of trawling.

Peel-Harvey Estuary habitats are under pressure due to poor water quality as a result of farming, canal development and urbanisation in the surrounding catchment. Fisher et al. (2020[1]), assessed the impacts of fishing on the various habitats in Peel Harvey Estuary as being either negligible or low. Cockburn Sound, which contains large areas of seagrass, has been mined for shell sand since 1972. The permitted areas for mining have been increasingly restricted and regulated since the commencement of mining operations. Therefore the risk score relating to WCB habitats (estuarine) is associated with the general health of habitats in bioregion, not referring to the impact of fishing .

The main fisheries in the central WCB involve fishing gear which has minimal impacts to the benthic habitats. These include: western rock lobster and octopus which uses traps, Roe's abalone which are hand collected, and several finfish fisheries that mainly use lines. Localised impacts to some nearshore rock platforms in the Perth metropolitan zone may occur as a result of concentrated recreational activity during the brief fishing season for Roe's abalone.

Due to the unique diversity of tropical and temperate habitats, the Abrolhos Islands were gazetted as WA's first Fish Habitat Protection Area (FHPA) and have been placed on the National Estate Register. Due to this, the risks to Abrolhos Islands habitats are assessed separately to the bioregion as a whole.

The main activities at the Abrolhos Islands are commercial rock lobster potting and line fishing, and recreational fishing and diving[2]. DPIRD has a long term coral reef monitoring program at the Abrolhos to detect potential impacts from human use and natural influences.

There are 45 public moorings installed at the Abrolhos Islands, distributed around the different

1 Fisher EA, Evans SN, Desfosses CJ, Johnston DJ, Duffy R, Smith KA. 2020. Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia. 102p.

2 Evans SN, Konzewitsch N, Bellchambers LM. 2022. Houtman Abrolhos Islands Fish Habitat Protection Area: A Summary of Marine Resource Use and Ecological Attributes. Fisheries Research Report No. 321. Department of Primary Industries and Regional Development, Western Australia. 174p.

island groups, to minimise impacts of anchoring on benthic habitats. The commercial scallop fishery also operates predominately in areas of sand away from coral reef habitats. Projected development of the tourism industry in the area may have effects on the habitats and will be monitored.

Ecosystems

Ecosystem	Aquatic zone	Current Risk Status
West Coast	Estuarine	HIGH (non-fishing)
West Coast	Marine	MEDIUM
Abrolhos Islands	Marine	MEDIUM

The estuarine ecosystems within this bioregion have been identified as being at significant risk, due to external factors (water quality issues due to high nutrient runoff from surrounding catchment, reduced rainfall) which have the potential to affect fish and other communities. Fish mortality events have been periodically reported from within the Peel-Harvey and Swan-Canning estuaries and in Cockburn Sound. Therefore the risk score relating to WCB ecosystem (estuarine) is associated with the general health of habitats in bioregion, not referring to the impact of fishing.

An assessment of the community structure and trophic level of all commercially caught fish species over the past 30 years found no evidence of systematic changes that could be evidence of an unacceptable impact on this ecosystem (Hall and Wise 2011)[1]. Continued monitoring of a deep water closed area will allow evaluation of potential ecosystem impacts of lobster fishing in deeper water ecosystems.

The central WCB area hosts multiple breeding colonies of the Australian sea lion, which is listed as endangered. Harvesting of key prey, such as lobster and octopus, around colonies is considered a medium risk because it could potentially reduce the quantity or quality of food available to sea lions (Desfosses et al. 2024)[2].

The Abrolhos Islands are protected within a FHPA and are not considered to be at an unacceptable risk from fisheries related activities. A significant coral bleaching event was observed during the marine heat wave event in 2011 (Abdo et al. 2012)[3]. The impact of this event is being monitored as part of an ongoing monitoring program run by DPIRD. The program also includes monitoring of the community structure of finfish within and outside of non-fishing areas

1 Hall NG, Wise BS. 2011. Development of an ecosystem approach to the monitoring and management of Western Australian fisheries. FRDC Report – Project 2005/063. Fisheries Research Report, No. 215. Department of Fisheries, Western Australia. 112p.

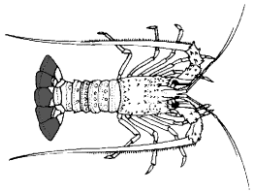
2 Desfosses C, Smith KA, Strain L, Murphy D, Hogan-West K, Yeoh D, Burchert S, Wiberg L, Oliver R, Crisafulli B, Mitsopoulos G. 2024. Ecological Risk Assessment for the Western Australian Cephalopod Resource. Fisheries Research Report No. 342. Department of Primary Industries and Regional Development, Western Australia. 88 p.

3 Abdo DA, Bellchambers LM, Evans SN. 2012. Turning up the Heat: Increasing Temperature and Coral Bleaching at the High Latitude Coral Reefs of the Houtman Abrolhos Islands. PLoS ONE 7 (8): e43878.

FISHERIES

WEST COAST ROCK LOBSTER RESOURCE STATUS REPORT 2025

S. de Lestang and T. Grosse



OVERVIEW

The West Coast Rock Lobster Managed Fishery (WCRLMF) targets the western rock lobster (*Panulirus cygnus*: WRL), off the west coast of WA between North-West Cape and Cape Leeuwin. Lobsters are taken throughout their range by both the commercial and recreational sectors, and each sector operates to formal resource allocations.

The WCRLMF was one of the first limited entry fisheries in the world, and for over 20 years utilised an Individual Transferable Effort system based on the number of allowable baited pots. In 2010-11, the WCRLMF began the transition to an Individually Transferable Quota (ITQ) fishery and now has a harvest strategy that uses Maximum Economic Yield (MEY) as its management target (DPIRD 2024). The WCRLMF has historically been Australia's most valuable wild capture fishery and in 2000, became the first fishery in the world to achieve Marine Stewardship Council (MSC) Certification. In 2022, it was the first fishery globally to be certified by MSC for the fifth time (see de Lestang et al. 2016, for further details on the assessment and management of this fishery).

The timing of the commercial fishing season has changed periodically since the introduction of quotas in 2010 and a permanent change to financial year started in July 2023.

Western rock lobster is also targeted by recreational and charter fishers using pots and diving (Smallwood et al. 2024). Since moving to a 12-month season, WRL is now the most commonly caught recreational species in WA.

For consistency in reporting, all data series are now reported by financial year, and not on the scale of historical fishing seasons.

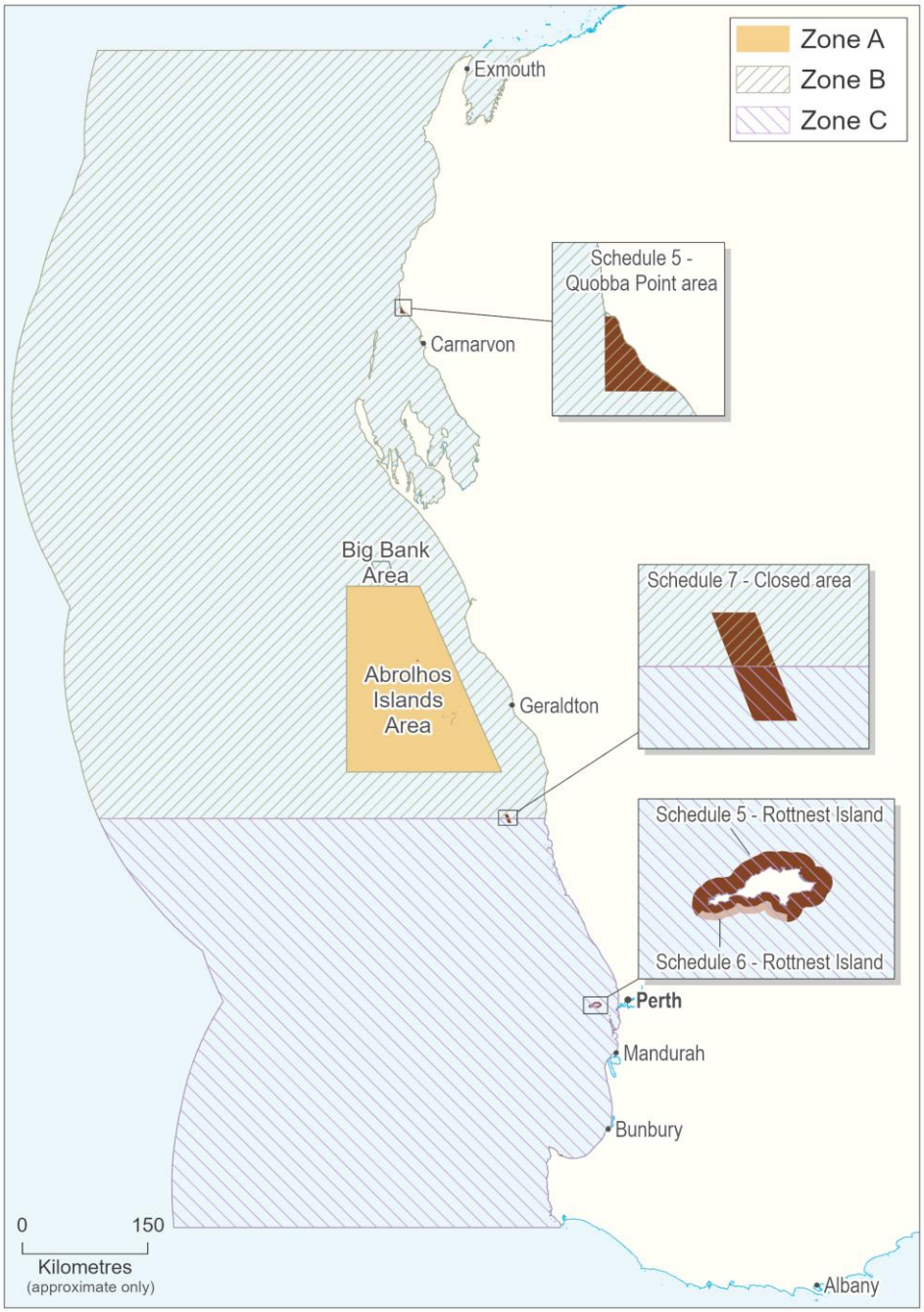
SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery (TACC 7,411 t)	Total Catch July 2023-Jun 2024: 7,403 t	Acceptable
Recreational fishery (527 t)	Total Catch May 2023-Apr 2024: 424 - 514 t (95% CI). Charter: 20 t.	Acceptable
EBFM		
Indicator species		
Western Rock Lobster	Low risk: Above biomass threshold	Adequate
Ecological		
Bycatch		
Crystal and giant Crab, Baldchin Groper	Medium risk	Adequate
All other species	Low risk	
Listed Species	Low risk	Adequate
Habitat	Low risk	Adequate
Ecosystem	Medium risk	Adequate
Economic 2023-24 Financial year (GVP $285 m)	Medium risk	Acceptable
Social (high amenity)	Medium risk	Acceptable
Governance	Low risk	Acceptable
External Drivers – Other	High risk	Acceptable
External Drivers – Climate change	Severe risk	

SUMMARY STATISTICS

Statistics	2022-23	2023-24	Further description
Total Catch	7,153 t (C), 401 - 476 t (R), 17 t (Charter)	7,403 t (C), 424 - 514 t (R), 20 t (Charter)	Recreational fishing season transitioned from Feb/Jan in 2022-23 to May/Apr in 2024-25
Commercial Effort (potlifts 1,000s)	2,230	2,338	Effort increased in line with total landings.
Participation	218 (C), 35,236 licensed fishers (R), 14,132 clients (Charter)	207 (C), 31,156 licensed fishers (R), 15,579 clients (Charter)	Stable due to similar lobster biomass and target catches. Commercial fishers based on the number of unique Managed Fishing Licenses reported.
Beach price	$36.06 / kg	$38.46 / kg	Stable. Likely to increase with trade with China recommencing.
Main (>20%) by-catch species	O (18.4 t), CC (1.1 t), BG (3.5 t)	O (22.0 t), CC (1.3 t), BG (4.9 t)	Increase in catch of some main by-catch species, due to more fishing on reef.
Listed Species interactions	0 (SL), 1 (HB), 0 (T)	0 (SL), 2 (HB), 0 (T)	The number of reported interactions remains low.

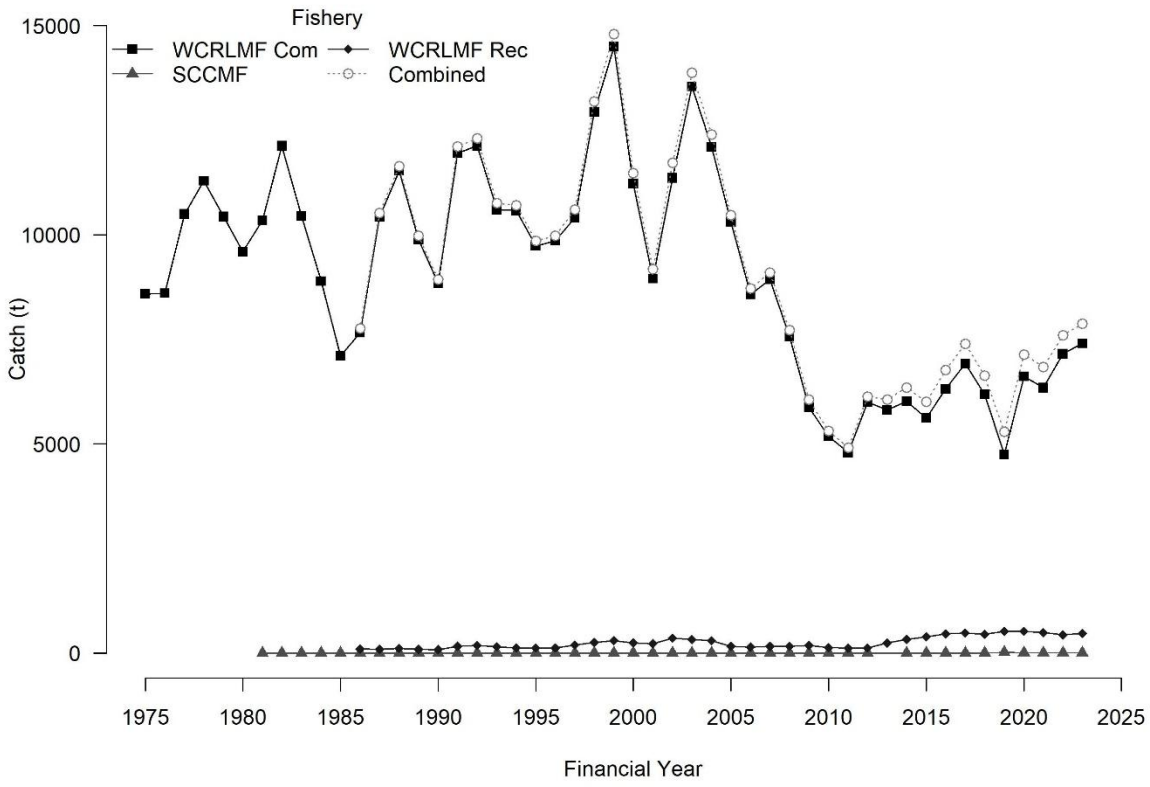
Key to table: C = commercial sector, R = recreational licensed fishers, Charter = recreational charter fishing. For by-catch species: O = Octopus, CC = Champagne Crab, BG = Baldchin Groper. For listed species: HB = Humpback Whale, T = unknown turtle, SL = Australian Sea Lion.



WESTERN ROCK LOBSTER FIGURE 1.
Boundaries of the West Coast Rock Lobster Managed Fishery.

CATCH AND LANDINGS

The total commercial landings of western rock lobster in the 2023-24 season from the WCRLMF were 7,404 t. The total allowable commercial catch for this period was 7,411 t. The median estimate of the recreational catch was 469 t (424 - 514 95% CI) and the charter catch was 20 t, compared to the Total Allowable Recreational Catch (TARC) of 527 t (Western Rock Lobster Figure 2).



WESTERN ROCK LOBSTER FIGURE 2.
Total landings by fishery, including the West Coast Rock Lobster Managed Fishery (commercial and recreational components), the South Coast Crustacean fishery (SCCMF), and all fisheries combined for western rock lobster.

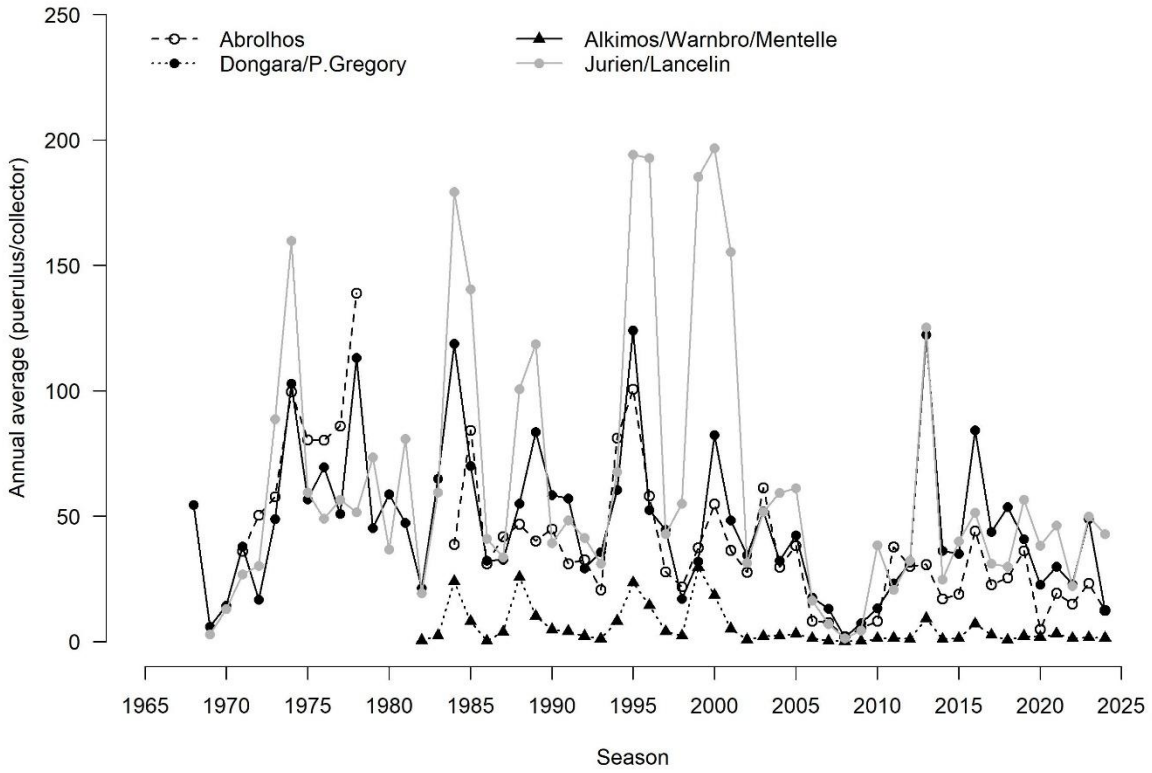
INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Western rock lobster (Sustainable–Adequate)

Commercial and recreational catch rates have been maintained near their record-high levels. Fishery-independent egg production indices at all sites are well above threshold and long-term levels, indicating that the biomass and egg production in all locations of the WCRLMF are at record-high levels since surveys began in the mid-1990s. The breeding stock is therefore considered **sustainable-adequate**.

Fishery-independent recruitment (puerulus) monitoring indicates that the puerulus settlement was close to average across all areas during 2023-24 except at the Dongara/Jurien location (Western Rock Lobster Figure 3). This is likely the result of a strong Leeuwin Current pushing settlement southwards.

The integrated population model indicates that a continuation of fishing at similar Total Allowable Commercial Catch (TACC) (e.g. 6,800 t over 12 months) over the coming five-year period will result in similar levels of legal and spawning biomass, catch rates, and harvest rates (see de Lestang et al. 2016, section 9.3.14).



WESTERN ROCK LOBSTER FIGURE 3.
Levels of puerulus settlement in four regions of the WCRLMF from 1968.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Bycatch

The main bycatch species landed in the WCRLMF are octopus, champagne crabs (CC), and baldchin groper (BG). See West Coast Octopus, South Coast Crustacean, and West Coast Demersal Scalefish reports for further information.

An Ecological Risk Assessment (ERA) re-assessed risks to bycatch in 2022 (Stoklosa 2022). From this ERA, the only threat to be ranked as high was baldchin groper, due to reductions in west coast stock. This high risk is being mitigated with management action implemented early in 2023 and was subsequently re-scored as a **medium** risk (Stoklosa 2022).

Protected Species

The WCRLMF has the potential to interact with a number of protected species, however, substantial improvements have been achieved during the past decade (see Bellchambers et al. 2017; section 4).

To mitigate the risk to juvenile Australian sea lions (ASL), all pots fished within designated sea lion areas are now fitted with devices to stop the accidental drowning of ASL. Since their implementation, there have been no records of any drowned ASL. During the whale migration season (May – October, inclusive) all pots must comply with mitigation measures aimed at reducing the entanglement of migrating whales (see Bellchambers et al. 2017, section 4). This has resulted in a significant (~60%) reduction in reported whale entanglements. The 2022 ERA re-assessed all protected species interactions, and with the implementation of the various mitigation measures, they were considered **low** risk (Stoklosa 2022).

HABITAT AND ECOSYSTEM INTERACTIONS

While WRL may use a range of habitats throughout their life cycle, including shallow water reefs and adjacent seagrass beds as juveniles, or unvegetated areas during their migratory phase (‘whites’), algal covered limestone reefs form the habitat for the majority of the population.

Western rock lobster are an omnivorous generalist feeder, with a diet that consists of a variety of invertebrates, algae, carrion, and bait. Results from monitoring in areas closed and open to WRL fishing, established to examine the potential ecosystem effects of WRL removal, suggest that lobsters do not play a key role in ecosystem functioning (see section 6.2 in Bellchambers et al. 2017).

The 2022 ERA re-assessed all habitat and ecosystem interactions. Only 2 aspects were considered a **medium** risk. These were the translocation of pests and diseases from ports,

and bait infected with viruses. The risk assessment suggested a number of actions that could be implemented to reduce these risks (Stoklosa 2022).

SOCIAL AND ECONOMIC OUTCOMES

Social

The rock lobster fishery is a major recreational activity and provides a significant social benefit to the WA community. At current high stock levels there is a **medium** risk to this valuable social amenity.

In November 2019, a trial commenced to provide increased tourism opportunities for selected charter operators undertaking pot-based rock lobster fishing tours and experiences for local, interstate, and international visitors. After a successful 4-year trial this opportunity was expanded to all charter operators in the West Coast bioregion on an ongoing basis.

Economic

The beach price has reduced in recent years due to limitations in exporting live lobster into the Chinese market. In late 2024, China lifted bans imposed on exported live rock lobster, which is anticipated to improve beach prices. Since this is the main market for WRL it is considered to be a **high** risk.

GOVERNANCE SYSTEM

Harvest Strategy

The West Coast Rock Lobster Resource Harvest Strategy (Harvest Strategy, DPIRD 2024) is used to set catch limits for both the commercial and recreational sectors on an annual basis. The Harvest Strategy has a primary sustainability objective to maintain egg production at sustainable levels, and a secondary economic objective to maximise the profitability of the WCRLMF, i.e. to target MEY levels.

A harvest rate of 39% is used to set the upper limit of the annual Total Allowable Catch (TAC), of which 95% forms the TACC. Since the commercial sector achieved (within 5%) their TACC, their catch level was **acceptable**.

Of the TAC, 5% forms the Total Allowable Recreational Catch (TARC). The harvest control rules surrounding recreational catch are based on a five-year moving average (FYMA). Since the FYMA recreational catch was below the FYMA TARC, the recreational catch was considered **acceptable**.

Compliance

For the commercial sector, enforcement effort is focused on fisher's compliance with quota and entitlement arrangements. There is also at-sea compliance to check that rock lobster gear is compliant with ASL and whale mitigation devices/measures.

For the recreational sector, compliance efforts focus on bag limits, size limits, and protection of totally protected crustaceans through routine landing inspections. In addition, targeted compliance operations are utilised to detect serious offences such as gear interference, and the unlawful sale of recreationally caught rock lobster.

Consultation

Consultation occurs between DPIRD and the commercial sector either through the Western Rock Lobster Council or the Annual Management Meetings convened by DPIRD through the Western Australian Fishing Industry Council. Consultation with Recfishwest and other interested stakeholders is conducted through specific meetings and DPIRD's website. Annual surveillance audits are conducted under the MSC standard, which are attended by DPIRD, licence holders and the Western Rock Lobster Council.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

In July 2024, the *West Coast Rock Lobster Managed Fishery Management Plan 2012* was amended to change the methodology used to determine net weights at the registered receiver's premises. In early 2025, the methodology was again refined to ensure integrity in the quota management system. Additionally, a formerly closed area of the fishery referred to as 'Big Bank' was reopened to enable Independent Breeding Stock Surveys to be undertaken in this area.

For the 2024-25 season, the TACC was set at 7,300 t and the TARC was set at 500 t. For the 2025-26 season, the TACC was set at 6,800 t and the TARC was set at 500 t.

EXTERNAL DRIVERS

Environment

The variations in WRL recruitment to the fishery are largely a result of variable levels of puerulus settlement 3-4 years previously which are driven by changes in oceanic conditions. Catches are also dependent upon the environmental conditions at the time of fishing.

Over longer time periods, WRL have been rated as a high risk to the effects of climate change as many aspects of its life history are highly sensitive to environmental conditions (Caputi et al. 2010).

Climate Change

Demonstrable negative effects associated with high SSTs and MHW events have already

impacted the northern component of this stock, while positive impacts were observed towards the southern region. Continued increases in projected SSTs and MHWs will further negatively impact this stock by 2050 across much of the west coast, although towards the southern range distribution some stock benefits may occur. Timing and strength of the Leeuwin Current is critical to the survival and settlement processes during the long 12 month larval phase of WRL. Projections of a weaker LC overall will therefore have mixed impacts. Reduction in rainfall in the mid west will be negative for larval recruitment. Overall the assessment deemed the WRL stock to be at **severe risk** from climate change.

WEST COAST ROCK LOBSTER RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for western rock lobster in the WCRLMF.

Indicator species	Sensitivity	Exposure	Climate Change risk
Western rock lobster	High	Demonstrable negative effects evident	Severe

Other

The economic performance of the WCRLMF is strongly affected by the value of the Australian dollar (affecting the price of lobsters), fuel prices, labour costs, and previous limitations in exporting live lobster into the Chinese market as this was the main market for WRL. This dependence on the Chinese market is considered a **high** risk.

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WEST COAST ROE'S ABALONE RESOURCE STATUS REPORT 2025

L. Strain, J. Brown, D. Nolan



OVERVIEW

The Roe's abalone (*Haliotis roei*) resource is accessed by both the commercial and recreational sectors, and is a dive and wade fishery operating in shallow coastal waters along WA's western and southern coasts. The commercial Roe's abalone fishery is managed primarily through Total Allowable Commercial Catches (TACCs), which are set annually for each of the 6 management areas (Roe's Abalone Figure 1), and allocated as Individually Transferable Quotas (ITQs).

The recreational fishery is divided into three zones (Roe's Abalone Figure 1): Zone 1 (Western Zone - including the Perth Metropolitan Fishery), Zone 2 (Northern Zone), and Zone 3 (Southern Zone). Management arrangements include a specific abalone recreational fishing licence, size limits, daily bag and possession limits, temporal and spatial closures, and a Total Allowable Recreational Catch (TARC) in the Western Zone.

Further information on the fishery can be sourced from Hart et al. (2017) and Strain and Nolan (in press).

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery (70.7 t)	Total Catch 2024: 20.4 t	Acceptable
Recreational fishery (22–26 t Perth Metro Fishery)	Total Catch 2024: 16–20 t Perth Metro Fishery; 23.3–27.9 t Other	Acceptable
EBFM		
Indicator species		
Roe's abalone (*Haliotis roei*)	Above Target (excluding closed Area 8/Northern Zone)	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Negligible risk	Adequate
Habitat	Medium risk	Adequate
Ecosystem	Negligible risk	Adequate
Economic (GVP $0.5 m)	High risk	Acceptable
Social (Amenity - Significant)	High risk	Acceptable
Governance	Low risk	Acceptable
External Drivers – Other	High risk	Acceptable
External Drivers – Climate change	Severe risk (Areas 2,5,6,7,8)	

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Total Catch	73.8 t Com: 25.9 t Rec: 47.9 t	64.3 t Com: 20.4 t Rec: 43.9 t	Decrease in statewide commercial catch (5.5 t). Decrease in estimated Perth Metro Fishery recreational catch (4 t).
Commercial Effort	208 days	216 days	Fishing effort below the target range due to commercial economic decisions.
Participatation	Com: 21 vessels Rec: 17,401 licenses	Com: 21 vessels Rec: 16,114 licenses	Constant number of commercial vessels and 7.4% decrease in the purchase of recreational abalone licences.
Beach price	$22.56/kg	$23.59/kg	Beach price increased slightly in 2024 but still 50% lower than in the early 2000's.
Main (>20%) by-catch species	NA	NA	Targeted hand collection fishery that does not inadvertently harvest bycatch.
Listed Species interactions	0	0	The only potential listed species interaction (more likely an observation) is with the white shark (*Carcharodon carcharias*).



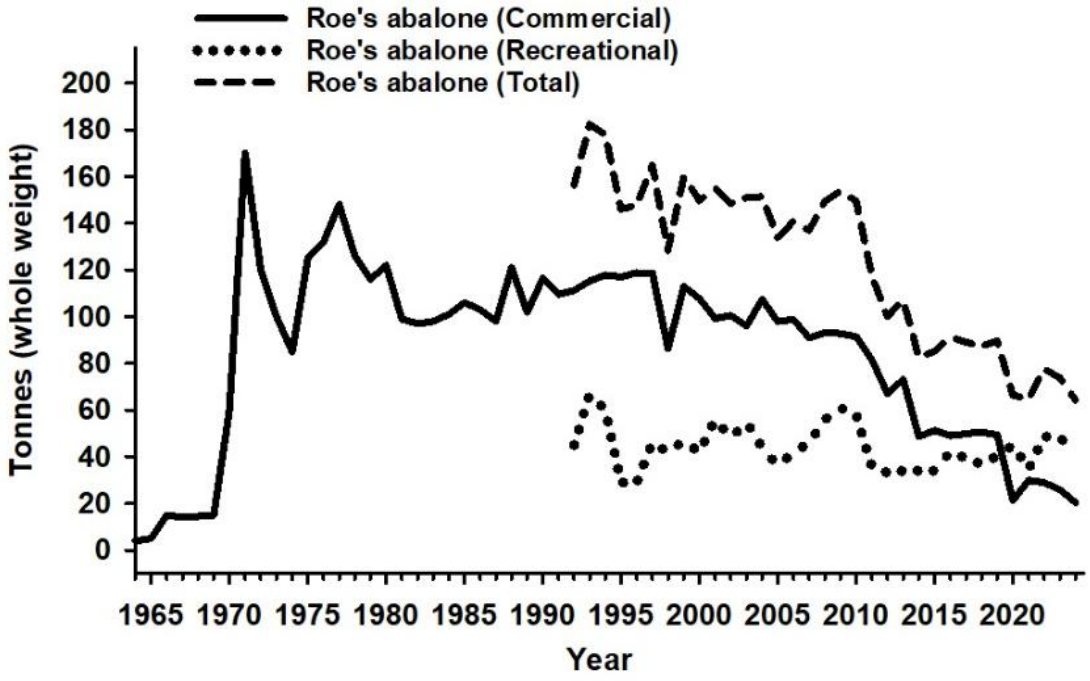
ROE'S ABALONE FIGURE 1.
Boundaries of the management areas for Roe's abalone in the commercial Abalone Managed Fishery. The three zones of the Recreational Abalone Fishery (Western Zone, the Northern Zone, and the Southern Zone) are also shown.

CATCH AND LANDINGS

In 2024, the total commercial catch was 20.4 t whole weight, which was a decrease of 21.1% from last season, and only 28.9% of the 70.7 t whole weight TACC (Roe's Abalone Figure 2). The commercial catch was less than the TACC in Area 1 (0% caught), Area 2 (24% caught), Area 5 (10% caught), Area 6 (21% caught), and Area 7 (54% caught). The commercial viability of Roe's abalone fishing in regional areas has suffered for more than a decade due to economic influences (low value of catch and few viable markets), high cost of accessing some areas, and prevailing weather conditions (Area 6).

The TACC in Area 7 for 2024 remained unchanged and was at low levels given the influence of recent warmer summer sea surface temperatures within the Roe's abalone stock prediction model. The potential impact of the Ocean Reef Marina (ORM) development on the fishery (loss of access), resulted in the TACC being restricted by an estimated annual forgone catch of 5.3 t again in 2024 (construction began in April 2021). In Area 7, only 54% of the TACC was caught, which is now the sixth season the full TACC hasn't been caught since an individual management area quota was introduced in 1999. The commercial industry has also attributed the reduction in Area 7 catch over recent seasons to decisions driven by economic influences simlar to those impacting regional areas.

The estimated recreational catch of Roe's abalone in 2024 was 43.9 t whole weight, which represents 68.3% of the total Roe's abalone catch (Roe's Abalone Figure 2). The recreational catch includes 16–20 t (18.3 t) from the Perth metropolitan stocks, which was below the TARC range (22–26 t) due to substandard weather conditions impacting recreational fisher effort and catch rate. The TARC for the Perth Metropolitan Fishery was reduced by 4.7 t to account for the potential impacts of the ORM development. A recreational catch estimate of 25.6 t was obtained for the rest of the state (Western Zone excluding the Perth metropolitan stocks and the Southern Zone). This was derived from a phone-recall survey for the 2021-22 recreational abalone season (Smallwood et al. 2023), and provides an updated estimate of the recreational catch from the 2007 phone-diary survey (14 t catch).



ROE'S ABALONE FIGURE 2.
Roe's abalone commercial and recreational catch (t, whole weight) by season as recorded against the calendar year.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Roe's abalone (Sustainable–Adequate)

The stock status is assessed using commercial and recreational catch and effort statistics, and fishery-independent sampling. Trends in stock indicators were used to determine the 2024 TACC for each management area, and the TARC for the Western Zone of the recreational fishery.

Area 1 (near WA/SA border): There was no catch in 2024 from a TACC of 5 t. This area is a marginal part of the fishery in a remote location, making it economically difficult for fishers given current market conditions.

Area 2 (Esperance): The catch in 2024 was 3.9 t whole weight of the 16.2 t TACC. The annual standarised catch per unit effort (SCPUE) declined between 2010 and 2015 to below the target reference level. It then increased in 2016, declined for the next 2 seasons, steadily increased during the last 6 seasons and has remained above the target reference level over this 9 season period.

Area 5 (Albany): The catch in 2024 was 1.9 t whole weight of the 18 t TACC. The annual SCPUE between 2013 and 2019 was slightly lower than the historical average (1992–2012), but remained stable during this period and above the target reference level. Between 2020 and 2024, the low annual catch has resulted in a high degree of uncertainty around the annual SCPUE estimates.

Area 6 (South West Capes): The catch in 2024 was 1.6 t whole weight of the 7.5 t TACC. The annual SCPUE declined sharply between 2011 and 2013 to below the target reference level. It then increased between 2014 and 2019, where it was above the target reference level and within the historical range. From 2021 to 2024 the low annual catch has resulted in a high degree of uncertainty around the annual SCPUE estimates.

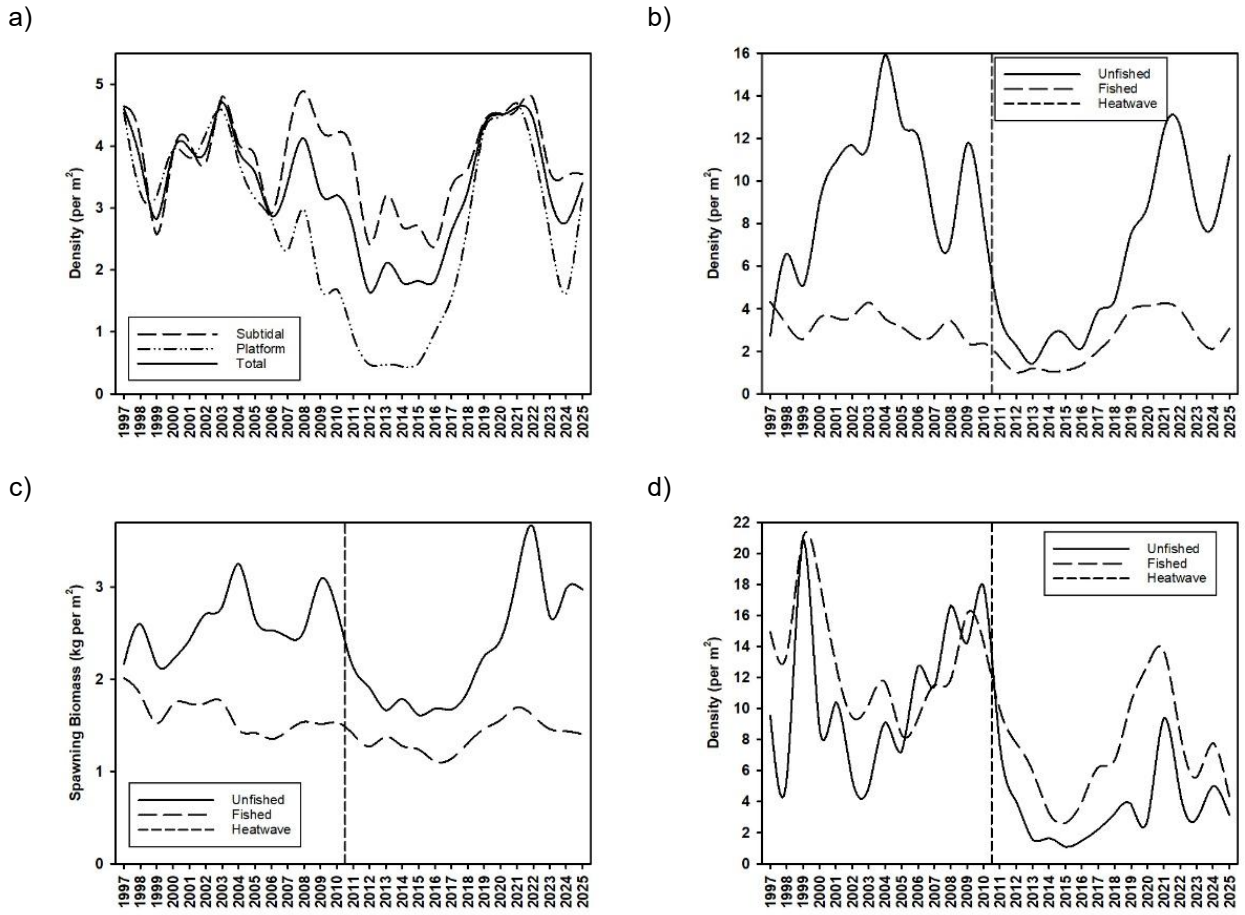
Area 8 (Kalbarri): This area has been closed since the 2011 season due to catastrophic mortality following the marine heatwave. With no evidence of natural recovery, a restocking project has been successful on a trial-scale, but it has yet to be implemented on a commercial scale to determine if restocking would recover the entire stock in the longer term (Strain et al. 2019).

Perth Metropolitan Roe's Abalone Fishery (Area 7 / Zone 1): The commercial catch in 2024 was 13 t of the 24 t TACC. The annual SCPUE for Area 7 has declined over the last 5 seasons and in 2024 was below the target reference level for the first time since 2014. This decline followed a continual increase over the previous 5 seasons, which followed a steady decline between 2005 and 2014. The TACC was set using the stock prediction model based on juvenile abundance and an environmental factor. The recreational catch estimate was 16–20 t (18.3 t) whole weight, and below the TARC range (22–26 t).

Fishery-independent surveys indicate that the density of harvest-sized Roe's abalone in both the subtidal and platform habitats, and across both fished and unfished areas experienced substantial declines between 2003 and 2012 (Roe's Abalone Figure 3a and b). Harvest-sized density then increased from record low levels during 2012-2016, and between 2019 and 2022 was either at or near record-high levels in both the subtidal and platform habitats. In 2023, density of harvest-sized animals decreased in both the subtidal (first annual decline since 2016) and platform habitats. In 2024 it declined further in the platform habitat before increasing in 2025, while the density in the subtidal habitat remained stable over the last two years (Roe's Abalone Figure 3a). The increasing trend in density in both unfished and fished stocks from 2012-13 halted in 2022. Both stocks exhibited a decline in 2023 and 2024 from near record-high levels before increasing in 2025 (Roe's Abalone Figure 3b).

Spawning biomass in the fished areas remained steady in 2025 after declining between 2022 and 2023 but is comparable to years preceding the 2011 marine heatwave levels (average 2004-2010). In the unfished area spawning biomass remained stable in 2025 after it increased slightly in 2024 (Roe's Abalone Figure 3c). Density of Age 1+ (17 – 32 mm) animals also increased (2015-2021) in both fished and unfished areas from record-low levels, after juvenile recruitment declined by 80% between 2010 and 2013 (post marine heatwave). Juvenile recruitment exhibited a sharp decline over 2022 and 2023, increased in 2024 but then declined in 2025 in both fished and unfished areas (Roe's Abalone Figure 3d).

Recovery of the Perth Metropolitan Roe's Abalone Fishery from historically low levels was considered complete in 2021 (above pre 2011 heatwave levels). The recovery of these indicators had been aided by a marine cold spell that occurred during 2016-2019. However, the increasing trend across all stock indicators (post 2015) halted in 2022, with all indicators having declined on average since then. The increase in summer sea surface temperature over recent years as a result of a moderate marine heatwave is of concern.



ROE'S ABALONE FIGURE 3.
Density and spawning biomass of Roe's abalone in the Perth Metropolitan Fishery (Area 7/Zone 1) from fishery-independent surveys. a) Density of harvest-size Roe's abalone (71 mm+) in fished areas within the subtidal and platform habitats, b) Density of Roe's abalone (71 mm+) in the fished and unfished areas, c) Spawning biomass (kg per m^2 of <40 mm abalone) of Roe's abalone in the fished and unfished areas, and d) Density of age 1+ Roe's abalone (17 – 32 mm) in the fished and unfished areas.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Divers have the ability to target abalone (species, sizes, and quality of abalone) and do not inadvertently harvest bycatch in their normal fishing activities. The only potential listed species interaction (more likely an observation) is with the white shark (*Carcharodon carcharias*), with some divers adopting the 'shark shield' technology. **Negligible** risk.

HABITAT AND ECOSYSTEM INTERACTIONS

The fishing activity makes minimal contact with the habitat, which typically consists of hard rock surfaces in a high wave energy environment. Localised impacts to some nearshore rock platforms may occur as a result of concentrated recreational activity during the brief fishing season. As abalone feed on drift algae, their removal is unlikely to result in any changes to the algal growth cover in fished areas, and hence it is considered unlikely that the fishery has any significant effect on the food chain in the region. **Medium** risk.

SOCIAL AND ECONOMIC OUTCOMES

Social

There are 21 vessels registered to operate in the commercial Roe's abalone fishery, but given the economic impacts outlined, only a small number of divers fished during 2024. The dispersed nature of the Roe's abalone fishery means that small coastal towns from Perth to Eucla receive income from the activity of divers. The recreational fishery provides a major social benefit to those members of the community that appreciate abalone as a delicacy, and 16,114 licences were issued that would have allowed fishers to participate in the recreational abalone fishery. **High** risk.

Economic

Estimated annual value (to commercial fishers) for 2024 was $0.5 million, based on the estimated average price for Roe's abalone of $23.59/kg whole weight. The price of Roe's abalone has dropped by 50% since 2000, when it was $55/kg whole weight. This was due to the value of the Australian dollar and wild caught Roe's abalone being in direct market competition with aquaculture produced abalone. **High** risk.

GOVERNANCE SYSTEM

Harvest Strategy (Formal)

The Harvest Strategy for Roe's abalone (DPIRD 2023) uses annual SCPUE as a proxy for biomass (key performance indicator), which is assessed against specified biological reference levels for each management area. The Perth Metropolitan Fishery (Area 7 / Zone 1) is managed using a stock prediction model with an environment factor (DPIRD 2023). The predicted harvest-sized density is used to set the Total Allowable Catch (TAC), with the habitat biomass and sectoral patterns of usage separating the TAC into TACC and TARC. The following TACCs (whole weight) have been set for the 2025-26 season; 5 t in Area 1, 16.2 t in Area 2, 18 t in Area 5, 7.5 t in Area 6, 24 t in Area 7, and 0 t in Area 8, totalling 70.7 t. The Area 7 TACC and Western Zone TARC may be varied following a mid-year review.

Annual Catch Tolerance Levels

Commercial – Acceptable: 70.7 t (TACC for 2024-25) (530–640 fishing days)

Recreational – Acceptable: 22–26 t (TARC for 2024-25) Perth Metropolitan Fishery only (Zone 1).

Commercial catch was below the TACC due to commercial industry decisions driven by economic influences (low value, overseas market issues and high fishing costs). The commercial fishing effort (216 days) was also below the expected range. Area 8 is still closed due to the catastrophic mortality following the 2011 marine heatwave. The recreational catch range in the Perth Metropolitan Fishery was below the TARC range due to the weather conditions effect on fisher effort and catch rate.

Compliance

DPIRD conducts regular inspections of commercial catch at both the point of landing and processing facilities to ensure the commercial industry is adhering to the governing legislation. The recreational fishery, particularly the Perth Metropolitan Fishery, has a high level of enforcement given its high participation rate combined with a restrictive TARC, restricted season length, and bag limit.

Consultation

DPIRD undertakes consultation directly with the Abalone Industry Association of Western Australia (AIAWA), West Coast Abalone Divers Association (WCADA), and licensees on operational issues. Annual Industry Management Meetings are held between DPIRD and licensees, in conjunction with the Industry Consultation Unit at the Western Australian Fishing Industry Council (WAFIC), who are also responsible for undertaking statutory management plan consultation under a Service Level Agreement.

Recreational consultation processes are facilitated by Recfishwest under a Service Level Agreement, although DPIRD undertakes direct consultation with the community on specific issues.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

In 2024, DPIRD continued the management arrangements for the Western Zone (Zone 1) of the recreational abalone fishery that were reviewed and implemented in 2017 to improve fisher safety and stock sustainability. Given the previous reductions in the TARC range based on the prediction model forecast and the ORM foregone catch estimates, the number of fishing sessions in the Western Zone for the 2024 season remained at 4.

The commercial Roe's abalone fishery has undergone full MSC assessment and achieved certification in 2017. The Abalone Managed Fishery successfully underwent its first re-certification in 2022, and has its third annual surveillance audit during 2025 (https://fisheries.msc.org/en/fisheries/western-australia-abalone-fishery/@@view).

DPIRD has reviewed the Harvest Strategy for the Western Australian Abalone Resource (DPIRD 2023) in consultation with the commercial and recreational sectors.

EXTERNAL DRIVERS

Environment

During the summer of 2010-11, the West Coast bioregion experienced a marine heatwave which led to an estimated 99.9% mortality of Roe's abalone in the area north of Kalbarri (Area 8) (Strain et al. 2019). Subsequently, a complete closure of the commercial and recreational fisheries was implemented north of Moore River. The heatwave also affected the Perth metropolitan stock but to a lesser extent (Hart et al. 2018). The recovery of the Perth metropolitan stock had been assisted by a marine cold spell during 2016-2019 (Feng et al. 2020). However, the increase in summer SST over recent years is of concern given its significant relationship with the stock replacement and stock recruitment models.

Climate change

Roe's abalone stocks along the west and south coasts (Areas 2,5,6,7,8) has shown negative effects associated with high summer SSTs and summer MHW events. Thus there is high confidence that projected increase in SSTs and

MHWs will further negatively impact these stocks by 2050. A weaker Leeuwin Current may positively influence self-recruitment but this may be offset by the adervse imapcts of projected ncrease in ocean acidification resulting in thinner and weaker shells. Thus Roes abalone is deemed at **severe risk** from climate change.

WEST COAST ROE'S ABALONE RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for Roe's abalone stocks along the west and south coasts.

Indicator species	Sensitivity	Exposure	Climate Change risk
Roe's abalone (Area 2)	High	Demonstrable negative effects evident	Severe
Roe's abalone (Area 5)	High	Demonstrable negative effects evident	Severe
Roe's abalone (Area 6)	High	Demonstrable negative effects evident	Severe
Roe's abalone (Area 7)	High	Demonstrable negative effects evident	Severe
Roe's abalone (Area 8)	High	Demonstrable negative effects evident	Severe

Other

Weather conditions during fishing continue to have a significant effect on catch rates and the total catch of recreational fishers, particularly in the Western Zone.

The small size of Roe's abalone results in its direct competition with aquaculture-produced abalone, and therefore there has been a decline in the beach price and overall economic value during the last decade.There has also been other economic impacts on overseas markets, which subsequently reduced the Roe's abalone catches and consequently the GVP of the fishery in 2024.

The Ocean Reef Marina development located within the Perth Metropolitan Fishery poses a significant risk to the Roe's abalone stock, and subsequently the commercial and recreational fisheries. **High** risk.

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WEST COAST BLUE SWIMMER CRAB RESOURCE STATUS REPORT 2025

D. Harris, C. Maus, B. Brooks



OVERVIEW

Blue swimmer crabs (*Portunus armatus*) are found in a range of estuarine and nearshore habitats (<50 m) along the entire WA coast.

Blue swimmer crabs represent one of the most important recreationally fished nearshore species in the WCB in terms of catch (by numbers) (Ryan et al. 2025). Recreational crab fisheries in the WCB are centred on the estuaries and coastal embayments from the Swan-Canning Estuary (SCE) south to Hardy Inlet (HI). Recreational fishers use baited drop nets, scoop nets, or collect crabs by hand.

In 2024, blue swimmer crabs were caught commercially in (from north to south) Green Head (GH), SCE, the Peel-Harvey Estuary (PHE) and HI using purpose-designed crab pots, drop nets, and/or tangle nets (West Coast Blue Swimmer Crab Figure 1).

Both the commercial and recreational sectors in the WCB are managed via a suite of input/output controls, including minimum size limits, protection of breeding females, gear restrictions and seasonal closures. There is also limited entry to commercial fisheries.

For more detailed descriptions of blue swimmer crab biology and the West Coast crab fisheries, refer to Johnston et al. (2020a, b).

The commercial and recreational PHE blue swimmer crab fisheries attained Marine Stewardship Council (MSC) Certification in 2016 and were re-certified for a further five years in 2021. In January 2024, the recreational sector was withdrawn from certification.

Catch and effort data for crab fisheries in the WCB are presented by fishing season, which runs from December to the following November (i.e. the 2023-24 season spans December 2023 to November 2024 inclusive). The statewide total catch is presented by calendar year as fishing season varies between fisheries.

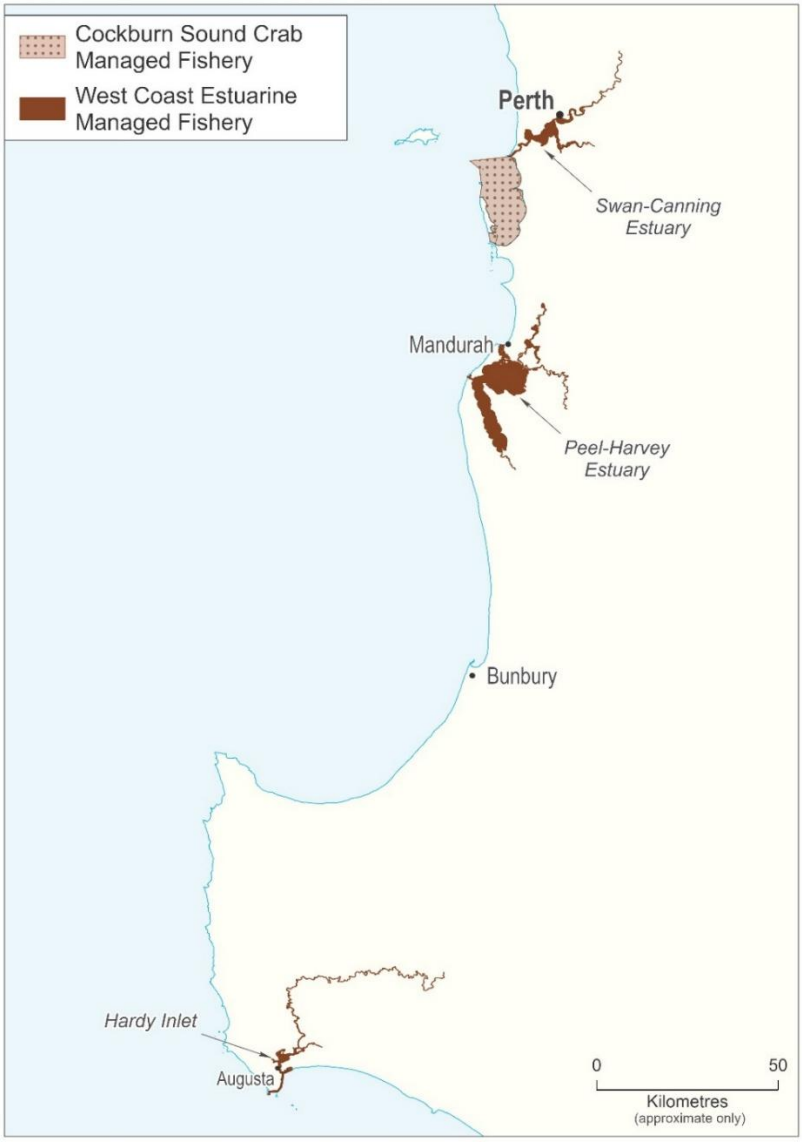
SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery – West Coast Bioregion	Total Catch 2023-24: 57 t	Acceptable
Recreational fishery – West Coast Bioregion	Total Catch 2023-24 (boat only): 27 t (95% CI 20–34)	Acceptable
EBFM		
Indicator species		
Cockburn Sound	Medium risk: Above biomass threshold	Adequate
Peel-Harvey	Medium risk: Above biomass threshold	Adequate
Other (GH, SCE, HI)	Medium risk: Above biomass threshold	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Negligible risk	Adequate
Habitat (wading birds)	Low risk	Adequate
Ecosystem	Low risk	Adequate
Economic (GVP <$1 m)	Low risk	Acceptable
Social (high amenity)	Medium-High risk	Acceptable
Governance	Medium-High risk	Acceptable
External Drivers – Climate change	Low risk (Cockburn Sound, Peel-Harvey Estuary)	

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Commercial Catch (t)	471^{S}, 40^{PHE}, 4°	547^{S}, 48^{PHE}, 9°	WCB fishery catches within historic range; State catch increased due to higher landings from Shark Bay and Peel-Harvey Estuary.
Commercial Effort (potlifts)	36,500^{PHE}	37,460^{PHE}	Commercial effort in PHE within historic range
Recreational catch	2020-21: 38 t (95% CI 25–51)	2023-24: 27 t (95% CI 20–34)	Boat-based fishing only (Ryan et al. 2025)
Commercial participation	13	14	
Beach price	$10.90	$10.84	Domestic market supply and demand.
Bycatch	NA	NA	Crab pots are a targeted fishing method with minimal bycatch identified in commercial monitoring surveys
Listed species interactions	0	0	Interactions with listed species are rare, with no interactions reported in statutory returns during the 2023-24 fishing season.

Key to table: S – State, WCB – West Coast Bioregion, PHE – Peel-Harvey Estuary, O – other (Green Head, Swan-Canning Estuary, Hardy Inlet).

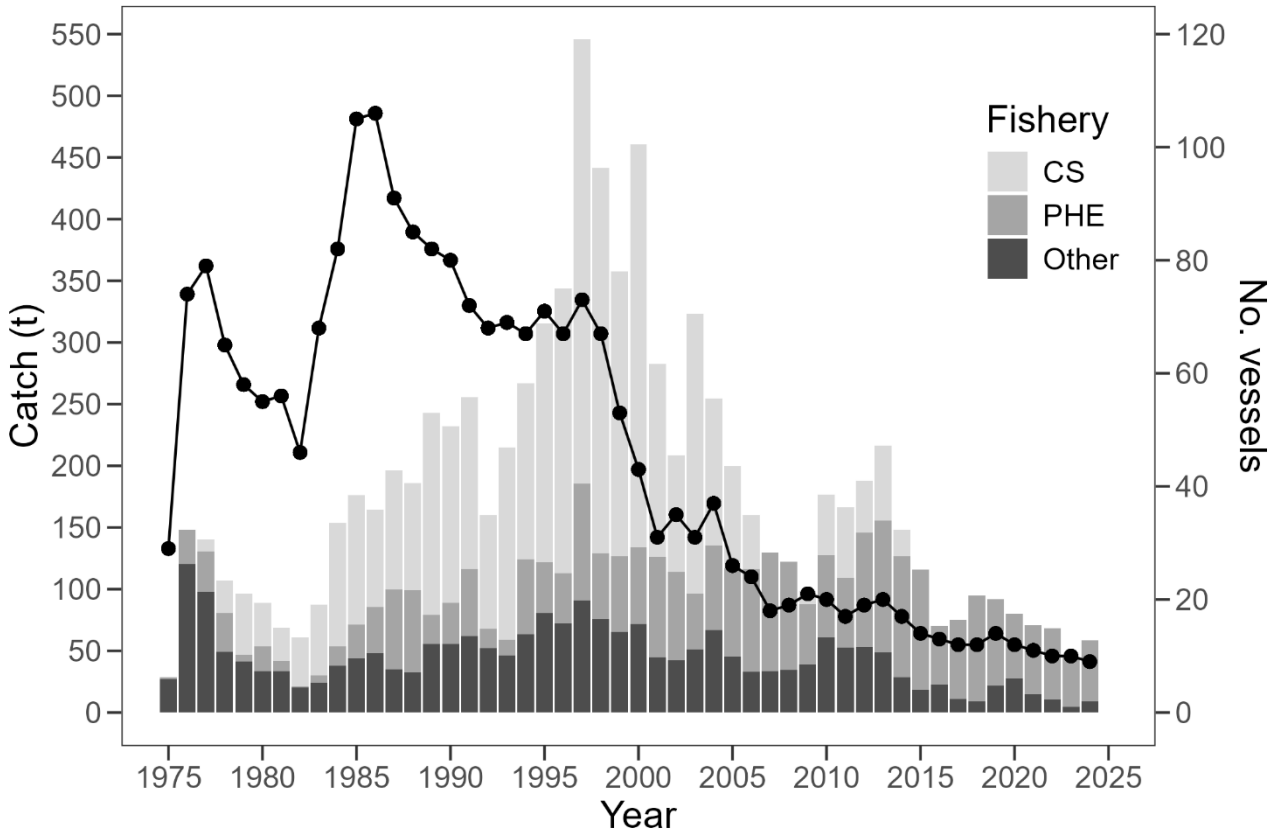


WEST COAST BLUE SWIMMER CRAB FIGURE 1.
Boundaries of the main commercial blue swimmer crab fisheries in the West Coast bioregion.

CATCH AND LANDINGS

Commercial Sector

The total commercial catch of blue swimmer crabs in the WCB for the 2023-24 season was 57 t, a 27% increase on the previous season (West Coast Blue Swimmer Crab Figure 2). This increase was primarily due to higher catches from the PHE and SCE. WCB landings accounted for ~11% of the State 2024 commercial blue swimmer crab catch (547 t).



WEST COAST BLUE SWIMMER CRAB FIGURE 2.

Annual commercial catch history (calendar year) and the number of commercial vessels retaining blue swimmer crabs in the WCB (●) since 1975. CS — Cockburn Sound, PHE — Peel-Harvey Estuary, Other – remaining WCB commercial fisheries (amalgamated to preserve fisher confidentiality).

Recreational Sector

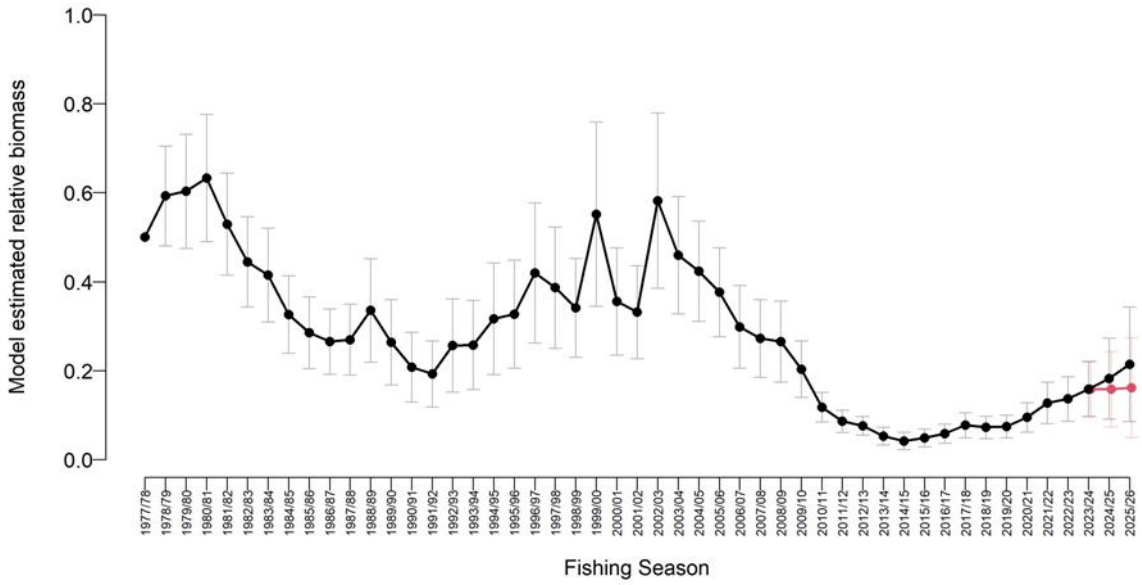
The estimated harvest of blue swimmer crab by boat-based recreational fishers in the WCB during 2023-24 was 27 t (95%CI 20–34 t) which accounted for 88% of the statewide harvest (Ryan et al. 2025). A contemporary estimate of harvest of blue swimmer crab by shore-based recreational fishers is unavailable.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Cockburn Sound (Sustainable–Adequate)

While recreational fishing for blue swimmer crab is permitted north of Woodman Point (annual take ~0.5 t), the majority of CS remained closed to both commercial and recreational fishing from 2014 due to low stock levels.

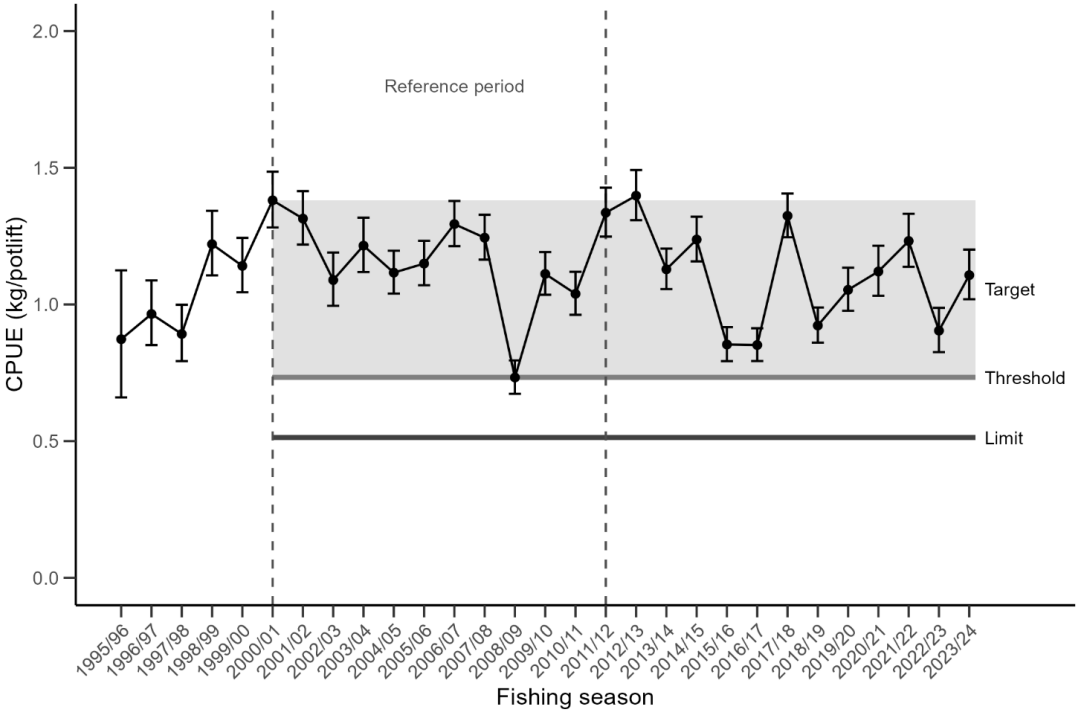
Biomass modelling suggests that stock levels have stabilised at a carrying capacity significantly below that recorded in the 2000s (West Coast Blue Swimmer Crab Figure 3). This change is considered to be environmentally driven. These preliminary analyses indicated that if the fishery were to re-open, there would be sufficient stock to support limited recreational fishing, but not the reopening of the commercial fishery at this time. Based on this assessment, the fishery reopened to the recreational sector only on 1 December 2024 for the 2024-25 season. The status of the stock is classified as **sustainable-adequate.**



WEST COAST BLUE SWIMMER CRAB FIGURE 3.
Model estimated annual relative (to carrying capacity) legal biomass (± 95% CI) for blue swimmer crab in Cockburn Sound under two future catch scenarios, continued (current) take of ~0.5 t (black) or an increase to 20 t annually (red).

Peel-Harvey Estuary (Sustainable-Adequate)

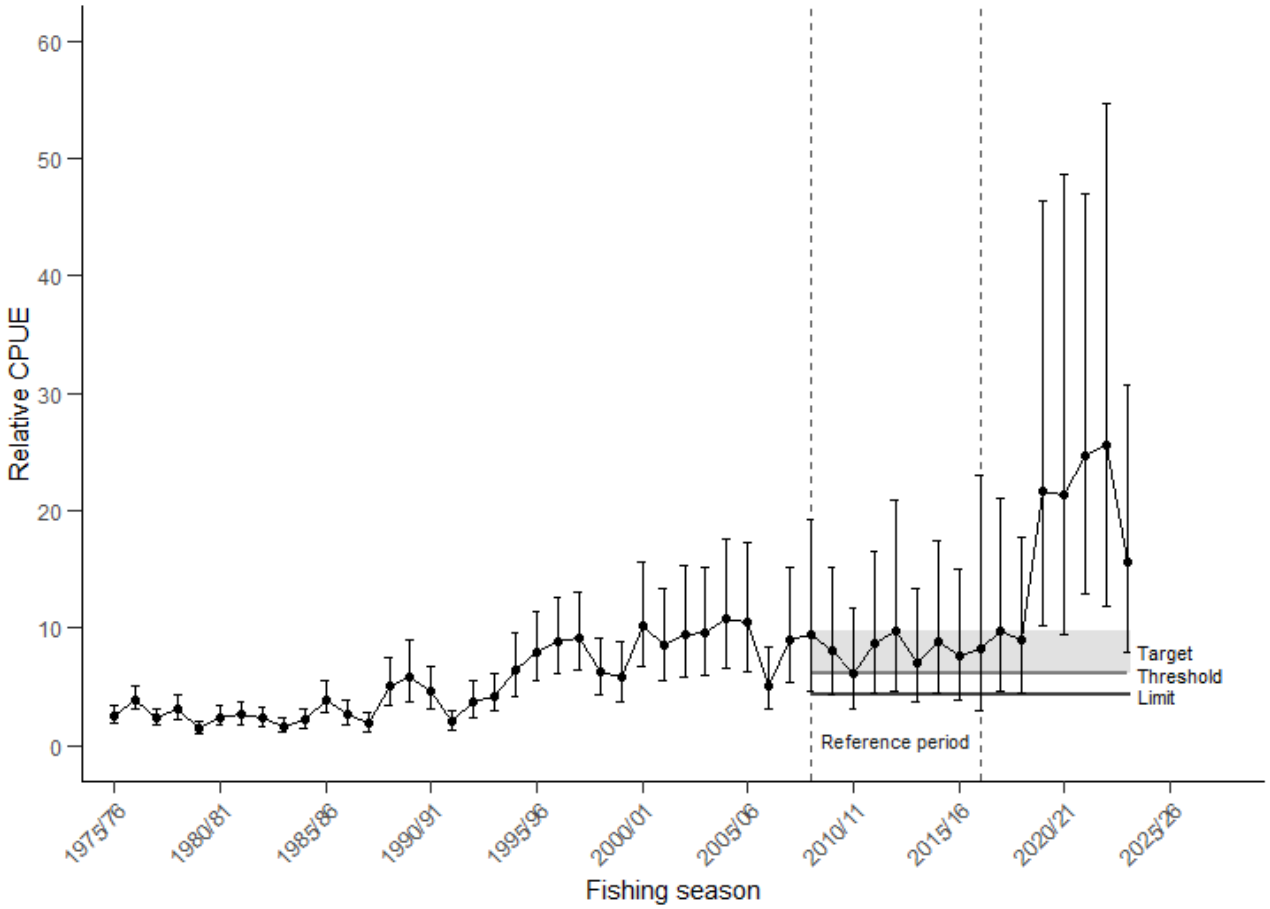
The primary performance indicator in the Harvest Strategy for the PHE is the annual commercial catch rate, standardised to account for month and fisher effects using a generalised linear model (DPIRD, 2020). The standardised catch rate for the 2023-24 fishing season (1.11 kg/potlift) was above the harvest strategy threshold (0.7 kg/potlift), indicating that the stock is being fished at a sustainable level (West Coast Blue Swimmer Crab Figure 4). In addition, the 2023-24 season catch (48 t) falls within the catch tolerance levels (36-72 t) that form the secondary performance indicator of the Harvest Strategy (DPIRD, 2020). Therefore, the PHE crab stock is classified as **sustainable-adequate**



WEST COAST BLUE SWIMMER CRAB FIGURE 4.
Annual standardised commercial catch rate (kg/potlift) of blue swimmer crabs in the Peel-Harvey crab fishery (±95% confidence limits) relative to the associated reference points (target range, threshold, and limit) for the harvest strategy. Fishing season is defined as 1 November to 31 August between 1995-96 and 2018-19, and from 1 December to 31 August from 2019-20 onwards. Annual values have been standardised using a generalised linear model to account for the effects of month and fisher.

Swan-Canning Estuary (Sustainable-Adequate)

The primary performance indicator in the Harvest Strategy for the SCE is the annual commercial catch rate, standardised using a generalised linear model to account for month and fisher effects (DPIRD, 2020). Historically, the standardised catch rate was reasonably consistent through the 2000s but increased notably from 2019-20 due to a change in fisher efficiency. While the relative CPUE for the 2023-24 fishing season has declined from the 2022-23 peak, it was still well above the Harvest Strategy target range which is now under review. Despite the increased catch rates, however, annual commercial landings have remained within the Catch Tolerance levels of the secondary performance indicator in the Harvest Strategy (6-11 t). Therefore, the SCE crab stock is classified as **sustainable-adequate.**



WEST COAST BLUE SWIMMER CRAB FIGURE 5.
Annual relative standardised commercial catch rate (kg/potlift) of blue swimmer crabs in the Swan-Canning Estuary crab fishery (±95% confidence limits) relative to the associated reference points (target range, threshold, and limit) for the harvest strategy. Fishing season is defined as 1 November to 31 August between 1995-96 and 2018-19, and from 1 December to 31 August from 2019-20 onwards.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Bycatch

Commercial hourglass crab pots used in WCB crab fisheries are purpose-designed to minimise the capture of non-target species through selective mesh sizes. Escape gaps are also used in the PHE, allowing undersized crabs to exit the pot. Tangle set nets used in the SCE are deployed in a spatially targeted manner to avoid non-target species, while mesh size regulations select for larger size crabs and finfish.

While there is potential for fishers to catch and discard low numbers of non-target invertebrates, finfish, sharks and rays, monitoring data suggest the discard ratios of the different sectors/methods in the WCB are low and pose a **negligible** risk to these stocks (Fisher et al. 2020).

Protected species interactions

Fishing with commercial crab pots in the WCB is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened, or protected species and avoids or minimises impacts on threatened ecological communities. Therefore, this method is considered to pose a **low** risk to listed ETP species present (Fisher et al. 2020).

As commercial net fishing activities, particularly set tangle nets, within WCB crab fisheries have the potential to interact with a number of ETP species, this method is considered to pose a **medium** risk to listed species.

Recreational scoop net fishers (and other recreational activities) have the potential to disturb migratory and threatened shorebird species that inhabit southwest WA estuaries during summer months. Consequently, scoop netting in key areas of overlap is considered to pose a **high** risk to these species (Fisher et al. 2020). The MSC has funded research to build understanding of interactions between recreational fishers and birds.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

While retrieval of pots or tangle nets may result in minor dragging across the mostly sandy or muddy substrate inhabited by blue swimmer crabs in WCB fisheries, the negligible amount of seagrass removal results in minimal habitat damage (Fisher et al., 2020). Therefore, commercial fishing for blue swimmer crab is considered to pose a **low** risk to benthic WCB habitats.

Ecosystem interactions

The commercial and recreational take of blue swimmer crabs represents a relatively small portion of the overall biomass. As crab biomass is effectively renewed annually and subject to high levels of natural variation in abundance, secondary food chain effects are likely to be minimal (Fisher et al., 2020). Therefore, these crab fisheries are considered to represent a **low** risk to the ecosystem.

SOCIAL and ECONOMIC OUTCOMES

Social

Blue swimmer crab fisheries in the WCB provide a **high social amenity** to the recreational sector as they represent one of the most popular recreational species in terms of participation rate and catch (Ryan et al. 2025).

During the 2023-24 season, 14 people were directly employed on commercial vessels targeting blue swimmer crabs in the WCB. They provide a **high social amenity** to the local community by supplying local markets with fresh seafood. Therefore, the WCB crab fishery is considered a **medium–high** risk to social outcomes.

Economic

The commercial blue swimmer crab catches in the WCB for the 2023-24 season had an estimated gross value of production of $0.62 million, marginally lower than the 2022-23 estimate of $0.64 million (Level 1 <$1 million). Most of the catch was sold through local markets. Therefore, the WCB crab fishery is considered a **low** economic risk.

GOVERNANCE SYSTEM

Harvest Strategy

The primary performance indicator for commercial WCB blue swimmer crab fisheries is the standardised annual commercial catch rate.

Cockburn Sound:

Although the majority of CS had remained closed to both commercial and recreational fishing from 2014, stock levels have shown little improvement. A change in nutrient inputs from industry has reduced the level of productivity in this embayment, with crab biomass levels strongly linked to this productivity (Marks et al., 2021). The crab stock is now considered at its environmental carrying capacity (no further increase expected), which is far lower relative to historical levels. As preliminary biomass dynamic modelling (West Coast Blue Swimmer Crab Figure 3) suggests that CS could only support a small catch, the fishery was reopened for the 2024-25 season to the recreational sector only with a reduced bag limit (5 crabs per person, 20 crabs per boat).

Peel Harvey:

As the 2023-24 standardised commercial catch rate for the PHE was within the harvest strategy target range, no additional management action was considered necessary for the 2024-25 season.

Other West Coast fisheries:

Although the 2023-24 standardised commercial catch rate for the SCE was well above the Harvest Strategy target range (West Coast Blue Swimmer Crab Figure 5), the annual catch in this fishery was within Catch Tolerance range of the Harvest Strategy. Commercial catch and effort on blue swimmer crab in the HI was minimal.

Therefore, no additional management action was required for either fishery for the 2024-25 season.

Allowable Catch Tolerance Levels

The acceptable catch range for WCB crab fisheries is based on the last 10 years of annual catch.

Cockburn Sound: Under review

Peel Harvey:
Commercial: 36 – 72 t

Recreational: 31 – 55 t

Swan-Canning Estuary:
Commercial: 6 – 11 t

Recreational: 4 – 12 t

The commercial catch for the 2023-24 season in the PHE of 48 t was within the revised range.

The 2023-24 season catches for the remaining WCB commercial crab fisheries were also within their respective acceptable ranges.

Compliance

Current risks to enforcement are **low** for most West Coast crab fisheries. However, the Peel-Harvey Estuary recreational fishery has a **high** level of enforcement risk, particularly for offences relating to the take of undersize crabs, crabs in excess of the bag limit, and night-time fishing activities.

Consultation

DPIRD undertakes consultation directly with licensees on commercial operation issues. Industry Annual Management Meetings are held between DPIRD and licensees, in conjunction with the Industry Consultation Unit of the Western Australian Fishing Industry Council who are also responsible for statutory management plan consultation under a Service Level Agreement with DPIRD.

Consultation processes are now facilitated by Recfishwest under a Service Level Agreement, although DPIRD undertakes direct consultation with the community on specific issues.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines:

Guideline for stakeholder engagement on aquatic resource management-related processes.

Management Initiatives

Informed by the recent Cockburn Sound crab stock assessment, DPIRD is working with WAFIC and Recfishwest to develop appropriate arrangements for future management of the Cockburn Sound blue swimmer crab resource.

EXTERNAL DRIVERS

Environment

This report takes into consideration evidence of a changing climate, which has had both positive and negative effects on blue swimmer crab abundance across the WA coast. While the 2011 marine heatwave and localised flooding events had detrimental effects on stocks north of Kalbarri (e.g. Shark Bay; Chandrapavan et al. 2019), warming waters and increasingly marine conditions in southwest Australian estuaries have generally had positive impacts on southern stocks.

Recruitment success, abundance and crab condition in southwest Australian blue swimmer crab stocks appear to be strongly influenced by the environment (e.g. water temperature, salinity and food availability; Johnston and Yeoh 2021; Marks et al. 2021), with annual legal-sized biomass levels seemingly having less impact. Thus, biomass levels can change markedly between seasons in response to environmental variation. Along with density-dependent growth and reduced levels of primary productivity (Chlorophyll-a), fluctuations in water temperature appear to have been a contributing factor in the decline of CS crab stocks since the early 2000s (Marks et al. 2021).

Climate Change

West Coast Blue Swimmer Crab Resource Table 1 provides a summary of the climate vulnerability risk assessment outcomes for blue swimmer crab stocks in the Cockburn and Peel-Harvey Estuary fisheries.

Considered a semi-tropical species towards the southern end of its distribution on the south-west coast, projected increases in SST are expected to be beneficial through increased primary productivity, expanded spawning season and accelerated growth. Rising sea levels and declining rainfall will also likely increase marinification of the Peel-Harvey Estuary which is expected to benefit resident crab stocks.

Therefore, although potential risk from increased ocean acidification remains, overall climate change is anticipated to have a positive effect.

Both stocks are deemed at **low** risk from climate change.

WEST COAST BLUE SWIMMER CRAB TABLE 1.
Summary of the climate vulnerability risk assessment output for blue swimmer crab stocks in the Peel-Harvey Estuary and Cockburn Sound crab fisheries.

Indicator species	Sensitivity	Exposure	Climate Change risk
Cockburn Sound	Medium	Remote or potentially positive effect	Low
Peel-Harvey Estuary	Medium	Demonstrable positive effects are evident	Low

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MID-WEST SCALLOP RESOURCE STATUS REPORT 2025

S. Wilkin, J. How, S. Brown



OVERVIEW

Saucer scallops, *Ylistrum balloti* (formerly *Amusium balloti*), are fished using otter trawls in four separate fisheries in WA, from Shark Bay through to the south coast. Genetically and geographically separated from other scallop stocks, the Mid-West Scallop Resource are those scallops accessed by the Abrolhos Islands Mid-West Trawl Managed Fishery (AIMWTMF).

The AIMWTMF is the second largest scallop fishery in Western Australia. Access is limited to the 10 licences granted to access the resource, which are managed through a range of gear controls, catch rates and seasonal closures. Due to the inherent variability in scallop abundances, catches vary widely depending on the strength of recruitment. Extreme environmental events, as was observed with a marine heat wave in the summer of 2010-11, can have a significant impact on scallop abundances.

The AIMWTMF was assessed under provisions of the Commonwealth's EPBC Act in 2025 and was accredited for export for a period of three years. Further details on the resource assessments are provided at: https://library.dpird.wa.gov.au/fr_msc/3/

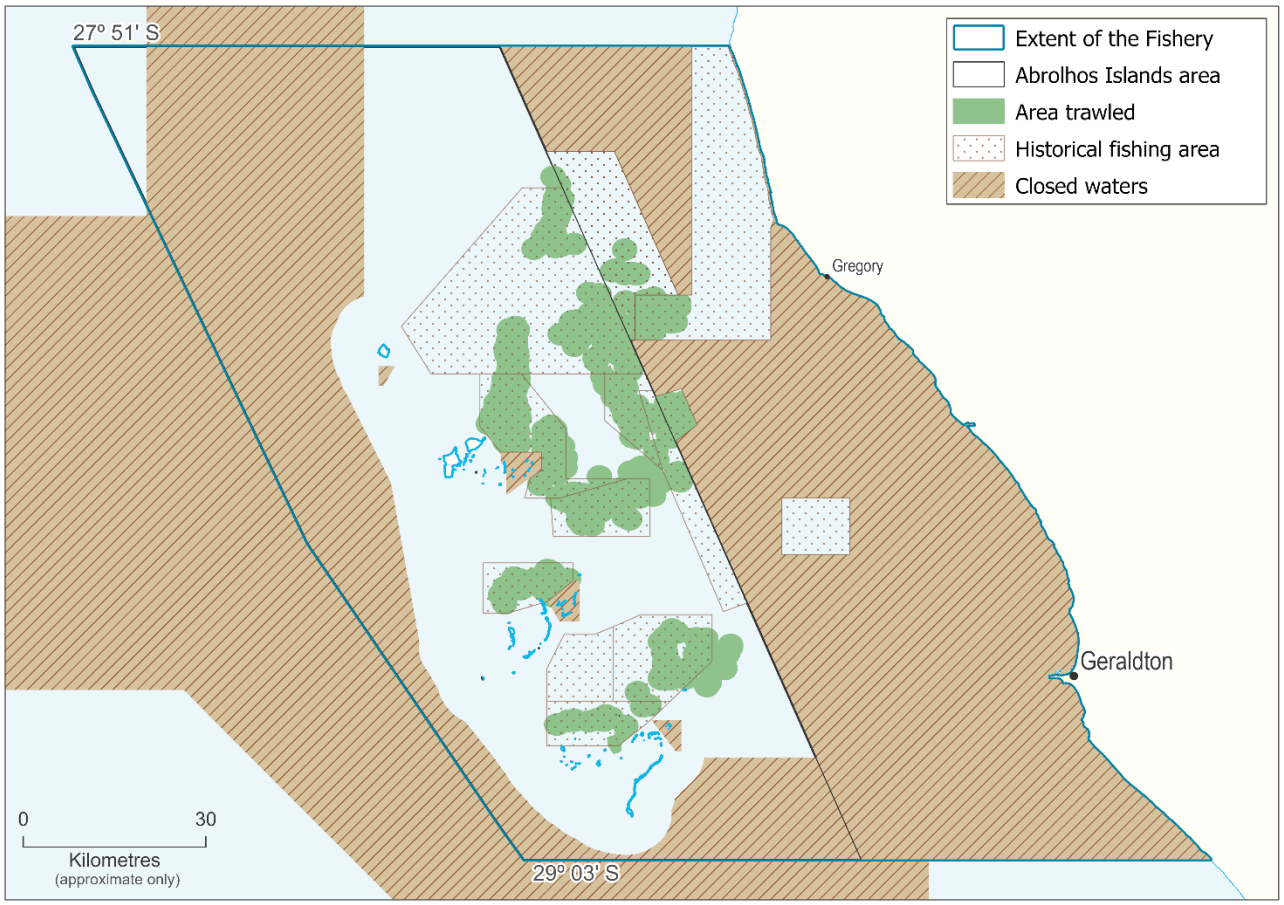
SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery (2024)	Total Catch 2024: 95.7 (meat) 478.3 (whole)	Acceptable
Recreational fishery (N/A)		
EBFM		
Indicator species		
Saucer Scallop	Severe risk	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Negligible risk	Adequate
Habitat	Low risk	Adequate
Ecosystem	Negligible risk	Adequate
Economic (GVP $4.3 m)	Medium risk	Acceptable
Social (1 amenity)	Moderate risk	Acceptable
Governance	Moderate risk	Acceptable
External Drivers – Other	High risk	Acceptable
External Drivers – Climate change	High risk	

SUMMARY STATISTICS

Statistics	Previous season (2023)	Current season (2024)	Further description
Total catch	263 t meat (1317 t whole)	96 t meat (478 t whole)	Catch within historic catch range.
Main byproduct species	NIL	NIL	No other species were retained
Commercial effort (nom. hrs)	4332	2393	Effort declines in line with catch declines and within historic range.
Participation (vessels)	4	4	
Beach price	$8.68 / kg (whole weight	$8.98 / kg (whole weight	
Bycatch	-	-	Limited data available.
Listed Species interactions	1 (SS)	NIL	No reported ETP interactions

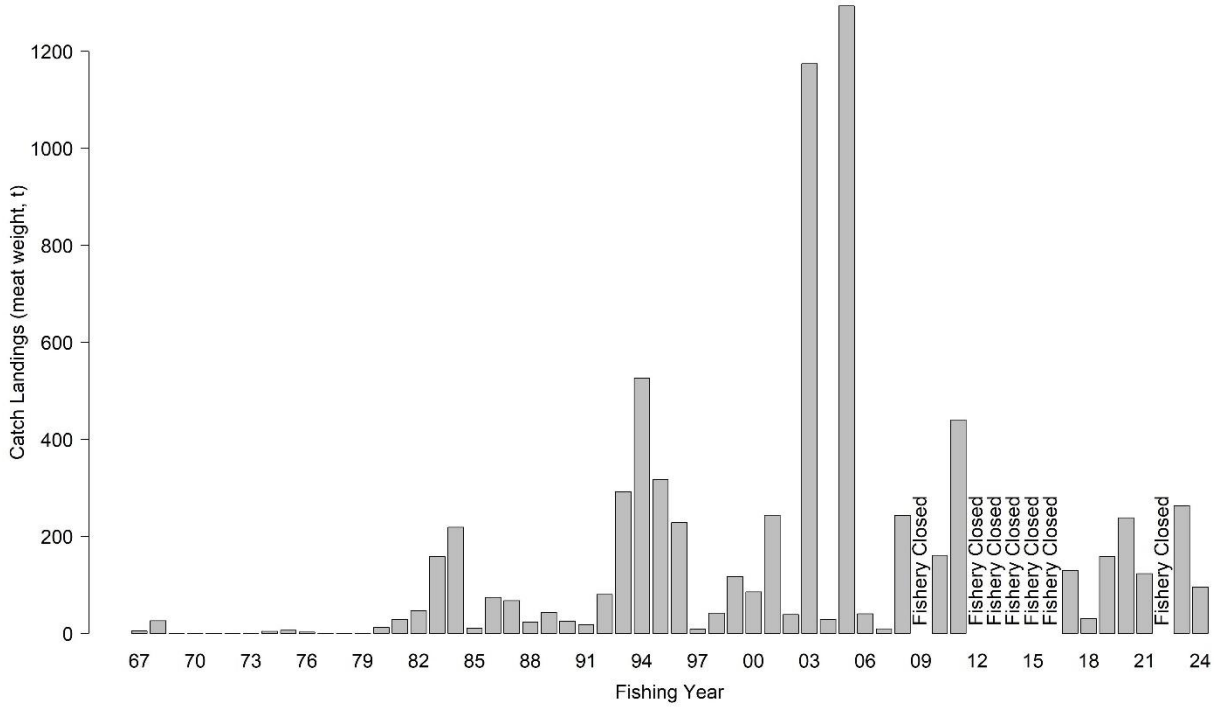
Key to table: SS = Sea Snake.



SAUCER SCALLOP FIGURE 1.
Boundaries of the Abrolhos Islands and Mid-West Trawl Managed Fishery for the 2024 fishing season. 'Closed waters' are inclusive of Fishery, State, and Commonwealth imposed trawl closures.

CATCH AND LANDINGS

The total scallop landings from the Resource in 2024 was 95.7 t meat weight (478.3 t whole weight).



SAUCER SCALLOP FIGURE 2.
Total annual scallop catches (t whole weight) for the AIMWTMF from 1967 to 2023. The fishery was closed in 2009, from 2012 to 2016, and 2022.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Abrolhos Islands and Mid-West Trawl Managed Fishery (Sustainable–Adequate)

The AIMWTMF is managed using a constant escapement approach in the Harvest Strategy (DPIRD 2020b). The impact to spawning biomass is limited by only permitting fishing after the peak spawning period; setting the duration of fishing according to catch predictions (based on pre-season surveys); closing the fishery at a minimum catch rate threshold (150 kg meat weight per day); avoiding areas of high concentrations of small scallops, and by not opening the fishery if scallop abundance is considered too low (below a specified limit reference point).

There was a notable decline in fishery-independent indices in 2024, with both approaching the limit reference point. Volatility in stock abundance is not uncommon or unexpected for such a fecund, short-lived species. This is particularly the case for scallops which are susceptible to shifts in environmental conditions. The stock in 2024 was assessed as at **severe** risk of stock depletion, with the harvest strategy indicating a range of possible management actions which should be implemented to address this stock status for the 2025 season.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Bycatch

Bycatch reduction devices (BRDs) are mandatory in the AIMWTMF, with all boats required to fish with a ‘grid’ which allows large marine animals to escape the trawl net. Grids have been fully implemented in this fishery since 2003. Bycatch was assessed as a **negligible** risk in a previous ERA (Stoklosa 2019 in DPIRD 2020c).

Protected species

The first known report of a captured (alive) sea snake in the AIMWTMF was made in 2023. There were no protected species interactions reported in the fishery for the 2024 season, with a previous ERA scoring ETP interactions as a **negligible** risk (Stoklosa 2019 in DPIRD 2020c).

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

Habitat effects are considered **low** risk, with trawl boats generally sweeping a small proportion of the designated and available trawl area. Because these areas are sandy habitats, trawling activity has a low impact on the substrate (Laurenson et al. 1993), therefore, overall habitat effects are considered low. In 2024, 6.9% of the historic permitted trawl area was fished, noting that some of this historic area is now excluded from trawling due to the implementation of marine parks.

Ecosystem

The ecosystem impacts of scallop fisheries are considered **negligible** risk, due to the relatively low total biomass taken by these operations. The high natural recruitment variability, and therefore scallop stock abundance, and short life span (up to 3 years) also means that few predators have become highly dependent on the species.

SOCIAL AND ECONOMIC OUTCOMES

The overall GVP for the fishery was $4.3 million. Declining catch impacted the GVP, though there was a slight increase in the beach price. Four vessels, each with a skipper, mate and four or five crew fished in 2024. Therefore, it is likely that this resource supports ~35 fishers with additional staff in onshore support / processing roles. It should be noted that these vessels and associated staff also access other fisheries. Owing to the size of the fleet, location of fishing and the lack of recreational catch, the Resource is considered to have a low (Level 1) social amenity.

GOVERNANCE SYSTEM

Harvest Strategy

The harvest strategy is based on the abundance of scallops during the annual recruitment / spawning stock surveys, with limit and threshold levels based on the stock recruitment relationships established for the fishery (Caputi et al. 2021). A formal harvest strategy for the AIMWTMF was published in July 2020 (DPIRD 2020b). This outlines the long and short-term management objectives for the fishery and the performance indicators, reference levels, and harvest control rules required to achieve these objectives.

Annual Catch Tolerance Levels

Abrolhos Islands: The fishery catch fell within the target range (95-1830 t whole weight), resulting in 478.3 t landed.

Compliance

It is a requirement that all vessels in each of the fisheries are fitted with an Automatic Location Communicator (ALC). The implementation of an ALC enables DPIRD to monitor the fleet using a Vessel Monitoring System (VMS) and manage compliance with temporal and spatial closures. Regular vessel inspections are also conducted to ensure fishing is being undertaken in accordance with the governing legislation (e.g. gear requirements, catch reporting).

Consultation

Management meetings are held annually between DPIRD and licensees, in conjunction with the Industry Consultation Unit of the Western Australian Fishing Industry Council (WAFIC). These meetings provide an opportunity for DPIRD, WAFIC, and industry to discuss research outcomes and initiatives, management of the fishery, and industry issues. Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

The AIMWTMF completed an MSC assessment during early 2021 and achieved MSC accreditation with no conditions.

EXTERNAL DRIVERS

Environment

Strong La Niña events that typically result in strong Leeuwin Currents and warm sea-surface temperatures often result in below-average scallop recruitment at the Abrolhos Islands (Chandrapavan et al. 2020). The 2011 extreme marine heatwave event (MHW) that was associated with a strong La Niña, resulted the AIMWTMF being closed from 2012 to 2016 to allow for the spawning stock to recover. A return of La Niña conditions between 2020-2023 once again resulted in the fishery closed for the 2022 season to allow for spawning biomass to rebuild.

Climate Change

Mid-West Scallop Resource Table 1 provides a summary of the climate vulnerability risk assessment outcome for the saucer scallop stock in the AIMWTMF. The assessment found that demonstrable negative effects associated with high SST and MHW events had already impacted this stock and thus there is high confidence that projected increase in SSTs, MHW days and ocean acidification will further adversely impact this stock by 2050. This stock is deemed at **high** risk from climate change.

MID-WEST SCALLOP RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for saucer scallop stock in the AIMWTMF.

Indicator species	Sensitivity	Exposure	Climate Change risk
Saucer scallop	Medium	Demonstrable negative effects are evident	High

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WEST COAST OCTOPUS RESOURCE STATUS REPORT 2025

L. Strain, K. Hogan-West, D. Murphy, S. Monaghan



OVERVIEW

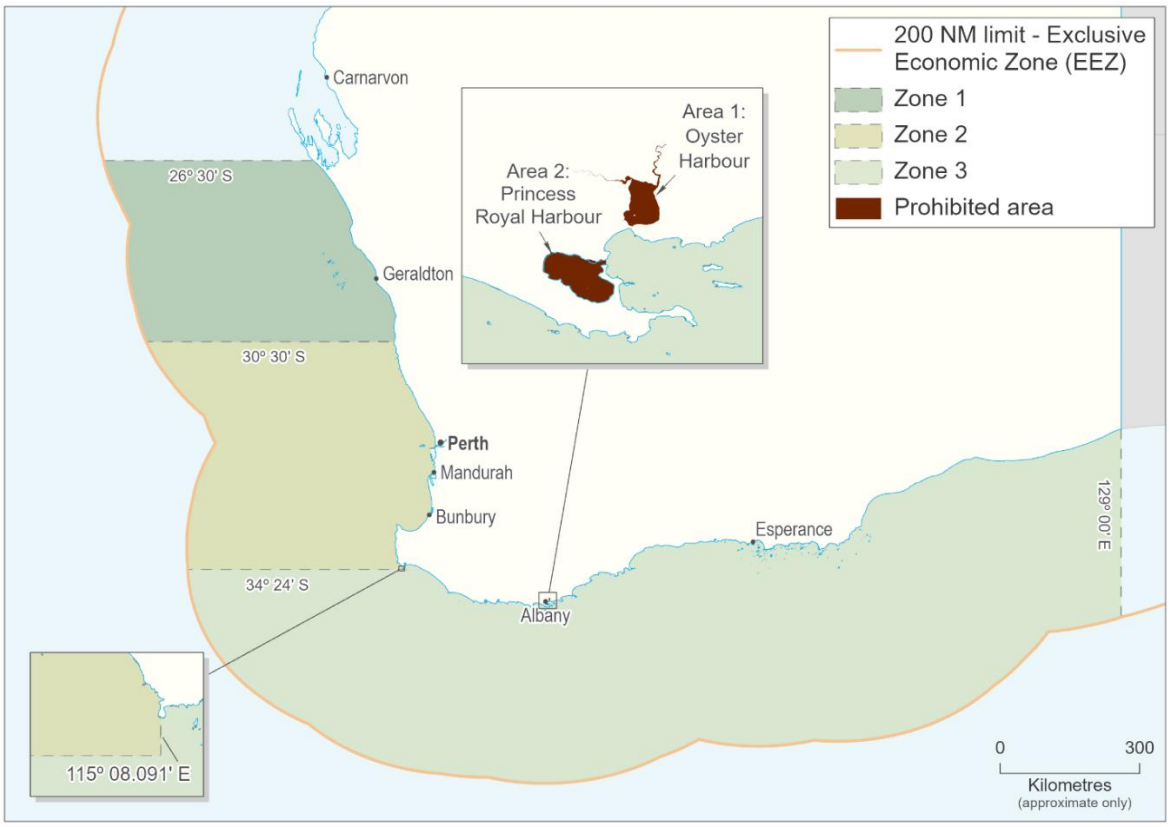
The Octopus Fishery in Western Australia targets the Western Australian Rock Octopus, *Octopus djinda* (Amor and Hart, 2021). Octopus is predominantly harvested by the Octopus Interim Managed Fishery (OIMF), Cockburn Sound Line and Pot Fishery (CSLPF) and the West Coast Rock Lobster Managed Fishery (WCRLMF). The majority of the commercial catch occurs in the OIMF, which is in a growth and development phase. The primary harvest method in the OIMF is a baited octopus trap that uses a combination of active trapping (trigger or sliding door traps) via trigger mechanisms, and passive trapping (shelter traps) via the use of open ended traps. Unbaited shelter traps are also used mainly in the CSLPF, and octopus are also caught as by-product in the WCRLMF pots. Commercial management arrangements include input controls on the total allowable number of traps permitted in each of 3 management zones (Octopus Figure 1). Recreational fishing for Octopus is typically undertaken by diving, using unbaited shelter pots or bycatch in recreational rock lobster pots. More details are available in the Octopus Resource Assessment Report (Hart et al. 2018) available at https://library.dpird.wa.gov.au/fr_msc/7/.

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery	Total Catch 2024: 716 t	Acceptable
Recreational fishery	Total Catch 2024: 0–1 t (95% CI, boat only in 2023-24)	Acceptable
EBFM		
Indicator species		
Octopus (*Octopus djinda*)	Performance indicator above target	Adequate
Ecological		
Bycatch	Low risk	Adequate
Listed Species	Low risk	Adequate
Habitat	Low risk	Adequate
Ecosystem	Medium risk	Adequate
Economic (GVP $10.4 million)	Medium risk	Acceptable
Social	Low risk	Acceptable
Governance	Low risk	Acceptable
External Drivers – Other	Low risk	Acceptable
External Drivers – Climate change	Negligible risk	

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Total Catch	777 t	716 t	Catch decreased by 7.8% due to a reduction in fishing effort in the OIMF and CSLPF.
Effort (traplifts)	795,832	743,798	Traplifts in the OIMF and CSLPF fisheries decreased by 6.5%.
Participation	28	27	27 commercial vessels fished in the OIMF and CSLPF fisheries in 2024, a minor decrease from 2023.
Beach price	$14.49/kg	$14.56/kg	Whole weight price. Landed weight price is $12.38/kg.
Whale entanglements	1	4	3 humpback whale entanglements reported in commercial fishing gear and 1 humpback whale entanglement reported in recreational fishing gear.

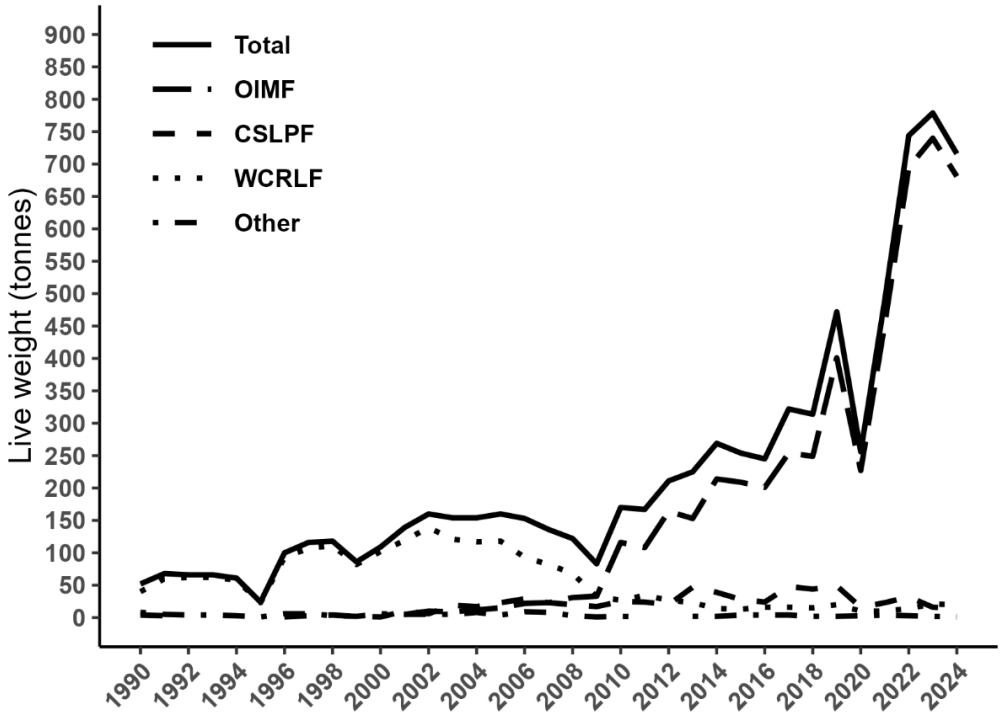


OCTOPUS FIGURE 1.
Boundaries of the three fishery management zones (Zone 1, Zone 2, Zone 3) for the Octopus Interim Managed Fishery of WA. The octopus fishery is primarily managed by the number of octopus traps permitted to be fished in each of these zones.

CATCH AND LANDINGS

In 2024, the total commercial octopus catch was 716 t whole weight, which was 7.8% lower than the 2023 catch of 777 t (Octopus Figure 2).

The statewide boat-based recreational harvest range was 0–1 t in 2023-24 (95% CI, boat only; Ryan et al. 2025).



OCTOPUS FIGURE 2.
Commercial catch (t) of *Octopus djinda* in WA since 1990. OIMF (Octopus Interim Managed Fishery), CSLPF (Cockburn Sound Line and Pot Fishery), WCRLF (West Coast Rock Lobster Managed Fishery), and Other, which is by-product from trawl and miscellaneous pot fisheries.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Octopus (Sustainable–Adequate)

Octopus djinda is a highly productive species, with an average maximum age of 1.5 years, and is widely distributed along the west and south coasts of WA. The estimated area of habitat fished in 2024 was 3,192 km^2, a slight decrease from 3,323km^2 in 2023. This area was estimated at 16% of the total estimated habitat area on the West Coast of 20,073 km^2 (Hart et al. 2019), where most of the fishing occurs. The current catch of 716 t is likely to be no more than 20% of the total biomass, at a conservative estimate. Consequently, the breeding stock is considered to be **adequate**.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

The selective method of fishing used results in a minimal level of bycatch of other species. Risk to bycatch species is considered **negligible** (Desfosses et al. 2024).

In 2024 there were three reports of entanglements with whales in commercial octopus fishing gear. Fishers mitigate entanglements by setting pots on longlines, and using weighted ropes that hang vertically in the water column. Risk to listed species is considered **low** (Desfosses et al. 2024).

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

In the OIMF and CSLPF, octopus-specific pots are set predominately in sand and seagreass habitat, as well as similar habitats to those fished in the WCRLMF. These pots are not expected to impact on benthic habitats as the soak times are at long intervals, averaging 10 days in the OIMF, and 15-20 days in the CSLPF. Western Rock Lobster potting in the WCRLMF occurs primarily on sand areas around robust limestone reef habitats covered with coralline and macro-algae, and these habitats are considered resistant to lobster potting due to the hard nature of the bottom substrate (see WCRLMF report for full details). Risk to habitats is considered **low** (Desfosses et al. 2024).

Octopus are key prey for Australian sea lions, which are listed as endangered. Harvesting of octopus could potentially reduce the quantity or quality of food available for sea lions (Desfosses et al. 2024). **Medium** risk.

SOCIAL AND ECONOMIC OUTCOMES

Social

Each dedicated octopus fishing vessel employs between 2 and 4 people, and 27 vessels fished in the OIMF and CSLPF. Octopus is retained in the WCRLMF and landed as a byproduct in 6 other fisheries. There is also a substantial processing and value-added component to the octopus catch with factories in Fremantle and Geraldton. **Low** risk.

Economic

The estimated annual value for 2024 was $10.4 million based on the total catch of 716 t, and an average product price of $14.56/kg whole weight. **Low** risk.

GOVERNANCE SYSTEM

Annual Catch Tolerance Levels

The target commercial catch range for octopus is 500 - 1,000 t. The 2024 catch of 716 t was within the acceptable range.

Harvest Strategy (Formal)

The Harvest Strategy for the Octopus Resource of Western Australia (DPIRD, 2025) uses the performance indicator of standardised catch per unit effort (SCPUE) in kg/cradle lift, which accounts for environmental and efficiency changes in the fishery. Target, threshold, and limit reference points have been set, and the fishery is currently above the target level (Octopus Figure 3).

Management Initiatives

The Octopus Interim Managed Fishery successfully attained initial MSC certification in 2019, and was re-certified in 2025.

In 2023, DPIRD worked with permit holders in the OIMF to implement improved whale entanglement mitigation measures. DPIRD is also progressing a review of recreational octopus fishing arrangements.

EXTERNAL DRIVERS

Environment

Cephalopods in general, including octopus, are known to be subject to large environmentally-driven fluctuations in abundance.

Climate change

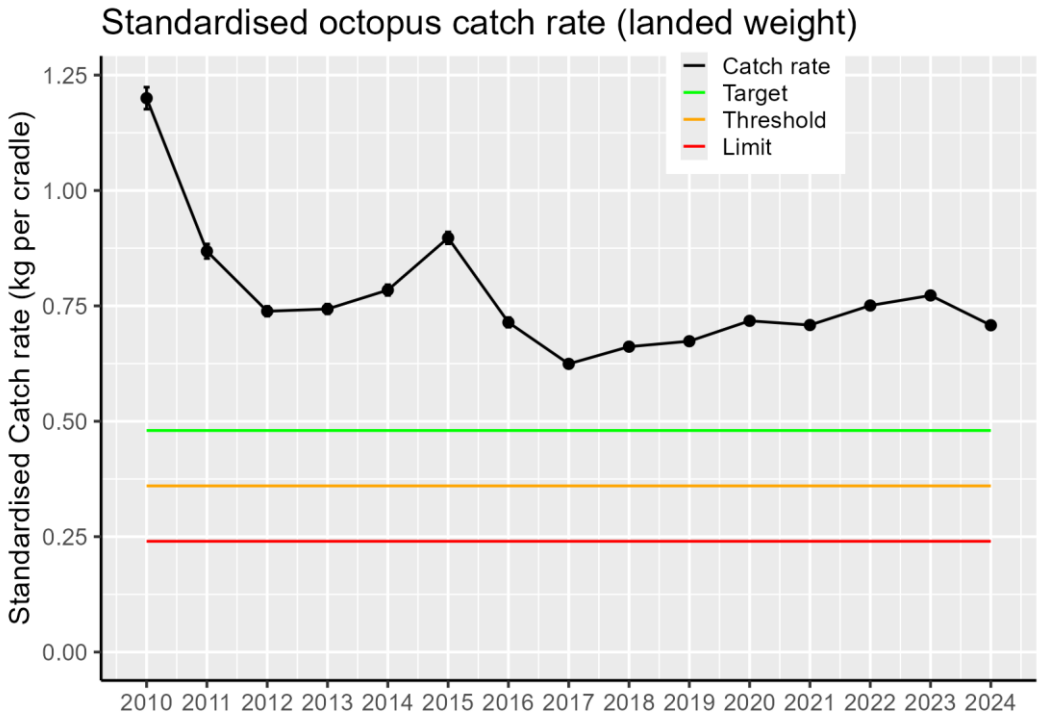
Generally, octopuses are well-adapted to changing environments with WA rock octopus catch landings steadily increasing since 2010. Under a warming ocean climate, octopus biomass is anticipated to increase although there is some uncertainty regarding the impact of climate change on its key inshore limestone reef ecosystem and prey availability. Thus the assessment deemed the rock octopus to be at **negligible** risk from climate change.

WEST COAST OCTOPUS RESOURCE TABLE 1. Summary of the climate vulnerability risk assessment output for WA rock octopus resource in OIMF, CSLPF and WCRLMF.

Indicator species	Sensitivity	Exposure	Climate Change risk
West Australian rock octopus	Low	Demonstrable positive effects are evident	Negligible

Other

The COVID-19 pandemic had a major influence on the Octopus fishery in WA, reducing the harvest by over 50% in 2020 (Octopus Figure 2). However, the impact was relatively short (1 year only), with catches reaching new record highs between 2022 and 2024. **Low** risk.



OCTOPUS FIGURE 3.
Standardised catch per unit effort (SCPUE) (±95% CL) in kg / trap (landed weight) of *Octopus djinda*. Biological reference points (BRP) including Target, Threshold and Limit are also given (see DPIRD, 2025 for definition of BRPs).

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WEST COAST NEARSHORE AND ESTUARINE SCALEFISH RESOURCE STATUS REPORT 2025

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OVERVIEW

The West Coast Nearshore and Estuarine Scalefish (WCNES) Resource comprises over 50 species in nearshore marine (<20 m deep) and estuarine waters in the West Coast bioregion (WCB).

Commercial fisheries that access this resource include the West Coast Estuarine Managed Fishery (WCEMF), West Coast Beach Bait Managed Fishery, South West Coast Salmon Managed Fishery (SWCSMF), Cockburn Sound Fish Net Managed Fishery, South West Coast Beach Net Fishery (Prohibition Order 43), and Open Access fishing in the West Coast bioregion using nets. The main commercial methods are haul, beach seine, and gill netting.

Five estuaries are open to commercial fishing (Swan-Canning Estuary, Peel-Harvey Estuary, Vasse-Wonnerup Estuary, Toby Inlet and Hardy Inlet). Sea mullet caught by haul net in the Peel-Harvey Estuary (PHE) commercial fishery (Area 2 of the WCEMF) have MSC certification.

Recreational fishers also target nearshore and estuarine species from the shore or a boat. The main recreational fishing method is line fishing. Boat-based recreational catches are monitored every three years. Shore-based recreational catches are unquantified and may be substantial for some species.

Customary fishers also harvest nearshore and estuarine species. Customary catch has not been assessed but anecdotally is low.

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery	Total Catch 2024: 372.4 t	Acceptable
Recreational fishery	Total Catch 2023-24: 43–70 t (95% CI, boat only)	Acceptable
EBFM		
Indicator species		
Western Australian Salmon	Low Risk: Within target (catch)	Adequate
Sea Mullet	Medium Risk: Above threshold (catch), Biomass > target	Adequate
Australian Herring	Low Risk: Within target (catch), Biomass ≥ target	Adequate
Yellowfin Whiting	Medium Risk: Within target (catch)	Adequate
Sandy Sprat (whitebait)	High Risk: Within target (catch)	Environmentally limited
Ecological		
Bycatch	Low risk	Adequate
Listed Species	Low risk	Adequate
Habitat	Low risk	Adequate
Ecosystem	Medium risk	Adequate
Economic (commercial GVP <$1 m)	Medium risk	Acceptable
Social (high amenity)	Medium risk	Acceptable
Governance	Medium risk	Acceptable
External Drivers – Other	High risk	Acceptable
External Drivers – Climate change	High risk (WA Salmon, Sea mullet, Australian herring, Whitebait), Low risk (Yellowfin whiting)	

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Commercial catch	2023: 267.5 t	2024: 372.4 t	Higher quantities of sea mullet, WA salmon and Australian herring caught in the current season.
Charter catch	2022-23: Negligible	2023-24: Negligible	Very limited charter fishing for nearshore/estuarine species.
Recreational catch	2020-21 (boat only): 55–100 t(95%CI)	2023-24 (boat only): 43–70 t (95% CI)	Top 10 nearshore and estuarine species in WCB, boat-based fishing only (Ryan et al. 2025)
Beach price	2022-23 Sea mullet: $3.11 WA salmon: $0.97 Australian herring: $2.47 Yellowfin whiting: $5.82 Tailor: $5.78	2023-24 Sea mullet: $3.07 WA salmon: $0.88 Australian herring: $1.84 Yellowfin whiting: $5.82 Tailor: $5.83	Top five species (by total catch) listed. Price varies with domestic market supply and demand.
Bycatch	-	-	Peel-Harvey Estuary observer data indicates very limited bycatch.
Listed species interactions	None reported	None reported	

CATCH AND LANDINGS

In 2024, the total commercial catch within the WCNES Resource was 327.4 t, higher than 2023 (267.5 t). The majority of the catch comprised sea mullet (141.7 t), largely taken by the WCEMF, and WA salmon (115.5 t) (Table 1).

The boat-based recreational harvest range for the top 10 nearshore and estuarine species in the West Coast (representing 94% of the resource kept catch by numbers) was steady at 57 t (95% CI 43–70) in 2023-24 compared with 77 t (95% CI 55–100) in 2020-21 (Ryan et al. 2025).

Shore-based recreational catch in marine waters of the Perth metropolitan region is monitored annually, with harvest estimates for key species (see Tate et al. 2025). Shore-based recreational catches for the WCB are not known but are likely to represent a considerable proportion of the overall catches of nearshore and estuarine species.

NEARSHORE AND ESTUARINE SCALEFISH TABLE 1.
Total commercial catch (tonnes) of each indicator species (ordered by catch in 2024) within the West Coast Estuarine and Nearshore Scalefish Resource over the previous 5 years.

Common name	Scientific name	2020	2021	2022	2023	2024
Sea mullet	Mugil cephalus	140.6	117.8	115.3	124.1	141.7
Western Australian salmon	Arripis truttaceus	16.6	88.5	82.9	28.4	115.5
Australian herring	Arripis georgianus	42.9	50.0	36.6	46.7	54.3
Yellowfin whiting	Sillago schomburgkii	23.9	24.0	23.8	24.1	25.0
Tailor	Pomatomus saltatrix	3.8	4.1	6.7	8.3	10.3
Sandy sprat	Hyperlophus vittatus	10.9	21.3	22.6	18.0	4.0
Perth herring	Nematalosa vlaminghi	0.8	1.0	2.0	1.3	2.4
Estuary cobbler	Cnidoglanis macrocephalus	1.0	2.0	0.2	0.1	0.8
Southern garfish	Hyporhamphus melanochir	0.8	0.2	0.2	0.2	0.3
Other		18.3	16.2	19.2	16.3	18.0
Total		259.6	325.1	309.5	267.5	372.4

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

The status of each stock is assessed using a weight-of-evidence approach that considers all available information about the stock. As this resource encompasses numerous species with divergent life histories, environmental tolerances and habitat preferences, a tiered approach is employed to determine indicator species. This approach ranks species based on their value to each fishery sector (customary, recreational and commercial), ecological importance and susceptibility to environmental or other influences.

Sea mullet (Sustainable–Adequate)

Sea mullet in WA are managed as a single stock, consistent with a single genetic population (Thieme et al. 2025). Stock status is assessed annually based on the commercial catch in the PHE (the main fishery area in the WCB) remaining below the annual tolerance level of 150 t, and by evaluating the standardised catch rate. Higher level assessments are periodically undertaken (every ~5 years) for the entire stock.

The most recent stock assessment (Duffy et al. 2022) indicated that sea mullet biomass has largely been maintained at a level above that estimated for MSY and is experiencing low levels of fishing mortality. A biomass dynamic model was updated in 2023, and indicated the stock remained above the target level.

Sea mullet catch from the PHE in 2024 was 91.6 t, below the 150 t tolerance level (Figure 1). Total WCB catch was 141.7 t, representing ~70% of the statewide commercial catch. Refer to the Gascoyne Inner Shark Bay Scalefish Resource Status Report for a catch rate assessment.

The risk to the sea mullet stock is assessed as **medium** and the stock is classified as **sustainable-adequate.**

Australian herring (Sustainable–Adequate)

Australian herring are considered to be a single biological stock throughout WA and are a multi-jurisdictional stock shared primarily with South Australia. In WA, the majority of commercial catch has historically been taken from the South Coast bioregion (SCB) (Figure 1). The WCNES commercial catch of Australian herring in 2024 was 54.3 t (Table 1), representing the vast majority of the total WCB commercial catch (54.4 t). Statewide (WCB & SCB) commercial catch in 2024 was 132.1 t (Nearshore and Estuarine Scalefish Figure 1).

The boat-based recreational harvest was 12 t (95% CI 7–18) in the WCB and 3 t (95% CI 1–4) in the SCB in 2023-24 (Ryan et al. 2025). A shore-based harvest estimate of 15.9 t (95% CI 10.1–21.7) was determined for the Perth metropolitan area in 2024 (5-month survey period, February to June; Tate et al. 2025).

The spawning biomass is estimated to be at or above the target level (40%). As a result, the stock is considered to be at a level where there is a **low** risk to sustainability.

On this basis, the Australian herring stock is classified as **sustainable-adequate.**

Refer to the South Coast Estuarine and Nearshore Scalefish and Invertebrate Resource chapter for further information on commercial catch.

Yellowfin whiting (southern stock) (Sustainable–Adequate)

Yellowfin whiting are currently managed as two separate stocks. The southern stock, reported here, includes the WCB and SCB. It may be composed of multiple semi-discrete biological stocks. Stock status is assessed annually based on trends in the commercial and recreational catches, as well as commercial catch in the main fishery area of PHE remaining below the annual tolerance level of 12 t. Higher-level assessments are periodically undertaken as required.

The most recent equilibrium model assessment was based on age structure data collected in 2015 and 2016 (Duffy et al. 2022). ‘Spawner per recruit’ modelling (SPR) suggested that the spawning biomass was above the threshold level (30%).

Catch since 2020 has remained below the 12 t tolerance level, with 10.4 t recorded in 2024 (Table 1; Figure 1). Total commercial catch from the southern stock in 2024 was 25.9 t, approximately 25% of the statewide total of 101.2 t (Nearshore and Estuarine Scalefish Figure 1).

The risk to the southern yellowfin whiting stock is assessed as **medium** and the stock is classified as **sustainable-adequate.**

Western Australian salmon (Sustainable–Adequate)

The commercial catch of WA salmon in the WCB in 2024 was 115.5 t (Table 1), a substantial increase from 2023 (28.4 t). This increase is likely to reflect more favourable conditions (cooler inshore waters leading to more fish migrating northward along the coast). This species is considered to comprise a single biological stock throughout WA, with the majority of commercial catch historically taken from the SCB (Nearshore and Estuarine Scalefish Figure 1). Total statewide commercial catch of WA salmon in 2024 was 213.4 t. The spawning biomass of the stock is estimated to be well above the target.

The risk to the WA salmon stock is assessed as **low** and the stock is classified as **sustainable-adequate.**

Refer to the South Coast Estuarine and Nearshore Scalefish and Invertebrate Resource chapter for further information.

Sandy sprat (whitebait) (Environmentally limited)

Sandy sprat (whitebait) are assessed annually based on commercial catch from the southern region of the WCB (Myalup Beach to Geographe Bay), the main fishery area for this species, and higher-level assessments are periodically undertaken as required.

Sandy sprat catches peaked from the mid-1980s to mid-2000s, and in recent decades have notably declined (Figure 1). Within this broader declining trend there are highly variable peaks and troughs. This species has a lifespan of only 3-4 years, and so the high catch variation likely reflects environmentally driven recruitment variability. Longer-term declines in catch are likely related to climate changes in the region, e.g. decreasing rainfall and river flow with warming temperatures.

A stock assessment in 2018 indicated a severe risk to sustainability from a combination of environmental drivers and fishing. This resulted in a reduction in the season to 2 months, and a voluntary total allowable catch (TAC) of 25 t for the southern region. Since 2019, total WCB sandy sprat catch has ranged 4–23 t, below the TAC (Nearshore and Estuarine Scalefish Figure 1). Catches in 2022, 2023 and 2024, were 23, 18 and 4 t respectively, with the latter being the lowest on record (Nearshore and Estuarine Scalefish Table 1; Figure 1). This very low catch is thought to be, at least partly, attributed to unfavourable environmental conditions during the short fishing period reducing catchability. An updated stock assessment is currently underway to evaluate changes in stocks since catch reductions were introduced and further elucidate environmental drivers.

The risk to the sandy sprat stock is assessed as **high** and the stock is classified as **environmentally limited**.

Southern garfish (Perth metropolitan zone) (Environmentally Limited)

Southern garfish in WA are thought to form multiple semi-discrete biological stocks (Smith et al. 2017) and are therefore managed at this scale. Stock status is assessed annually based on commercial and recreational catches in relation to recent trends, and management action.

Southern garfish have several biological traits which make it potentially vulnerable to external drivers such as climate change and fishing, e.g. small breeding stock sizes, low dispersal rate and low fecundity (Smith et al. 2017).The species is also considered ‘seagrass-dependent’ because it directly consumes seagrass and associated organisms, and requires seagrass (or macroalgae) for egg attachment for reproduction (Smith et al. 2017).

Commercial catches of southern garfish in the Perth Metropolitan Zone peaked at ~38 t during the late 1990s, declining during the 2000s and most notably following the 2011 extreme marine heatwave event (Nearshore and Estuarine Scalefish Figure 1). From 2012 to 2017 commercial catches were low compared to historical levels at <6 t.

A level 3 assessment conducted during 2017 indicated that spawning biomass in the metropolitan zone was below the limit reference level (i.e. 20% of the unfished level) and indicated the risk to sustainability was high (Smith et al. 2017). From June 2017 to February 2024 this zone was closed to commercial and recreational fishing for southern garfish to aid stock recovery. An interim assessment conducted in 2023, incorporating productivity susceptibility analysis (PSA), catch-MSY modelling and recreational and commercial garfish bycatch information (from fishers targeting other species), suggested that opening the fishery represented a moderate risk. The recreational fishery has subsequently been reopened and limited commercial fishing (2 t informal quota) permitted to inform future stock assessments. No commercial catch was taken from the metro area during 2024, and shore-based recreational catch was negligible (Tate et al., 2025).

The risk to the southern garfish stock in the Perth Metropolitan Zone is assessed as **medium** and the stock is classified as **environmentally limited**.

Estuary cobbler (Peel-Harvey Estuary) (Sustainable–Adequate)

Estuary cobbler in the WCB are managed as a single stock, however, discrete biological stocks may occur within individual estuaries (Ayvazian et al. 1994). Stock status is assessed annually based on the commercial catch in the PHE in relation to recent trends, and management action.

An ecological risk assessment of cobbler in the PHE determined the species to have a medium risk to sustainability (Fisher et al. 2020). This was based on the large decline in cobbler catch from historic highs due to habitat loss and degradation, resulting in a reduced carrying capacity of the estuary to support cobbler (Smith and Lenanton 2021).

The commercial catch of estuary cobbler in 2024 was minimal at 0.8 t (Nearshore and Estuarine Scalefish Figure 1). Recent low catches are considered to be reflective of both estuarine habitat changes and reduced targeting by commercial fishers. The exploitation rate of cobbler in the PHE is currently thought to be low.

The overall risk to the estuary cobbler stock is **medium** and the stock is classified as **sustainable-adequate**.

Perth herring (Environmentally Limited)

Perth herring in WA are managed as a single stock; however each estuary may have a discrete or semi-discrete biological stock. Stock status is assessed annually based on the commercial catch in the PHE in relation to recent trends, and management action.

An ecological risk assessment of Perth herring in the PHE determined the species to be at high risk from fishing and environmental pressures (Fisher et al. 2020). This species has a restricted distribution to estuaries on the lower-west coast of WA, where there has been a large decline in catch from historic highs (Nearshore and Estuarine Scalefish Figure 1; Smith et al. 2024). This has been attributed to changing market demands and environmental degradation in the upper reaches of estuaries due to low rainfall and anthropogenic activities (Fisher et al. 2020, Smith et al. 2024).

Commercial catch of Perth herring in 2024 was 2.4 t (Nearshore and Estuarine Scalefish Figure 1). Recent low catches are considered to be largely reflective of reduced targeting by commercial fishers.

The overall risk to the Perth herring stock is **high** and the stock is classified as **environmentally limited.**

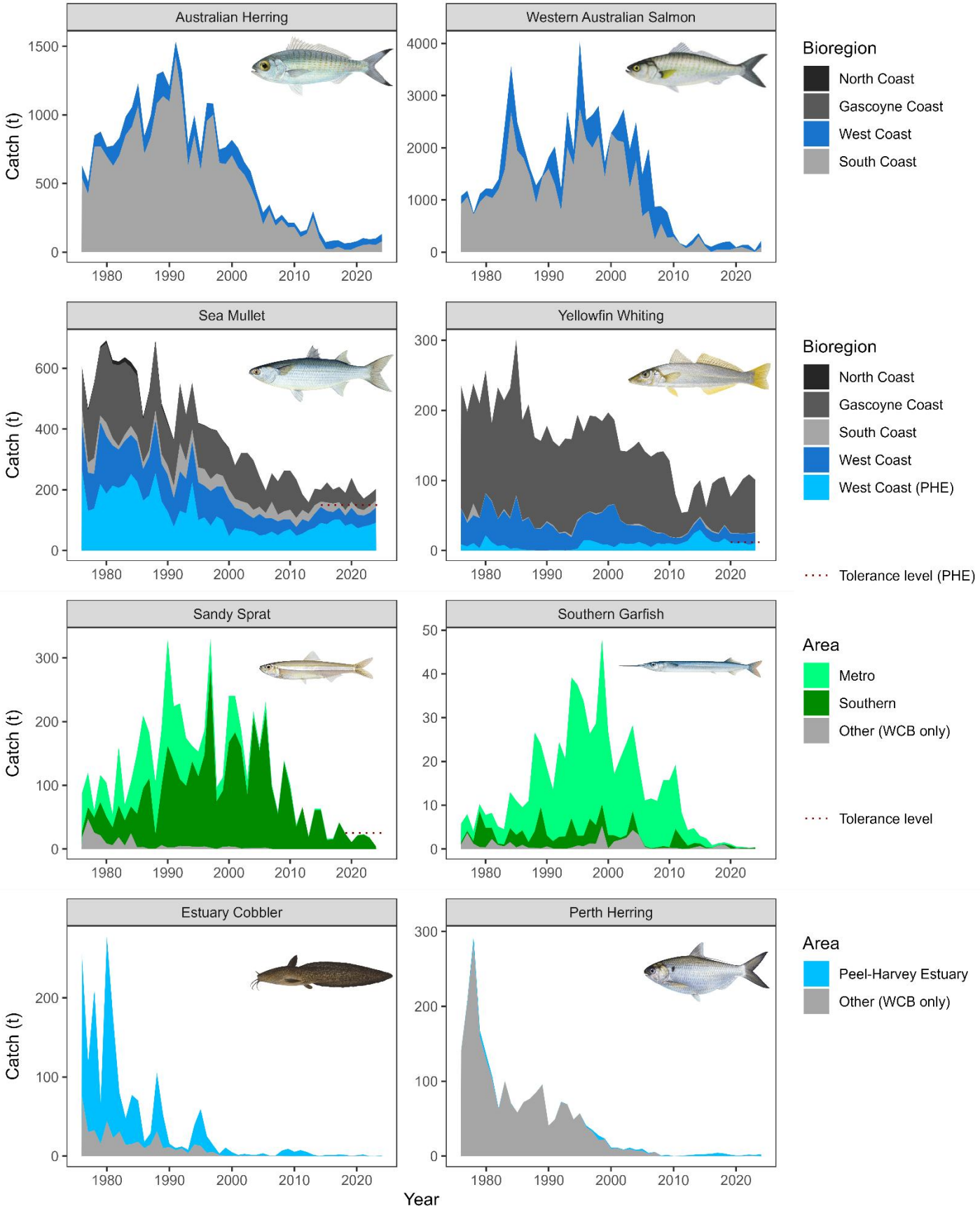
Tailor (Sustainable–Adequate)

Tailor in WA are managed as a single stock, consistent with what is thought to be a single biological stock. Stock status is assessed annually based on the commercial and recreational catches in relation to recent trends and management action.

Commercial catch in 2024 from the WCB was 10.3 t (Table 1) consistent with the historic catch range. The catch rate of tailor fluctuates in response to recruitment variations, which are linked to environmental factors (Smith et al. 2013, DoF 2017).

The risk to the tailor stock is assessed as **medium** and the stock is classified as **sustainable-adequate**.

Refer to the Gascoyne Inner Shark Bay Scalefish Resource chapter for more information.



NEARSHORE AND ESTUARINE SCALEFISH FIGURE 1.
Annual commercial catch of Australian herring, WA salmon, sea mullet and yellowfin whiting in the West Coast bioregion (WCB) and other bioregions since 1976. The Peel-Harvey Estuary (PHE) catch contribution to the WCB total is denoted for sea mullet and yellowfin whiting. Annual commercial catch of sandy sprat (whitebait) southern garfish, estuary cobbler and Perth herring within areas of the WCB are displayed since 1976. Catch tolerance levels are denoted by dotted lines where applicable.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

In 2024, DPIRD convened an ecological risk assessment (ERA) of the fisheries that access the Southern Nearshore Fish Resource, which included commercial nearshore net fisheries within the WCNES Resource and recreational fishing for nearshore scalefish species. The ERA considers the potential ecological impacts of these fisheries on all relevant retained and bycatch (non-retained) species; endangered, threatened and protected (ETP) species; aquatic habitats; and the broader ecosystem. Full details of the assessment are available in Smith et al. (2025), with key aspects relevant to the WCNES Resource summarised below.

Bycatch

The small-scale commercial fisheries in nearshore and estuarine waters mainly use haul, seine, and gill nets that are deployed in a targeted manner, with gear configurations (e.g. mesh sizes) chosen to minimise capture of undersized fish. These are also mainly multispecies fisheries which retain and market most encountered species. There is therefore typically minimal discarded bycatch. Recreational fishers mainly use line-based fishing methods in nearshore and estuarine waters. This can result in the capture and release of non-target species and undersized fish. The risks associated with post-release mortality vary considerably among species and with individual fisher behaviour (e.g. hook type/size, handling practices). In general, nearshore and estuarine species have lower risks of post-release mortality than deep water oceanic species.

On this basis, bycatch species are considered at **low** risk.

Listed Species

Commercial fishers are required to report all interactions with listed species. Waterbirds have been known to interact with fishing nets in estuarine fisheries, but there have been no reports in recent years. There is also the potential risk of pinnipeds and cetaceans becoming entangled in set nets (Smith et al. 2025). Overall, impacts of commercial fishing activity on listed species is considered to be **negligible** risk.

Recreational fishing gear, including discarded or lost tackle, can occasionally hook or entangle waterbirds, turtles, pinnipeds and dolphins, which can result in injury and mortality (Smith et al. 2025). Four-wheel drive vehicles and boats used as part of recreational fishing activities can also negatively impact wildlife such as shorebirds, turtles and dolphins (Smith et al. 2025). Overall, impacts of recreational fishing activity on listed species are considered to be **low** risk.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

The operation of gillnets and haul nets over seagrass, sand and mud bottoms is likely to have a minor impact on these habitats in estuaries and nearshore waters (Fisher et al. 2020; Smith et al. 2025). Line fishing methods used by recreational fishers have a negligible impact on benthic habitats. Anchoring by recreational fishing vessels may have localised impacts on habitats such as seagrass and reefs. Commercial and recreational fishers walking and driving on beaches can cause compaction, erosion, vegetation damage and disturbance to fauna (Smith et al. 2025). Overall, there is a **low** risk to benthic habitats.

Ecosystem

Nearshore and estuarine fish are prey for a wide range of marine predators and excessive fishery removals could impact higher trophic levels in marine food webs. For example, sandy sprat and other small pelagic fishes are prey for little penguins (*Eudyptula minor*), and their availability may affect penguin breeding success (Cannell et al. 2012). Little penguins form colonies at Penguin Island and Garden Island, and forage between Cockburn Sound and Geographe Bay (Cannell 2016). When baitfish abundances are low (e.g. due to natural variability or environmental drivers), additional removals by fishing could further limit food availability for penguins.

Commercial fishers rarely use bait or burley for targeting WCNES, but this practice is common among recreational fishers. There are biosecurity risks associated with the use of imported bait products from interstate and international waters (Smith et al. 2025). There is also potential for localised trophic impacts through food provisioning at popular recreational fishing locations (e.g. a reliance on bait/burley as a regular food source or attracting unnaturally high numbers of certain species).

Ghost fishing from lost nets is considered to be negligible in nearshore and estuarine fisheries, however, discarded or lost gear associated with line fishing (e.g. line, hooks and plastic bait bags) can be a substantial problem at popular fishing locations (Smith et al. 2025).

The overall risk of the WCNES to ecosystems is therefore **medium** risk.

SOCIAL AND ECONOMIC OUTCOMES

Social

An estimated 753,000 WA residents participated recreational fishing in 2023-24 (DPIRD 2024). The recreational fishing participation rate in WA (26%) is higher than the Australian average (21%)

(Moore et al. 2023). The nearshore and estuarine recreational fisheries of the WCB provide a **high social amenity** for the WA community. This bioregion is adjacent to the main population centres and fishery resources are very accessible to boat and shore-based recreational fishers. There is currently a **medium** risk to these values.

Economic

Estimated annual value (Gross Value of Production) to commercial fishers for 2024:

Level 1: <$1 million.

This reflects the commercial beach price of landed product only and does not include economic flow-on values such as employment within the fishery, additional employment/value in distribution networks, retail fish sales sectors, and spending on fuel and equipment.

Recreational fishing in WA contributes over 9,000 jobs and over $1.1 billion per year to the economy and supports economic activity in many regional locations (Moore et al. 2023). A significant amount of this value is derived from boat and shore-based fishing for nearshore and estuarine species in the WCB. The economic risk is considered **medium.**

GOVERNANCE SYSTEM

Harvest Strategy

This resource is harvested using a constant exploitation approach, where the annual catch taken is assumed to vary in proportion to stock abundance. Indicator species are used to determine the status of the resource. All indicator species are assessed annually based on catch and/or catch rate trends, where data are available (noting that recreational fishery catch data are limited for these stocks). Additionally, higher level assessments are periodically undertaken for some stocks.

Allowable Catch Tolerance Levels

West Coast Estuarine Managed Fishery (Peel-Harvey Estuary only)

Scalefish caught commercially in the PHE are managed according to a Harvest Strategy, which uses catches and catch rates as indicators of fishery performance (DoF 2015, DPIRD 2020). In 2024, the catches of sea mullet and yellowfin whiting were within the acceptable catch tolerance level of <150 t and <12 t, respectively, as identified in the harvest strategy (DPIRD 2020). DPIRD reviewed the current risk posed by this catch level and determined that it was **acceptable**.

Nominal tolerance levels are used for other species.

Compliance

DPIRD undertakes regular compliance inspections to ensure fishing is being undertaken in accordance with the governing legislation, and runs education programs with various stakeholder groups to increase the levels of voluntary compliance.

Consultation

DPIRD undertakes consultation in relation to the commercial sector directly with licensees on operational matters, as well as the peak commercial representative body, the Western Australian Fishing Industry Council (WAFIC). Industry Management Meetings are held between DPIRD and licensees, in conjunction with the Industry Consultation Unit of WAFIC, who also undertake statutory management plan consultation on behalf of DPIRD under a Service Level Agreement.

Consultation with the recreational sector is undertaken via the peak representative body, Recfishwest, and/or DPIRD's website when documents are released for public comment.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

The metropolitan area was re-opened to fishing for southern garfish in March 2024.

Within the WCEF, catch of secondary species, including Perth herring, yellowfin whiting and estuary cobbler, remained under co-management arrangements with licence holders. This approach allows for ongoing adaptive management.

In addition to the above co-management arrangement, yellowfin whiting in the PHE is also managed under the Estuarine and Nearshore Finfish Resource of South-West Western Australia Harvest Strategy. When catch exceeds the trigger level of 10 t within a season, managers meet with stakeholders to evaluate the appropriateness of the 12 t tolerance level for the present season in relation to environmental and fishing factors.

EXTERNAL DRIVERS

Environment

Annual variations in water temperatures and coastal currents (particularly the Leeuwin and Capes Currents) can influence the spawning and recruitment patterns of nearshore species, such as sandy sprat, tailor, Australian herring, and WA salmon (Lenanton et al. 2009).

Changes in environmental variables due to climate change (such as ocean temperature, currents, winds, nutrient supply, rainfall, ocean chemistry, and extreme weather conditions) are

expected to have major impacts on marine ecosystems. These impacts are expected to create both difficulties and opportunities for fisheries.

In 2011, a 'marine heatwave' event in coastal waters of south-western WA altered the distribution (e.g. tropical species occurring in temperate waters), and behaviour (e.g. spawning activity, migration) of many nearshore scalefish species, which appears to have affected the abundance of these species in 2011 and in subsequent years (Caputi et al. 2014, Smith et al. 2019).

Climate Change

West Coast Nearshore and Estuarine Scalefish Resource Table 2 provides a summary of the climate vulnerability risk assessment outcomes for the key indicator species. The assessment found WA salmon, herring, whitebait and sea mullet to be at **high** risk from climate change while yellowfin whiting to be at **low** risk.

Australian salmon and herring stocks migrate from south coast to lower west coast for spawning which is likely to be negatively impacted under warming ocean conditions. Reduced Leeuwin Current strength in the future could also limit their larval dispersal back to the south coast. Whitebait is at their northern distributional limit on the lower west coast of WA. Thus, warming temperatures in combination with decreasing rainfall is anticipated to have negative impacts on stocks.

Declining freshwater flows and warmer temperatures likely to have a negative impact on WCB sea mullet populations. Yellowfin whiting is towards their southern distributional on the lower west coast and thus likely to benefit from warmer waters and more marine conditions inside estuaries. This is supported by increased abundances in PHE following the 2011 MHW.

WEST COAST NEARSHORE AND ESTUARINE SCALEFISH RESOURCE TABLE 2.
Summary of the climate vulnerability risk assessment output for the key indicator species in the WCNES resource.

Indicator species	Sensitivity	Exposure	Climate Change risk
Yellowfin whiting	Medium	Demonstrable positive effects evident	Low
WA Salmon	Medium	Negative effects are possible	High
Whitebait	Medium	Negative effects are possible	High
Australian herring	Medium	Negative effects are possible	High
Sea mullet	Medium	Negative effects are possible	High

Other

Estuaries in the WCB are highly modified, heavily utilised and often degraded environments. As such, the impacts of environmental factors on estuarine fish can be more influential than fishing pressure. Impacts in estuaries are most pronounced among 'estuarine-dependent' species, i.e. those that rely on estuarine habitats for spawning, feeding, and/or nursery areas (e.g. cobbler, Perth herring, black bream).

Fluctuating market demand is a significant factor affecting the annual commercial catch levels of many species.

These external drivers represent a **high** risk.

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WEST COAST SMALL PELAGIC SCALEFISH RESOURCE STATUS REPORT 2025

J. Norriss and A. Moses



OVERVIEW

The 5 species comprising the West Coast Small Pelagic Scalefish Resource are scaly mackerel (tropical sardine, *Sardinella lemuru*, pictured above), Australian sardine (pilchard, *Sardinops sagax*), Australian anchovy (*Engraulis australis*), yellowtail scad (*Trachurus novaezelandiae*), and maray (*Etrumeus jacksoniensis*). Scaly mackerel and Australian sardine are the indicator species and dominate the catch, which is taken predominantly by the West Coast Purse Seine Managed Fishery (WCPSMF) together with fishery developmental zone licence holders.

This fishery is split into three Zones - Northern Development Zone (all WA waters north of 31° 00'S, historically off Geraldton), Perth Metropolitan (31° 00'S to 33° 00'S, predominantly Cockburn Sound), and Southern Development Zone (33° 00'S to Cape Leeuwin, predominantly Geographe Bay). Licensees are also entitled to take Perth herring (*Nematalosa vlaminghi*), which forms part of the West Coast Nearshore and Estuarine Finfish Resource, but they have not reported catching this species since 1997. Since 2008, the catch and effort has been historically low and remains well within notional Total Allowable Commercial Catch (TACC) limits.

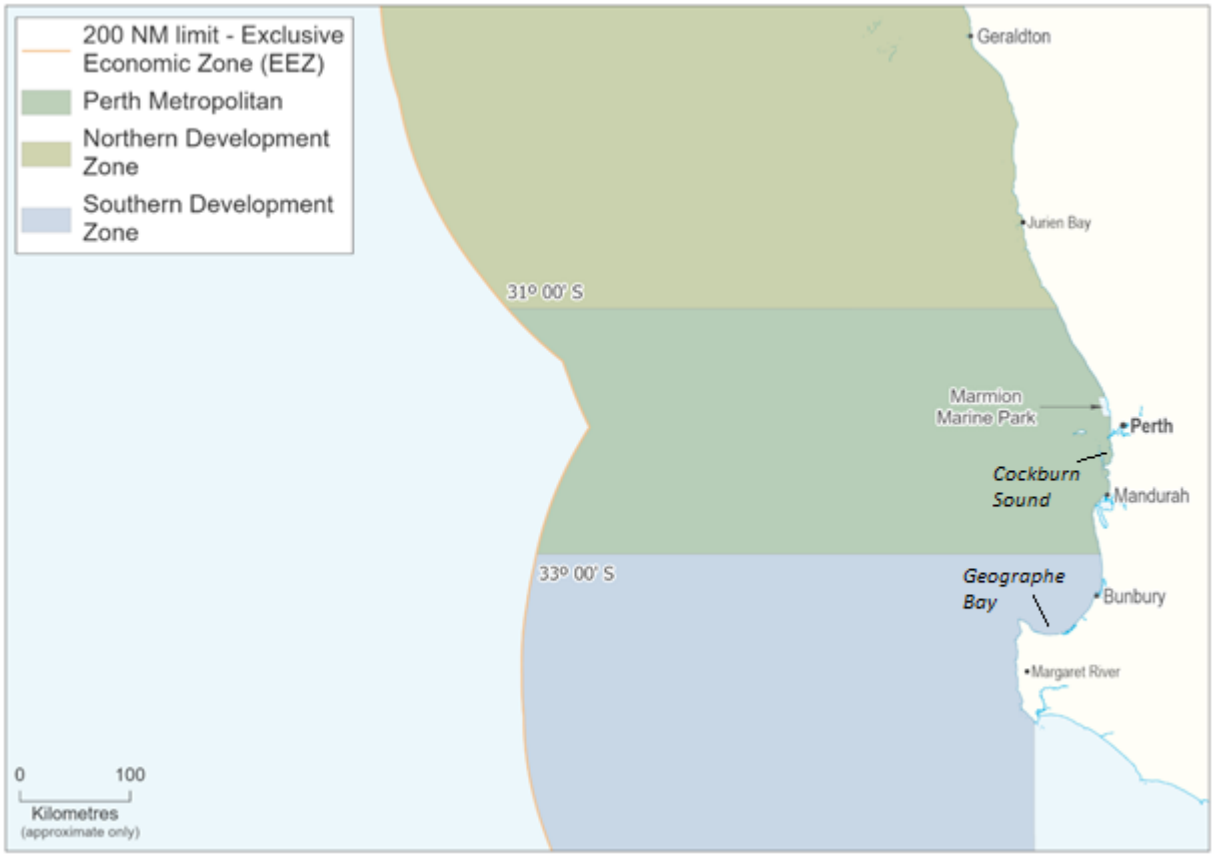
SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
WCPSMF and developmental zones, notional TACCs: Perth Metropolitan and Southern Development Zone combined: 3,000 t (Australian sardine 2,328 t, other permitted sp. 672 t); Northern Development Zone: 2,700 t scaly mackerel.	Total Catch 2023-24: 420 t* (all small pelagic species & zones combined)	Acceptable
Recreational fishery (not defined)	Total Catch 2023-24: <1 t (boat only)	Acceptable
EBFM		
Indicator species		
Scaly mackerel	Above target	Adequate
Australian sardine	Above target	Adequate
Ecological		
Bycatch	Negligible risk	Acceptable
Listed Species	Low risk	Acceptable
Habitat	Negligible risk	Acceptable
Ecosystem	Low risk	Acceptable
Economic (GVP <$1 m)	Medium risk	Acceptable
Social (Low amenity)	Negligible risk	Acceptable
Governance	Medium risk	Acceptable
External Drivers – Other	High risk	Acceptable
External Drivers – Climate change	Negligible risk (Scaly mackerel), High risk (Australian sardine)	

* Confidentiality requirements preclude disclosure of zonal catches due to insufficient fishers.

SUMMARY STATISTICS

Statistics	Season 2022-23	Season 2023-24	Further description
Catch, WCPSF & Dev. Zones	214 t	420 t	Within notional Total Allowable Commercial Catch.
Effort, WCPSF & Dev. Zones	214 boat days	210 boat days	
Active vessels	3	5	
Beach price	Aust sardine $1.28 Scaly mackerel $2.34	Aust sardine $1.23 Scaly mackerel $1.59	
Listed species interactions	White shark (*Carcharodon carcharias*). Alive: 1	Nil	Reported by fishers on monthly statutory Catch and Effort Returns.



WEST COAST SMALL PELAGIC SCALEFISH FIGURE 1.
Boundaries of the West Coast Purse Seine Fishery, and the Northern and Southern Development Zones, which comprise the majority of the catch of the West Coast Small Pelagic Scalefish Resource.

CATCH AND LANDINGS

The total WCB commercial catch of small pelagic scalefish in 2023-24 was 422 t of which 420 t was taken by the WCPSMF (including developmental zones). Zone catches cannot be disclosed due to confidentiality requirements but were well within the notional TACCs described in the Governance System section below. The WCPSMF catch increased by 96% from the previous year with only a minor decline in fishing effort (West Coast Small Pelagic Scalefish Figure 2). Scaly mackerel dominated the catch following mass mortality events of Australian sardine in 1995 and 1998-99 caused by a herpesvirus but catches of the two species have been at similar, albeit historically low levels since 2021-22. Recreational catches are negligible (<1 t annually, Tate et al. 2024; Ryan et al. 2025).

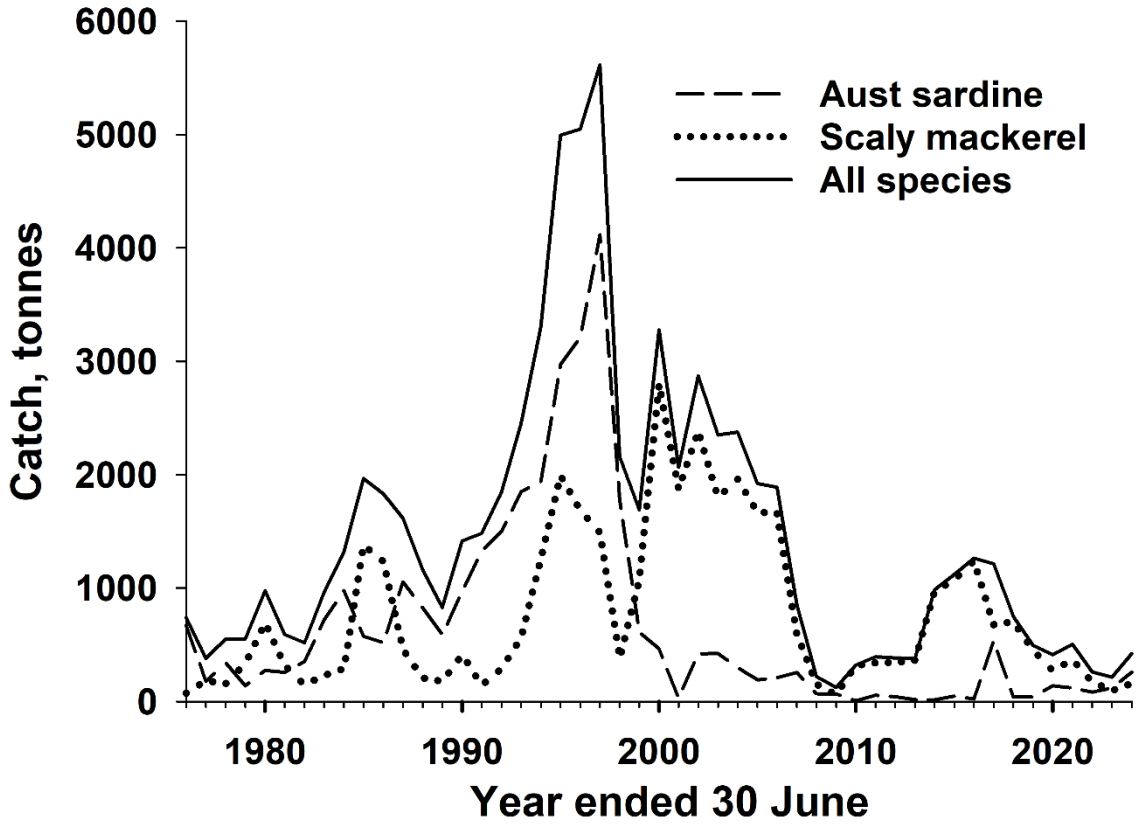
INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Scaly mackerel (Sustainable–Adequate)

Scaly mackerel is a small, low trophic level pelagic species that feeds by filtering plankton. In WA longevity has been estimated to be up to seven years of age, and maximum fork length and weight at 22 cm and 154 g respectively.

In WA, the WCPSMF and developmental zone licensees operate at the southern limit of the scaly mackerel's natural distribution. Analysis of otolith chemistry showed no evidence for the existence of separate populations between Carnarvon and Fremantle (Gaughan and Mitchell 2000). They are a highly mobile species resulting in a patchy but widespread distribution.

The precise catch of scaly mackerel by the WCPSMF (including developmental zones) in 2023-24 cannot be disclosed for confidentiality reasons (minimal fishers). Since 2008, the catch and effort has been historically low and since 2020-21 there has been no fishing in the Northern Development Zone for economic reasons. The limited spatial distribution of fishing effort suggests that only a small proportion of a widespread stock is being targeted. A risk based, weight of evidence assessment (Blazeski et al. 2021) demonstrated that the catches and biological stock were considered to be **sustainable-adequate**.



WEST COAST SMALL PELAGIC SCALEFISH FIGURE 2.
Time series of the total annual catch of all five west coast small pelagic scalefish species combined, scaly mackerel, and Australian sardine by the WCPSMF and developmental licensees from 1976 to 2024.

Australian sardine (Sustainable-Adequate)

Australian sardine is a small, low trophic level pelagic species that feeds by filtering plankton. Longevity is estimated to be up to nine years of age, and maximum size in the range of 200-250 mm SL.

The WCPSMF (including developmental zones) catch of Australian sardine in 2023-24 was 258 t (West Coast Small Pelagic Scalefish Figure 2).

Catches declined precipitously during the mid to late 1990s following two mass mortality events caused by a herpesvirus. While the stock had recovered by the mid-2000s (see below), catches have remained low due to reduced effort and the fishery transitioning to primarily scaly mackerel.

Population modelling, based on spawning biomass estimates (from egg surveys), catch-at-age, and catch data, suggested the stock had recovered from the mass mortality events by the mid-2000s (Gaughan et al. 2008). The annual

exploitation rate at that time was low: less than 5 per cent (around 400 t) of the estimated spawning biomass of approximately 25,000 t. Since then, annual catches have remained below this level and so are unlikely to cause the stock to become recruitment overfished. A risk based, weight of evidence assessment (Blazeski et al. 2021) demonstrated that the catches and biological stock were considered to be **sustainable-adequate**.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

The species available for capture in the WCPSMF and Development Zones are restricted by the *West Coast Purse Seine Limited Entry Fishery Notice 1989*, a *Prohibition on Fishing (Purse Seining) Order 2017*, and an Instrument of Exemption issued under Sections 43 and 7(2)(e) respectively of the *Fish Resources Management Act 1994.*

Bycatch

Small quantities of other finfish species are sometimes taken as bycatch, but this occurs infrequently, and the majority are released from the net unharmed. Juvenile spinner sharks (*Carcharhinus brevipinna*) are sometimes incidentally captured in Cockburn Sound, but the large majority are released unharmed.

An Ecological Risk Assessment (ERA) in 2021 assessed the impact of the WCPSMF and development zone activities on stocks of bycatch species to be a **negligible** risk (Blazeski et al. 2021).

Protected species

No protected species interactions were reported by the WCPSMF during 2023-24. From 2021-22 to 2023-24 DPIRD observers were on board for nine trips in which the net was deployed and recorded zero mortalities from interactions with protected species. On one trip two common bottlenose dolphins (*Tursiops truncatus*) were released alive, and on another trip two grey nurse sharks (*Carcharias taurus*) were released alive. Blazeski et al. (2021) found the risk to protected species from WCPSMF and Development Zone activities was **low** for dolphins and **negligible** for other protected species.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

Purse seine nets are pelagic in nature, with little impact on benthic habitats during normal operations. On rare occasions nets may be deployed in shallow waters and come into contact with habitats such as seagrass beds. The light structure of the net is expected to cause minimal damage to benthic habitats when this occurs, and any impact is restricted to a small, localised area. Blazeski et al. (2021) found the risk to these habitats from WCPSMF and Development Zone activities was **negligible**.

Ecosystem

Australian sardine and scaly mackerel are low trophic level species important for ecosystem structure and function. Their abundance is subject to large natural variations in response to environmental conditions, and allowable catch tolerance levels (see below) are likely to be <10% of the spawning biomass. Blazeski et al. (2021) found the ecosystem impact risk from WCPSMF and Development Zone activities was **low**.

SOCIAL AND ECONOMIC OUTCOMES

Social

Small pelagic fish are not a major target for recreational fishers and catches are low. There were no boat-based recreational catches of small pelagic species in the SCB during 2023-24 (Ryan et al. 2025). Very low shore-based recreational catches of scaly mackerel and yellowtail scad (<1 t combined) have been detected for the Perth metropolitan region (Tate et al. 2024). **Negligible** risk.

Economic

Local employment was provided by five active purse seine vessels as well as local processing factories. Most of the catch is sold for bait with a smaller proportion for human consumption, or feed for aquaculture and pets. Product export was permitted as the WCPSMF and Development Zones were declared an approved Wildlife Trade Operation (WTO) by the Australian Government's Department of Climate Change, Energy, the Environment and Water for three years from February 2023. The estimated gross value of production (GVP) for the WCPSMF in 2023-24 was <$1 million (Level 1). The economic risk is considered **medium**.

GOVERNANCE SYSTEM

Harvest Strategy

The WCPSMF is currently managed under a constant catch harvest strategy approach, with catches limited to notional Total Allowable Commercial Catches (TACCs).

Allowable Catch Tolerance Levels

Currently, a notional combined TACC, covering both the Perth metropolitan fishery and the Southern Development Zone, is set for Australian sardine, and separately for other small pelagic species. For the annual licensing period (1 April to 31 March) the notional TACC is 2,328 t for Australian sardine, and 672 t for other small pelagic species and Perth herring combined. For the Northern Development Zone, the notional TACC is 2,700 t for scaly mackerel. Catches are assessed against notional TACCs through the monthly lodgement of statutory Catch and Effort Returns by fishers to the DPIRD. Reaching or exceeding the notional TACCs will initiate a management response.

Compliance

DPIRD undertakes regular compliance inspections at sea and on land.

Consultation

DPIRD undertakes consultation directly with licensees on operational issues. Industry Management Meetings are held between the DPIRD and licensees, in conjunction with the WAFIC, who are also responsible for statutory management plan consultation under a Service Level Agreement.

Consultation on recreational fishing regulations or relevant commercial management changes is undertaken through the peak body Recfishwest.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

The West Coast Small Pelagic Scalefish Resource will continue to be monitored principally through Level 1 (catch based) assessments. A formal harvest strategy for the Statewide Small Pelagic Scalefish Resource is yet to be developed, however it is a future management initiative that is scheduled to be completed by November 2025.

EXTERNAL DRIVERS

Climate Change

West Coast Small Pelagic Scalefish Resource Table 1 provides a summary of the climate vulnerability risk assessment outcome for the key target species in the WCPSMF.

Australian sardine is a cool temperate species that may not adapt to a warming climate on the west coast. Evidence of Leeuwin Current avoidance by moving closer to the coast further suggests that this stock is likely to shift southwards to remain within its thermal range in the future. This stock is deemed at **high** risk from climate change.

Scaly mackerel is a tropical species with a distribution spanning between the Gascoyne and south-west coast. It is one of two stocks that is deemed at **negligible** risk from climate change and anticipated to benefit from warming ocean conditions, increased MHW days and reduced Leeuwin Current strength. Year-round spawning may lead to increased recruitment of this stock and stock expansion into the south coast bioregion.

WEST COAST SMALL PELAGIC SCALEFISH RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for key target species of the WCPSMF.

Indicator species	Sensitivity	Exposure	Climate Change risk
Scaly mackerel	Low	Demonstrable positive effects are evident	Negligible
Australian sardine	Medium	Negative effects are possible	High

Other

Planned upgrades to port facilities in Cockburn Sound (Westport) have the potential to impact fisheries operating in the area.

These external drivers represent a **high** risk.

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WEST COAST DEMERSAL SCALEFISH RESOURCE STATUS REPORT 2025

E. Fisher, M. Watt, S. Walters



OVERVIEW

The West Coast Demersal Scalefish Resource (WCDSR) comprises over 100 species in inshore (20-250 m deep) and offshore (>250 m) demersal habitats of the West Coast bioregion (WCB), which are exploited primarily by boat-based commercial, charter and recreational line fishers (Fisher and Fairclough 2024). The indicator species for inshore waters include WA dhufish, snapper, and baldchin groper (for the Mid-West area only), while indicators for offshore waters include Hapuku, blue-eye trevalla and bass groper (DPIRD 2021).

The WCDSR is currently managed under a 20-year recovery plan. In response to the 2021 assessment, demonstrating limited recovery of key indicator species (Fairclough et al. 2021), management action was taken in 2023 to reduce original recovery benchmarks by 50%. These measures aimed to limit total removals (retained catch + post-release mortality) of demersal scalefish in the WCB to 375 t and included reductions in effort entitlement (fishing hours) for the main commercial fishery targeting the WCDSR, a tag-based quota system for the charter sector, and a ~6-month closed season for boat-based recreational fishing for demersal scalefish in the WCB.

The latest 2025 WCDSR assessment shows that stocks of snapper and WA dhufish remain below their limit reference level in 2024 (Fisher et al. 2025). Total removals of demersal scalefish remain well above the updated recovery benchmarks for the commercial and recreational fishing sectors, demonstrating that the recent management changes have not been effective at reducing fishing mortality to the level required to support recovery of the resource. Stocks of snapper and WA dhufish are unlikely to rebuild to the threshold reference level by 2030.

SUMMARY FEATURES

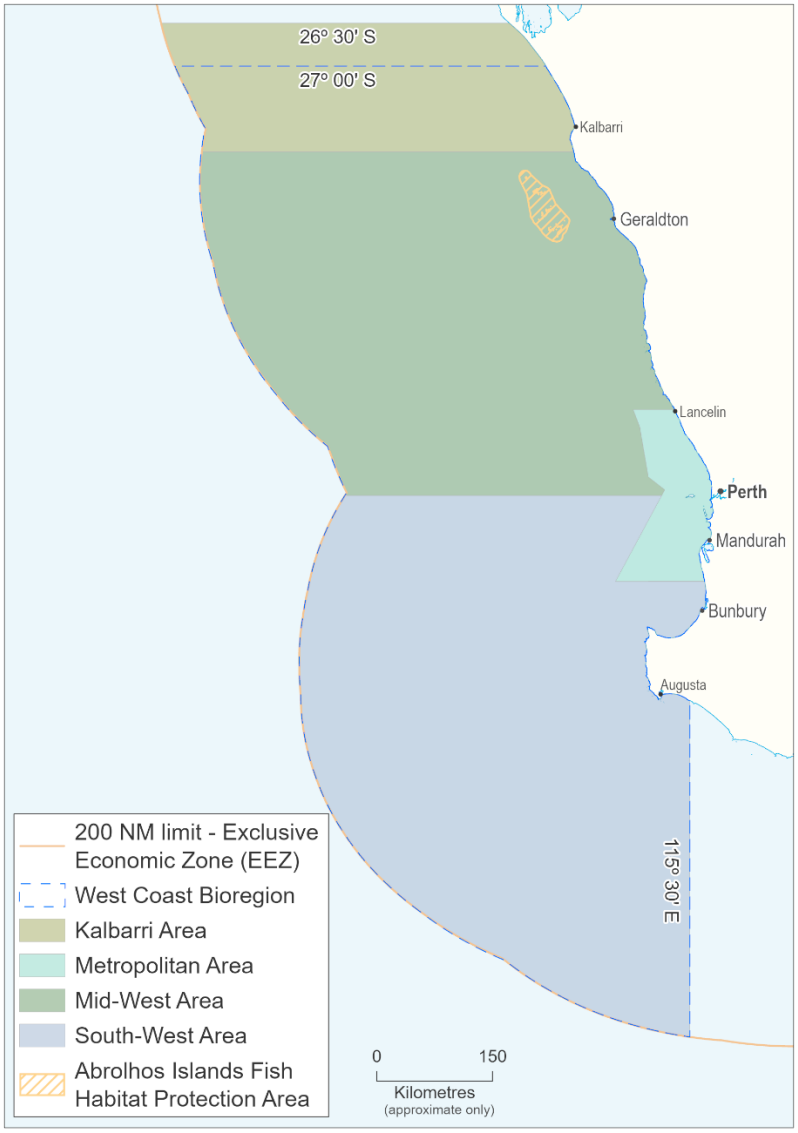
Asset (Allowable catch)	Outcome	Status
[a]Commercial sector: <220 t	2024: 291 t* (282 t catch + 9 t PRM)	Not acceptable (2024)
[b]Recreational sector: <115 t	2023-24 (including charter): 217 t* (196 t catch + 21 t PRM)	Not acceptable (2023-24)
EBFM		
Indicator species		
Snapper (North WCB)	Severe risk: $F \approx F_{limit}$, $B_{rel} < B_{limit}$ (2025)	Inadequate
Snapper (South WCB)	Severe risk: $F_{limit} > F > F_{threshold}$, $B_{rel} \approx B_{limit}$ (2025)	Inadequate
West Australian Dhufish (WCB)	Severe risk: $F > F_{limit}$, $B_{rel} < B_{limit}$ (2025)	Inadequate
Baldchin Groper (Mid-West)	High risk: $F_{limit} > F > F_{threshold}$, $B_{limit} < B_{rel} < B_{threshold}$ (2025)	Sustainable - Recovering
Ecological		
Bycatch	Low risk	Acceptable
Listed Species	Negligible risk	Acceptable
Habitat	Negligible risk	Acceptable
Ecosystem	Low risk	Acceptable
Economic (GVP $1-5 m)	High risk	Not acceptable; management action
Social (High amenity)	High risk	Not acceptable; management action
Governance	High risk	Not acceptable; management action
External Drivers - Other	Low risk	Acceptable
External Drivers – Climate change	Inshore: Low risk (baldchin groper), High risk (North and South snapper, dhufish) Offshore: Medium risk (blue-eye trevella), High risk (hapuku, bass groper)	

[a]Demersal suite; [b]Top 15 demersal species; *Total removals, comprising retained catch + post-release mortality (PRM).

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Commercial retained catch (demersal)	2023 Total commercial: 261 t WCDSIMF: 233 t TDGDLF: 21 t Other: 7 t	2024 Total commercial: 282 t WCDSIMF: 246 t TDGDLF: 28 t Other: 8 t	Demersal catch of WCDSIMF in 2024 by management area: Kalbarri: 86 t Mid-West: 88 t South-West: 72 t
Commercial effort	2023 WCDSIMF: 845 days (28 vessels)	2024 WCDSIMF: 794 days (25 vessels)	Days fished by WCDSIMF in 2024: Kalbarri: 147 days (4 vessels) Mid-West: 308 days (21 vessels) South-West: 340 days (4 vessels)
Charter retained catch	2022-23 36 t	2023-24 21 t	Top 15 demersal species/groups in WCB
Charter effort	2022-23 1,306 trips (51 vessels)	2023-24 978 trips (40 vessels)	Trips recording catches of top 15 demersal species in the WCB
Recreational retained catch	2020-21 192–263 t (95% CI)	2023-24 146–205 t (95% CI)	Top 15 demersal species in WCB, boat-based fishing only (Ryan et al. 2025)
Recreational effort	2020-21 308,701 days	2023-24 215,011 days	Days fished in WCB, boat-based fishing only (Ryan et al. 2025)
Participation	WCDSIMF (2023): 66% entitlement consumed Charter (WCB, 2022-23): 25,290 client days Recreational (WCB, 2020-21): 546,000 line fishing hours	WCDSIMF (2024): 68% entitlement consumed Charter (WCB, 2023-24): 25,307 client days Recreational (WCB, 2023-24): 386,000 line fishing hours	WCDSIMF: below target (75% entitlement consumed) Charter: between lower threshold and target (22,321 and 27,901 client days, respectively) Recreational: reference levels to be reviewed, with previous measure based on hours fished (not line fishing hours)
Beach price	2022-23 WA dhufish: $18.60/kg Snapper: $11.31/kg Baldchin groper: $15.18/kg	2023-24 WA dhufish: $19.27/kg Snapper: $11.16/kg Baldchin groper: $15.83/kg	Domestic market supply and demand
Bycatch	-	-	Available data from fishery-independent line fishing surveys, charter logbooks and recreational surveys indicate that discards primarily comprise undersized snapper and unwanted species such as silver toadfish.
Listed species interactions	2022-23 Charter (WCB): 1 potato rockcod	-	Mandatory reporting by commercial and charter fishers suggests line fishing interactions with listed species are rare.

WCDSIMF – West Coast Demersal Scalefish Interim Managed Fishery; TDGDLF – Temperate Demersal Gillnet and Demersal Longline Fisheries; Other includes: WCRLMF – West Coast Rock Lobster Managed Fishery, CSLPMF – Cockburn Sound Line and Pot Managed Fishery, SWTMF – South-West Trawl Managed Fishery.



WEST COAST DEMERSAL SCALEFISH RESOURCE FIGURE 1.
Map showing boundaries of the West Coast Demersal Scalefish Interim Managed Fishery. Note: the northern boundary of the West Coast bioregion and for the recreational sector in that bioregion is 27°S.

CATCH AND LANDINGS

In line with the WCDSR Harvest Strategy (DPIRD 2021), catch reviews for the demersal suite and key species are undertaken annually based on available information about the total removals of fish, including both retained catches and estimates of post-release mortality (PRM) of fish released/discarded after capture.

This current review incorporates commercial sector catch information from the 2024 calendar year, charter catches for the 2023-24 financial year, and new information from the integrated survey of boat-based recreational fishing undertaken in 2023-24. The total removals are compared to the recovery benchmarks in place for the commercial sector (220 t) and the recreational sector (155 t, including 125 t boat-based recreational and 30 t charter). Note these benchmarks reflect the February 2024 temporary reallocation following the completion of a Voluntary Fisheries Adjustment Scheme (VFAS) for the West Coast Demersal Scalefish (Interim) Management Fishery (WCDSIMF).

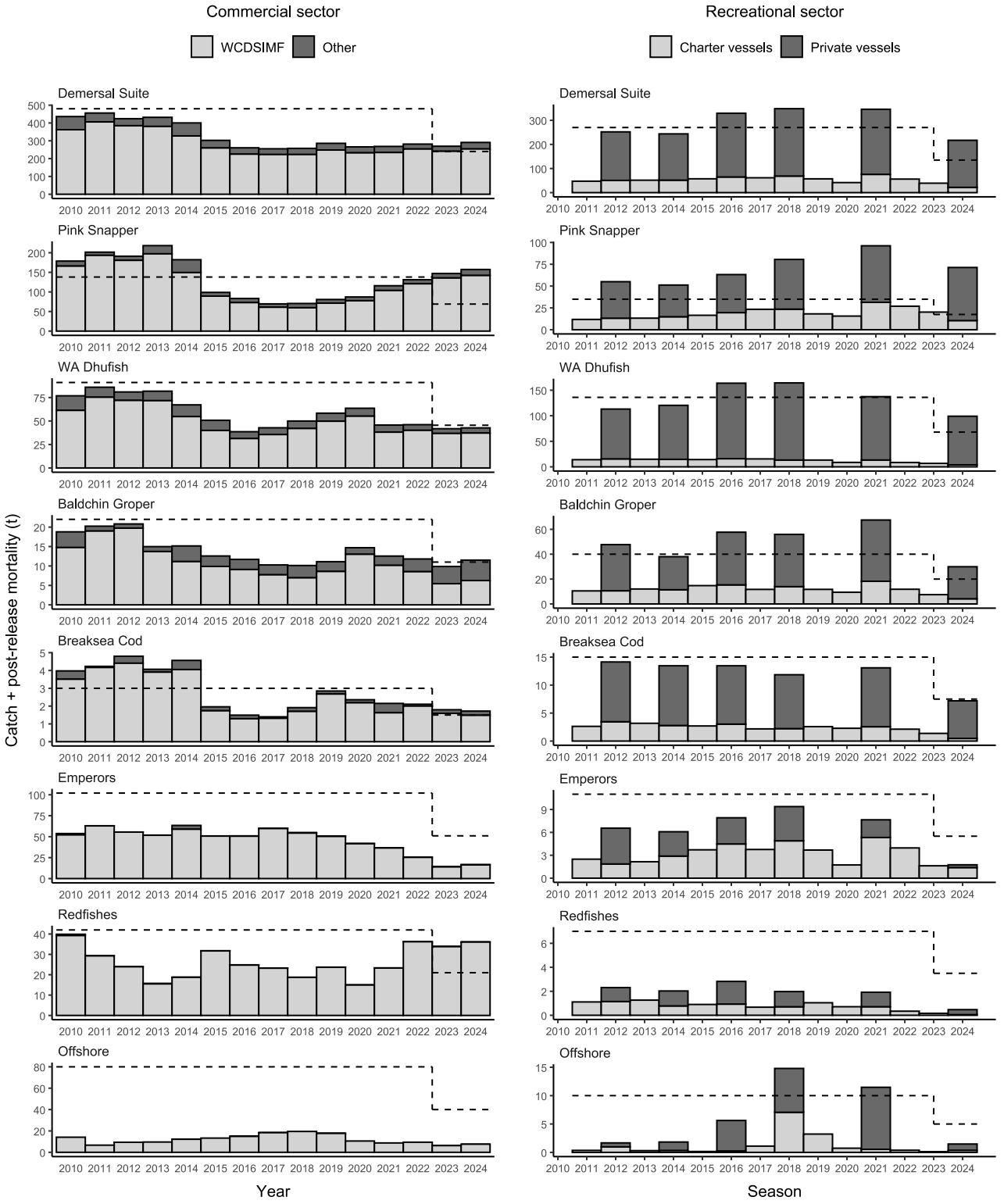
Commercial sector

The total removals of demersal scalefish by commercial fisheries in the WCB in 2024 (291 t) were well above the 220 t recovery benchmark of (West Coast Demersal Scalefish Resource Figure 2). Despite substantial effort reductions implemented in 2023 across the management areas of the WCDSIMF, the 2024 total removals of snapper (157 t), WA dhufish (43 t) and redfish species (36 t, primarily Bight redfish) by the commercial sector have remained at the previous level.

Recreational sector

The most recent estimate of total removals of the top 15 demersal scalefish species caught by boat-based recreational and charter fishers in the WCB (217 t in 2023-24) was well above the 155 t recovery benchmark for this sector (West Coast Demersal Scalefish Resource Figure 2). Despite the extended closed season in place for

recreational fishers targeting demersal scalefish in the WCB since 2023, total removals by these fishers in 2023-24 of 195 t (including 61 t snapper, 95 t WA dhufish and 26 t baldchin groper), were similar to estimates from 2020-21 (Ryan et al. 2025). Total removals of demersal scalefish by charter fishers in the WCB reduced from 74 t in 2020-21 to 22 t in 2023-24, with the current tag system successfully maintaining removals at an acceptable level. Since the removal of the minimum legal lengths for WA dhufish, baldchin groper and breaksea cod, the estimated PRM component of the recreational sector removals has markedly reduced (from 49 t in 2020-21 to 21 t in 2023-24).



WEST COAST DEMERSAL SCALEFISH RESOURCE FIGURE 2.
Total removals (retained catches and post-release mortality) of the demersal scalefish suite and key species/groups by the commercial and recreational fishing sectors from 2010 to 2024, compared to recovery benchmarks (dashed lines). Note that boat-based recreational catches are only shown for years with available estimates from statewide recreational fishing surveys. WCDSIMF – West Coast Demersal Interim Managed Fishery. Other includes commercial catches from the TDGDLF, WCRLMF, CSLPMF, and SWTMF.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

In addition to annual catch reviews for the WCDSR, stock assessments are undertaken periodically for indicator species to evaluate key performance indicators for stock status, including estimates of fishing mortality (F) and relative spawning biomass (B_{rel}). The most recent (2025) assessment of key indicator species for the WCDSR (snapper, WA dhufish, and baldchin groper) was based on data collected up to the end of 2024 (Fisher et al. 2025). The status of stocks is reported for snapper at the southern and northern WCB levels, for WA dhufish at the whole of bioregion level, and for baldchin groper in the Mid-West area.

Inshore Demersal

Snapper (Inadequate)

The 2025 integrated model (Level 5) assessment of snapper in the northern (Kalbarri and Mid-West) and southern (Metropolitan and South-West) management areas of the WCB indicated limited changes in stock status since the 2021 assessment. The estimated female B_{rel} for snapper in the northern WCB in 2024 remained below the limit reference level of 0.2, while the corresponding estimate for the southern WCB was at the limit level (Fisher et al. 2025). Estimated F for snapper in the WCB in 2024 exceeded acceptable levels. Snapper in the northern and southern WCB are classified as **inadequate** and the risk to both stocks is assessed as **severe**.

The total removals of snapper by the commercial sector in 2024 (primarily landed in Kalbarri and Mid-West) and the recreational sector in 2023-24 (primarily landed in the Metropolitan and South-West) were well above the updated recovery benchmarks. Model projections show that B_{rel} for the northern and southern snapper stocks is unlikely to rebuild above the threshold reference level of B_{MSY} by 2030 (Step 2 of the recovery plan), even if catches are reduced to current recovery benchmarks. Although highly uncertain, projections suggest that recovery of stocks to the target level may not occur until 2035-2040 unless current catches are substantially reduced.

West Australian Dhufish (Inadequate)

The 2025 integrated model assessment of WA dhufish in the WCB provided less optimistic estimates of stock status compared to the 2021 assessment. Estimated female B_{rel} for WA dhufish at the stock (bioregion) level in 2024 was below the limit reference level of 0.2, with recent trends in B_{rel} estimates indicating minimal recovery in the northern (primarily Mid-West) management areas and declining spawning biomass levels in the southern (Metropolitan and South-West) areas of the WCB. The estimated F for WA dhufish in the WCB in 2024 exceeded acceptable levels. WA dhufish in the WCB is classified as **inadequate** and the risk to this stock is assessed as **severe**.

Total removals of WA dhufish by the commercial sector in 2024 were just below the updated benchmark level, with total removals by the recreational sector in 2023-24 well above their benchmark. Model projections show that B_{rel} is unlikely to recover to B_{MSY} by 2030 (Step 2 of the recovery plan), even if catches are reduced to the current recovery benchmark. Although highly uncertain, projections suggest that recovery to the target level may not occur until 2040 unless current catches are substantially reduced.

Baldchin Groper (Sustainable–Recovering)

The latest catch curve and equilibrium biomass analysis (Level 3) assessment of baldchin groper in the Mid-West area of the WCB (for which this is an indicator species) provided evidence of some recovery occurring since the last (2014) assessment of this stock. The B_{rel} estimated for both sexes combined was between the limit and threshold reference levels of 0.2 and 0.3, respectively, in 2018-21 (Fisher et al. 2025). Estimates of F indicate a reduced exploitation of this stock since the start of the recovery period. The risk to baldchin groper in the Mid-West is assessed as **high** and the stock is classified as **sustainable-recovering**.

Total removals of baldchin groper by the commercial sector in 2024 were at the updated benchmark level, with total removals of this species by the recreational sector in 2023-24 above their benchmark.

Offshore Demersal (Sustainable–Adequate)

Retained catches of hapuku, bass groper and blue-eye trevalla in the WCB have largely fluctuated below estimates of Maximum Sustainable Yield (MSY, derived from Level 1 Catch-MSY models), since these offshore species were first targeted by fishers in the mid-1990s (Fisher et al. 2025). The risk to these offshore indicator species in the WCB is assessed as **medium** and the stocks are classified as **sustainable-adequate**.

In 2024, the total removals of offshore demersal species by the commercial sector were 8 t, mostly comprising hapuku (4 t) and grey banded (formerly eightbar) grouper (3 t). Estimated total removals of offshore demersal species by the recreational (including charter) sector increased from 2 t in 2015-16 to 15 t and 11 t in 2017-18 and 2020-21, respectively, before decreasing to 1.5 t in 2023-24. Catches of offshore species by the

recreational sector predominantly comprise bass groper, grey banded grouper and hapuku.

BYCATCH AND LISTED SPECIES INTERACTIONS

Bycatch

Line fishing for demersal species using baited hooks is highly selective for fishes. While other fishes that are caught but not normally retained during demersal fishing activities (including inedible species, e.g. silver toadfish, and small species, such as wrasses) may not all survive, the risk to these bycatch species is assessed as **low**.

Listed Species

Mandatory reporting of listed species interactions by commercial WCDSIMF and charter fishers suggest these interactions are relatively rare. In 2022-23, the charter sector caught and released alive one potato cod. The risk to listed species is assessed as **negligible**.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

Line fishing is the main method used in the commercial and recreational fishery for demersal species. As this fishing method has limited physical impact on the benthic environment, the risk to benthic habitats is assessed as **negligible**.

Ecosystem

Changes observed by Hall and Wise (2011) in the catch composition of commercial wetline, gillnet, and longline fisheries in the WCB over a 30-year timeline may be a result of changes in targeting or improvements in reporting methods. As there has been no evidence of a decline in the trophic level or mean size of fish in catches of key species, the risk to the ecosystem is assessed as **low**.

SOCIAL AND ECONOMIC OUTCOMES

Social

The WCDSR provides high social amenity to fishers and divers, as well as to consumers by providing commercial fish supply to markets and restaurants. An estimated 753,000 WA residents went recreational fishing in 2023-24 (DPIRD 2024). The recreational fishing participation rate in WA (26%) is higher than the Australian average (21%) (Moore et al. 2023). The WCDSR Harvest Strategy includes indicators to measure the performance of each sector against social and economic objectives (DPIRD 2021). These are applied within the constraints of meeting objectives for ecological sustainability, and while having regards to the objectives of other sectors. Due to the need for additional management action to recover the resource, the risk to these social values is assessed as **high**.

Economic

The estimated gross value of product (GVP) for the WCDSIMF in 2024 was $1-5 million. Recreational fishing in WA contributes over 9,000 jobs and over $1.1 billion per year to the economy and supports economic activity in many regional locations (Moore et al. 2023). A significant amount of this value is derived from boat-based fishing for demersal species in the WCB. Due to the need for additional management action to recover the resource, the risk to this level of economic return is assessed as **high**.

GOVERNANCE SYSTEM

Harvest Strategy

The WCDSR is currently managed using a constant catch strategy. A Harvest Strategy was developed in 2021 by a stakeholder-based reference group, which includes representatives from DPIRD, WA Fishing Industry Council (WAFIC), Marine Tourism WA and Recfishwest. This strategy details the current recovery plan, aiming to maintain total removals below recovery benchmarks until estimates of B_{rel} and F for key indicator species reach acceptable levels, i.e. 80% probability of being above the threshold reference point (DPIRD 2021). DPIRD undertakes annual and periodic review processes outlined in the WCDSR Harvest Strategy to provide recommendations to government on appropriate management responses.

Management Initiatives

Management action taken in 2023 to meet revised recovery benchmarks did not meet recovery benchmarks for both the commercial sector (32% exceedance) and recreational sector (56% exceedance).

The WCDSR has been under a recovery strategy for 15 years and management measures implemented for both commercial and recreational fishers have failed to improve stock status of key species.

In 2025, DPIRD will undertake a consultation process on management action to address the outcomes of the 2025 stock assessment. The Governance risk is assessed as **high**.

EXTERNAL DRIVERS

Environment

Recruitment success of demersal species, such as WA dhufish and snapper vary annually and are influenced in part by environmental factors. Demersal species in the WCB are potentially vulnerable to the impacts of climate change, with increased water temperatures and changes in

ocean currents potentially influencing the recruitment and aspects of their biology. Ongoing industrial development in Cockburn Sound may affect spawning aggregation behaviour and survival of juvenile snapper in that area, and thus recruitment to the broader lower-west coast stock.

Climate Change

West Coast Demersal Scalefish Resource Table 1 provides a summary of the climate vulnerability risk assessment outcomes for the indicator species in the inshore and offshore waters of the WCDSR.

For pink snapper stocks, warming waters and more frequent MHW conditions could lead to a contracted spawning period limited to cooler temperatures and seasons. Projected weakening of the Leeuwin Current could also lead to increased retention of eggs and larvae and thus reducing the southward dispersal during winter spawning. Observed range contraction of dhufish on the west coast in conjunction with evidence of increased recruitment towards the southwest coast after strong MHW events, seems to suggest that a warming climate could lead to a southward shift in distribution of this temperate species. The northern and southern pink snapper and dhufish stocks on the west coast are all considered at **high** risk from climate change.

As a tropical species, baldchin groper can tolerate warmer waters and has the capacity to shift its distribution southward. A weaker Leeuwin Current may facilitate increased localised recruitment although availability of suitable habitats to support larger abundances on the south coast is unclear. This stock is deemed at **low risk** from climate change.

Deeper-water indicator species hapuku, bass groper and blue-eye trevella are all at their northern range extension on the west coast. All have an extended pelagic juvenile phase of 2-5 years that may be particularly vulnerable to increasing ocean temperature and MHW events. These species are deemed at **high** (hapuku and bass groper) and **medium** risks (blue-eye trevella) from climate change.

Other

There is some overlap of demersal scalefish species captured in the WCB by State-managed fisheries with the Commonwealth-managed Western Deepwater Trawl Fishery (WDTF) and, to a lesser extent, Great Australian Bight Trawl Sector of the Southern and Eastern Scalefish and Shark Fishery. The WDTF operates in the WCB and Gascoyne Coast bioregion, primarily targeting ruby snapper. The number of active vessels in this fishery has been relatively low since the mid-2000s, with no catch or effort recorded in 2022–23 (Keller et al. 2024). The risk of these other external drivers to the WCDSR are assessed as **medium**.

WEST COAST DEMERSAL SCALEFISH RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for the indicator species in the WCDSR.

Indicator species	Sensitivity	Exposure	Climate Change risk
Pink snapper (North)	Medium	Negative effects are possible	High
Pink snapper (South)	Medium	Negative effects are possible	High
Baldchin groper	Medium	Remote or potentially positive effect	Low
Dhufish	Medium	Negative effects are possible	High
Hapuku	Medium	Negative effects are possible	High
Bass groper	Medium	Negative effects are possible	High
Blue-eye trevella	Low	Negative effects are possible	Medium

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GASCOYNE COAST BIOREGION



GASCOYNE COAST BIOREGION

ABOUT THE BIOREGION

The marine environment of the Gascoyne Coast bioregion (Gascoyne Overview Figure 1) represents a transition between the tropical waters of the North West Shelf of the North Coast bioregion and the temperate waters of the West Coast bioregion. Offshore ocean temperatures range from about 22°C to 28°C, while the inner areas of Shark Bay regularly fall to 15°C in winter. The major fish stocks are generally tropical in nature, with the exceptions of pink snapper, whiting, and tailor, which are temperate species at the northern end of their distributions in Shark Bay.

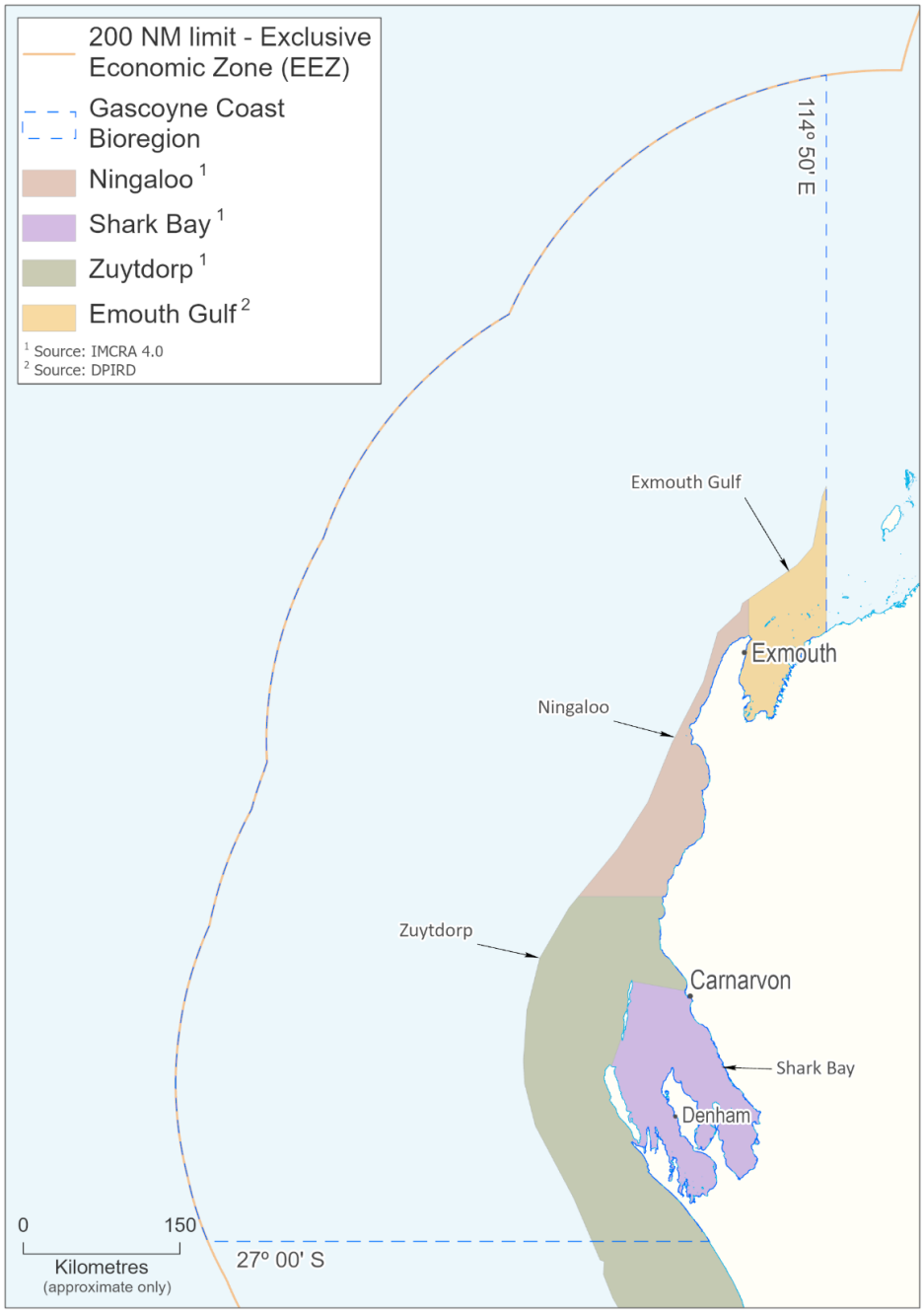
The coastline is characterised by high cliffs in the southern half, changing to fringing coral reefs in the north. Coastal waters are generally high-energy in terms of wave action due to the strong trade wind system. The Exmouth Gulf section of the Gascoyne Coast bioregion is seasonally influenced by extreme tropical summer cyclones, while the Shark Bay end of the Bioregion receives infrequent cyclones but is affected at times by river outflows from inland cyclone-based summer rainfall. The limited local rainfall comes mostly from the northern edge of winter storm fronts.

The waters off the Gascoyne Coast are also strongly influenced by the southward-flowing Leeuwin Current, generated by flow from the Pacific through the Indonesian Archipelago. This tropical current becomes evident in the North West Cape area and flows along the edge of the narrow continental shelf where, coupled with low rainfall and run-off plus the north flowing Ningaloo Current, it supports the diverse Ningaloo Reef marine ecosystem.

The outer area of the large marine embayment of the World Heritage-listed Shark Bay is also influenced by the warm winter Leeuwin Current. The inner waters of the embayment are hyper-saline, due to the high evaporation and low rainfall of the adjacent terrestrial desert areas. The sea floor of both Shark Bay and the continental shelf are typically sandy compared to Exmouth Gulf, which has more mud areas and greater turbidity. The seagrass banks of Shark Bay are the biggest in the world and twelve of the world's 60 species of seagrass are found in Shark Bay.

The Gascoyne Coast bioregion has been identified as one of eighteen World 'hotspots' in terms of tropical reef endemism and the second most diverse marine environment in the world in terms of tropical reef species.

The Ningaloo reef in the north of the bioregion is the largest continuous reef in WA and is one the most significant fringing reefs in Australia. The bioregion also has areas of mangroves, mostly in Exmouth Gulf, while seagrass beds are located in a number of areas.



GASCOYNE OVERVIEW FIGURE 1
Boundaries of the Gascoyne Coast bioregion and IMCRA (V 4.0) meso-scale regions: Zuytdorp, Shark Bay, Ningaloo, and Exmouth Gulf.

SUMMARY OF ACTIVITIES POTENTIALLY IMPACTING THE BIOREGION

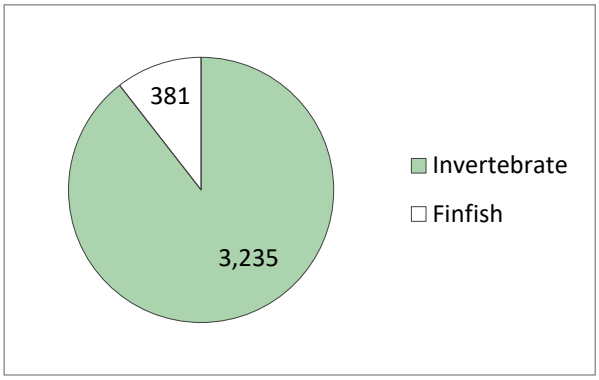
Commercial Fishing

Commercial fishing is a significant industry in the region, with catch dominated by invertebrate resources (Gascoyne Overview Figure 2). The bioregion hosts some of the WA's more valuable fisheries – the Shark Bay Prawn, Exmouth Gulf Prawn and Shark Bay Scallop fisheries – landing combined catches valued at about $30 million annually. These trawl-based fisheries have operated sustainably in the region since the mid-1960s and are internationally recognised as 'best practice' in terms of both management and research. Both prawn fisheries as well as the West Coast Deep Sea Crab Fishery have achieved Marine Stewardship Council (MSC) certification. Only a relatively small number of the approximately 1,400 species of fish inhabiting this bioregion are targeted by commercial fishing activity.

The Shark Bay Beach Seine and Mesh Net Fishery has operated in Shark Bay since the early 1900s and provides about half of the whiting catch for WA along with mullet, bream and tailor catches. The Gascoyne Demersal Scalefish Fishery (GDSF) has operated in the bioregion

since the 1960s, and provides a significant proportion of WA's snapper catch. The GDSF originally only targeted snapper but has developed over the past decade into a broader fishing sector taking other demersal finfish species including emperors, cods, and deeper water species such as goldband snapper. The Gascoyne includes part of the Mackerel Managed Fishery (which extends to the Northern Territory border and is reported in the North Coast bioregion chapter) with this area having lower annual catches compared to more northern areas.

The region also includes some other small commercial fishing activities including the Sea Cucumber Fishery (which is reported in the North Coast bioregion chapter) and the Marine Aquarium Fishery which collects small numbers of a wide variety of species but is not permitted within some areas of the Ningaloo Marine Park, Shark Bay Marine Park or any waters closed to fishing. There is also a small beach seining fishery within Exmouth Gulf.



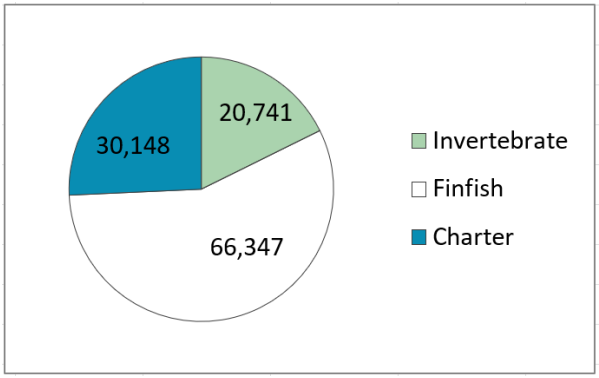
GASCOYNE OVERVIEW FIGURE 2
Contribution of finfish and invertebrates to the total commercial wild fishery catch originating from the Gascoyne Coast bioregion in 2023-24. Numbers represent total catch in tonnes.

The main invertebrate species captured by fisheries in the Gascoyne Coast bioregion include a number of penaeid prawns, scallops and blue swimmer crabs within the two main embayments of Shark Bay and Exmouth Gulf, plus deep sea crabs in the offshore region. The fishery for blue swimmer crabs which operates throughout the waters of Shark Bay is the largest Australian crab fishery. Other minor commercial fishing activities for invertebrates operating in the bioregion include collection of silver lipped pearl oyster, which is used in pearl culture, though most effort is focused in the North Coast bioregion, and some fishing for cockles.

Recreational Fishing

The warm, dry winter climate and accessible fish stocks have made the Gascoyne Coast bioregion a focal point for winter recreation by the WA community. Fishing during this season is a key component of many tourist visits (Gascoyne Overview Figure 3). A full range of angling activities is available, including beach and cliff fishing (e.g. Steep Point and Quobba), embayment and shallow-water boat angling (e.g. Shark Bay, Exmouth Gulf and Ningaloo lagoons), and offshore boat angling for demersal and larger pelagic species (e.g. off Ningaloo). The sustained popularity of recreational fishing contributes to pressure on local fish stocks.

Recreational fishing is predominantly for tropical species such as emperors, tropical snappers, groupers, mackerels, cods, trevallies and other game fish, as well as blue swimmer crab and squid. Some temperate species at the northern end of their ranges, such as pink snapper, tailor, and whiting, provide significant catches, particularly in Shark Bay.



GASCOYNE OVERVIEW FIGURE 3
Recreational catches (by number) in the Gascoyne Coast bioregion. Finfish and invertebrate catches were assessed in the statewide survey of boat-based recreational fishing in 2023-24[1]. Charter boat catch is for the same period. Estimates of shore based recreational catch are unavailable.

Aquaculture

Aquaculture in the Gascoyne focuses on the blacklip oyster *Pinctada margaritifera*. The local aquaculture sector is also focusing on the production of aquarium species, including coral, live rock and edible oysters.

Tourism

The Gascoyne Coast bioregion is a focal point for winter recreation by the WA community. Apart from its scenic beauty, the main attraction of the

1 Ryan KL, Lai EKM, Smallwood CB and Tate A. 2025. Boat-based recreational fishing in Western Australia 2023-24. Fisheries Research Report No. 352. Department of Primary Industries and Regional Development, Western Australia. 205p.

coastline for tourists is the quality of marine life. The region supports extensive scuba diving and snorkelling activities, particularly inside the coral lagoons of Ningaloo. Specialised eco-tourism activities include whale shark and manta ray observation at Ningaloo, and dolphin and dugong viewing in Shark Bay. Fishing is a key component of many tourist visits, and a full range of angling activities is available.

Oil and Gas Activity

Exploration and appraisal drilling has occurred mainly in the northern part of the Gascoyne Coast bioregion (Gascoyne Overview Figure 4). There continues to be significant oil and gas mining activity offshore from North West Cape in the Exmouth Sub-basin. The Australian Government has also released two areas offshore from Carnarvon in the Southern Carnarvon Basin for further exploration.

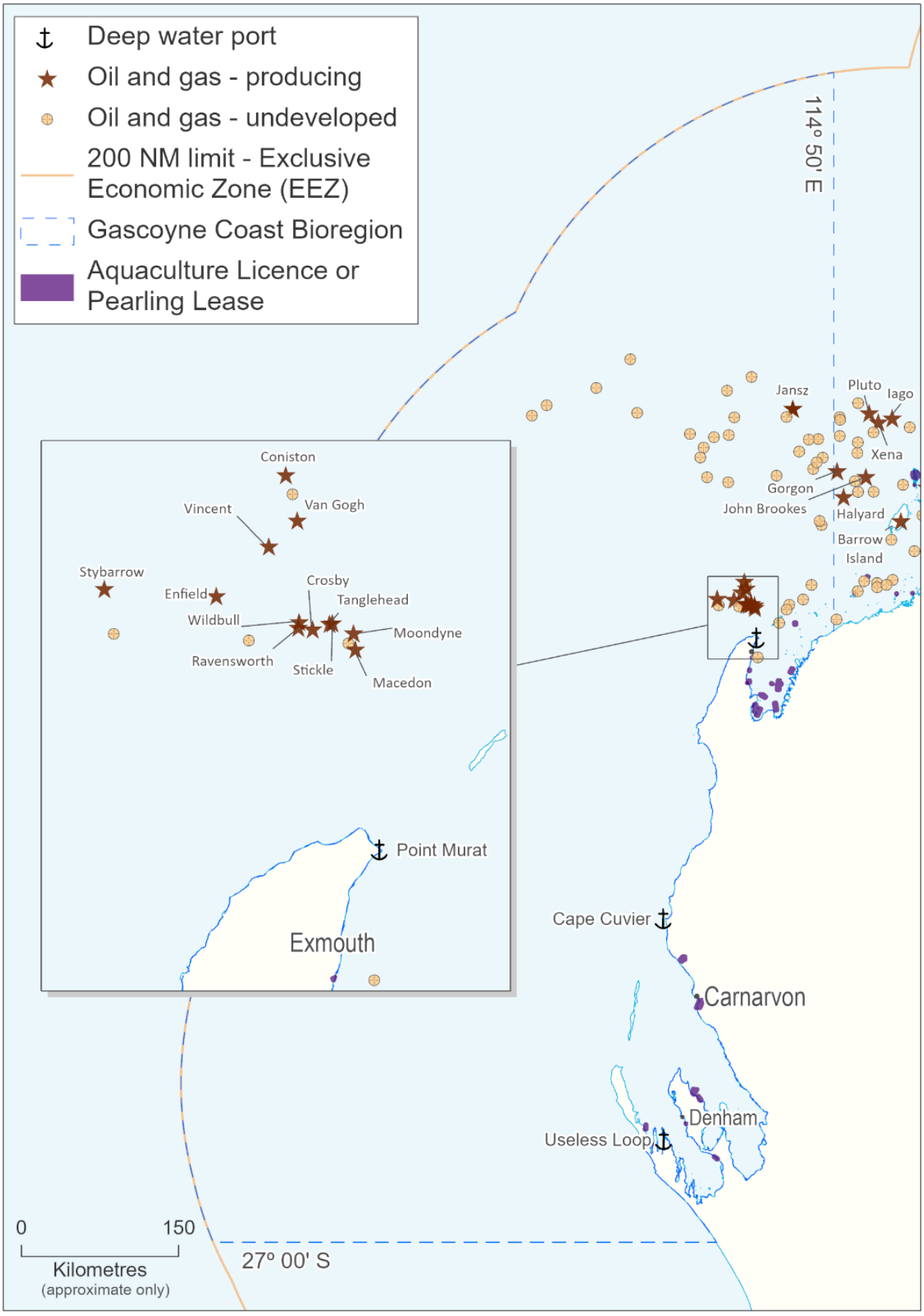
The main disturbances associated with oil and gas exploration and production include noise pollution from seismic surveys (e.g. potential for fish movement / impact arising from seismic surveys), disturbance to marine habitats through drilling and/or dredging activities, introduction of marine pest species, release of produced formation water, shipping and transport activities and oil spill risks.

Shipping and Maritime Activity

There are three deepwater port facilities currently operating in the Gascoyne Coast bioregion: Useless Loop, Cape Cuvier (both private facilities servicing salt fields) and Point Murat, a naval port facility at Exmouth. The majority of shipping movements involve coastal cargo vessels, shipping associated with the two salt fields in the region, shipping associated with oil and gas industries, large passenger cruise vessels and fishing vessels operating out of the numerous small ports along the coast.

Other harbours and maritime facilities in the Gascoyne Coast bioregion include those at Denham, Carnarvon, Coral Bay, and Exmouth, all of which largely service local fishing and charter vessels, as well private vessels. The expansion of oil and gas industries, along with increased recreational, charter and eco-tourism activities in the area, has led to the expansion of many of these facilities.

The impacts from vessels and ships tend to be concentrated around ports and favoured anchorage areas. Impacts include physical damage to the habitat, ship strikes of marine animals and the potential to introduce and spread marine pest species.



GASCOYNE OVERVIEW FIGURE 4
Exmouth sub-basin offshore oil and gas production sites, aquaculture licences and pearling leases.

BIOREGIONAL SPECIFIC ECOSYSTEM MANAGEMENT

Within each bioregion there are a range of management measures that have been implemented to manage the potential impact of activities (See Ecosystem Management Section for an overview). Management measures specific to the Gascoyne Coast bioregion (GCB) are outlined in the following sections.

Spatial Closures

DPIRD has established a comprehensive set of spatial management closures within the GCB that are equivalent to a number of IUCN categories for marine protected areas. Extensive trawl closures inside the 200 m depth zone in the Shark Bay and Exmouth regions provide protection to sensitive benthic habitat, including coral reef, sand flats and seagrass beds. These areas provide significant fish nursery, breeding and feeding habitat (Gascoyne Overview Figure 5). The extent of these areas means that most of the Gascoyne Bioregion inside 200 m depth could be classified as one of the marine protected area IUCN categories (Gascoyne Ecosystem Management Table 1; as per Dudley, 2008[1] and Day et al. 2012[2]). There are also a number of other marine protected areas in this bioregion that have been established under both the *Conservation and Land Management Act 1984* and the *Fish Resources Management Act 1994* (see Gascoyne Overview Figure 6). These include the Hamelin Pool Marine Nature Reserve, Ningaloo and Shark Bay Marine Parks, the Murion Islands Marine Management Area, and the Quobba and Miaboolya Beach Fish Habitat Protection Areas. Commercial and recreational fishing activities are restricted in these regions.

In 2019, the WA Government announced the 'Plan for Our Parks' initiative to create additional marine parks and terrestrial conservation reserves. In 2021 it was announced that this initiative would include the establishment of a new marine park over the entire Exmouth Gulf.The planning process for Exmouth Gulf Marine Park commenced in 2025.

The Australian Government implemented an Australian Marine Park for the North-West Marine region (between Shark Bay and the Northern Territory border) in July 2018. This resulted in a network of marine parks off the coast of the GCB (see Gascoyne Overview Figure 6). In 2025, WA's Commonwealth marine parks are being reviewed, with a major focus on expanding the network and increasing protection through new marine parks and sanctuaries.

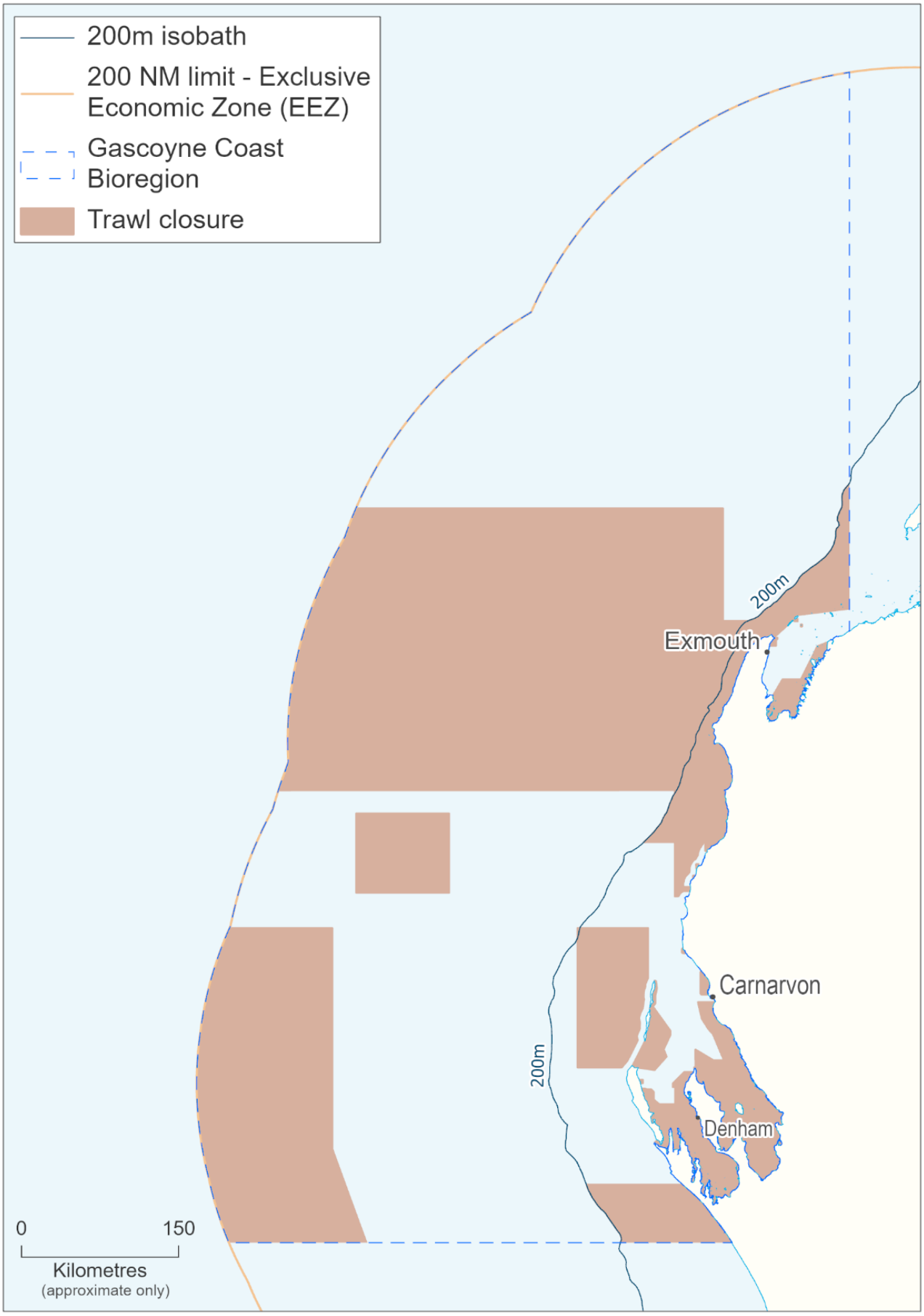
GASCOYNE ECOSYSTEM MANAGEMENT TABLE 1

The areas and proportions of the Gascoyne Coast bioregion making up State Waters and all continental shelf waters, out to 200 m depth, which are consistent with IUCN criteria for classification as marine protected areas. This table does not include State or Commonwealth closures that are currently in the process of implementation. These areas will be included in future volumes, when their respective implementation processes are concluded.

IUCN category or equivalent	State Waters only (24,100 km^2)				All Waters (416,300 km^2 (including State Waters))			
	Fisheries		Existing CALM Act MPA		Fisheries		Existing MPA	
	km^2	%	km^2	%	km^2	%	km^2	%
I	0	0	0	0	0	0	0	0
II	0	0	2,500	10	0	0	5,000	1
III	0	0	0	0	0	0	0	0
IV	3,100	13	6,400	27	13,200	3	6,400	2
V	0	0	0	0	0	0	0	0
VI	9,500	39	2,600	11	389,100	93	2,600	1

[1] Dudley, N. (editor) 2008. Guidelines for applying protected area management categories. IUCN. Gland, Switzerland.

[2] Day, J. et al. 2012. Guidelines for applying the IUCN Protected Area Management Categories to Marine Protected Areas. Gland, Switzerland: IUCN. 36p.



GASCOYNE OVERVIEW FIGURE 5
Boundaries of the Gascoyne Coast bioregion and areas permanently closed to trawling, consistent with IUCN marine protected area category IV. The area from Point Maud to Tantabiddi Well (23° 07.30’ S to 21° 56.30’ S) is closed to all commercial fishing activities.



GASCOYNE OVERVIEW FIGURE 6
Boundaries of the Gascoyne Coast bioregion, and State and Commonwealth marine parks and reserves in the Gascoyne Region.

ECOSYSTEM MONITORING AND STATUS

In order to assess the adequacy of management arrangements aimed at ensuring sustainability of the ecological assets within the GCB, DPIRD must identify and monitor trends in the condition of these resources. This is achieved through application of an Ecosystem Based Fisheries Management (EBFM) framework (see How to Use section for more details) to identify, in a hierarchical manner, the key ecological resources that require ongoing monitoring and assessment.

The key ecological resources identified for the GCB are identified in Gascoyne Overview Figure

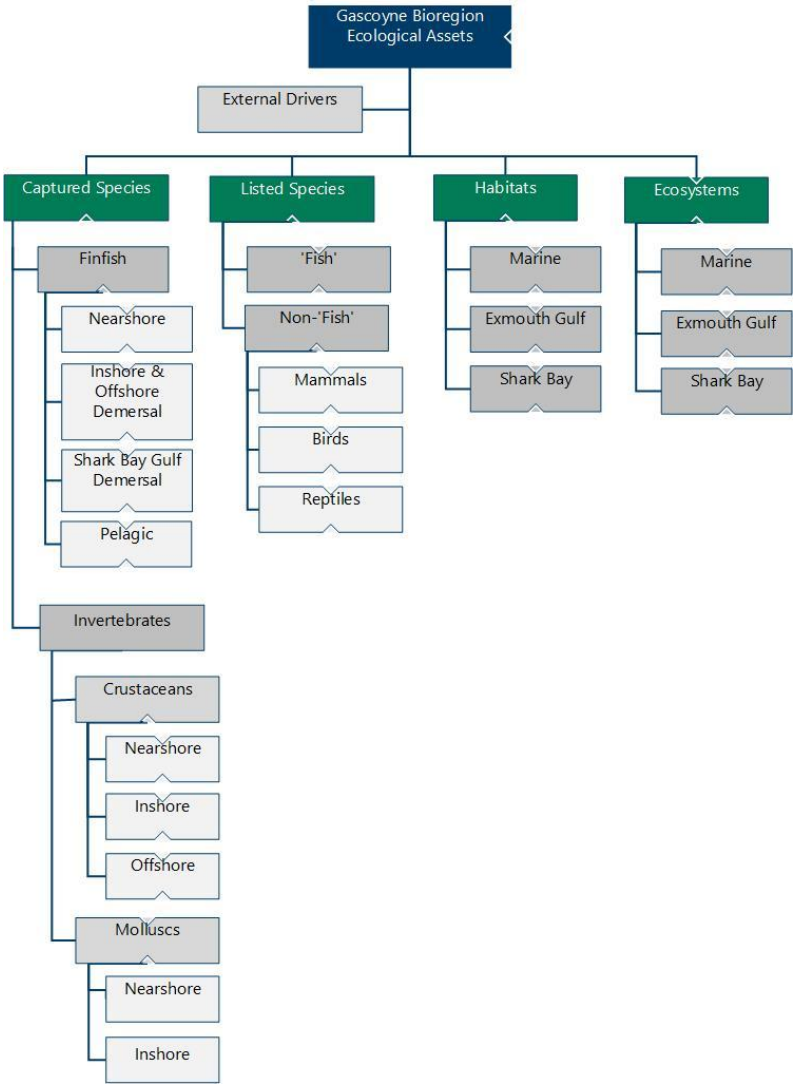
7 and their current risk status reported on in the following sections.

External Drivers

External factors include those impacting at the bioregional level that are likely to affect the ecosystem as a whole and may not fall within the direct control of fisheries legislation (e.g. climate change). An understanding of these factors, which are typically environmental (cyclones, ocean currents, water temperature) is necessary to fully assess the performance of the ecological resource. The main external drivers identified with potential to affect the GCB include climate change and introduced pests and diseases[1].

Climate change

Being a transition zone between tropical and temperate regions, the biota of the GCB is at enhanced risk of being affected by climate change. Climate change can influence fisheries and biological systems by affecting the timing of spawning, species range and distribution, composition and interactions within communities, exotic species invasions and impacts, community structure and productivity. Waters off the GCB are strongly influenced by the Leeuwin Current which brings warm low salinity water southward.



GASCOYNE OVERVIEW FIGURE 7
Component tree showing the ecological assets identified and separately assessed for the Gascoyne Coast bioregion.

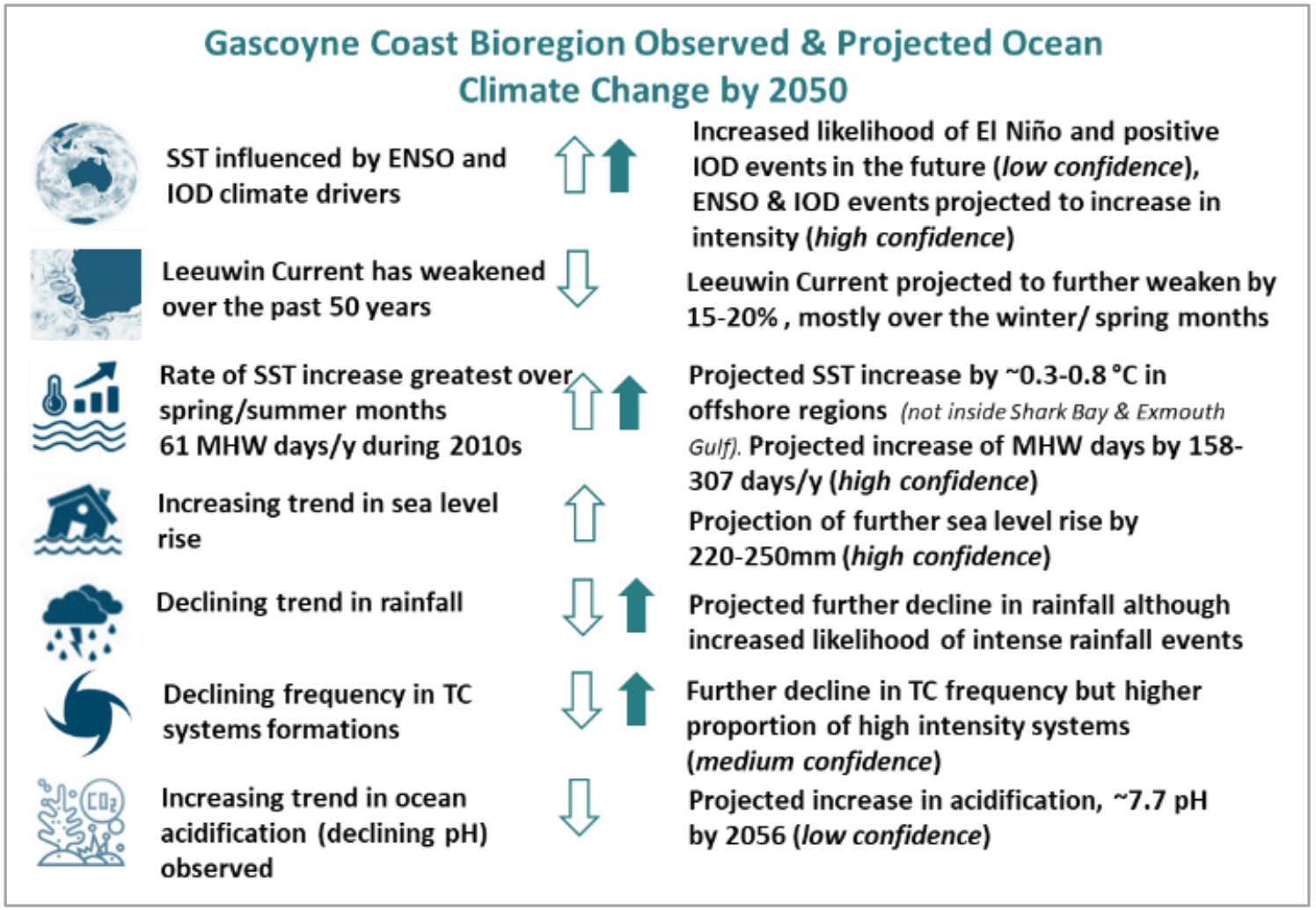
During the summer of 2010-11, an extreme marine heatwave (MHW) event took place off the coast of WA, with widespread reports of fish kills and of tropical species being found further south than their normal range. Sea surface temperatures were >4-5°C above the normal

1 Biosecurity issues are now reported by the Biosecurity pillar of the Department of Primary Industries and Regional Development.

summer averages in some regions. This MHW event was associated with an extremely strong La Niña, leading to a record strength Leeuwin Current for that time of year and resulting in record high summer sea levels along the Mid-West and Gascoyne coasts. The MHW caused what is considered to be the first WA regional scale coral bleaching event, affecting corals south to Rottnest Island/Wadjemup and north to the Montebello and Barrow Islands.

A summary of the observed and projected bioregional predictions in key ocean climate variables is listed in Gascoyne Overview Figure 8. This information supported the climate change risk assessment for the key indicator species in the managed resources from this bioregion.

Gascoyne Overview Figure



GASCOYNE OVERVIEW FIGURE 8
Observed and projected changes (by 2050) in the key ocean climate drivers and variables of sea surface temperature, marine heatwave duration, mean annual sea level, annual rainfall, tropical cyclone frequency, and ocean acidification for the Gascoyne Coast bioregion. The open arrow indicates directional change or frequency while the solid arrow indicates projected change in intensity

Captured Species

FINFISH

The GCB has diverse fish fauna and is noted for its high quality commercial and recreational fishing. Approximately 1,400 species of fishes inhabit this bioregion. Of these only a relatively small number are targeted by commercial and recreational fishing activities, which focus on demersal finfish species (e.g. pink snapper) captured in the Zuytdorp region and nearshore finfish species (e.g. whiting) within the Shark Bay region.

The majority of finfish species in this area are managed at the bioregional scale within recognised aquatic zones. Indicator species which reflect the characteristics of the broader exploited stocks are monitored in order to assess ecological risk to the suite of species targeted.

Nearshore (0-20m depth)

Captured Species	Aquatic zone	Ecological Risk
Finfish	Nearshore (0-20 m depth)	MEDIUM

The main fishery in this zone is the Shark Bay Beach Seine and Mesh Net Managed Fishery that catches whiting, mullet, bream and tailor. Fishery catch and effort has been occurring at acceptable levels for over 50 years.

Inshore and Offshore Demersal

Captured Species	Aquatic zone	Ecological Risk
Finfish	Inshore and Offshore Demersal	MEDIUM

The main fishery in this zone is the Gascoyne Demersal Scalefish Managed Fishery. This line fishery originally targeted pink snapper but has developed into a broader fishing sector targeting other demersal finfish species including emperors, cods and deeper water species.

Shark Bay Demersal

Captured Species	Aquatic zone	Ecological Risk
Finfish	Shark Bay Gulf Demersal	LOW

The main fishery operating in this zone is the Inner Shark Bay Demersal Scalefish Fishery, which is primarily a recreational and charter fishery.

Pelagic

Captured Species	Aquatic zone	Ecological Risk
Finfish	Pelagic	MEDIUM

The main commercial fishery operating in this zone is the Mackerel Managed Fishery (reported in the North Coast bioregion chapter). Recreational and charter fishing for large pelagic fish (e.g. gamefish, mackerel) is popular in the GCB.

INVERTEBRATES

Commercial fishing for invertebrates is a very significant industry within the GCB where 3 of WA's most valuable fisheries (the Exmouth Gulf Prawn, Shark Bay Prawn and Shark Bay Scallop Managed Fisheries) land combined catches valued in the range of $40-50 million annually. These trawl-based fisheries have operated in the region since the mid-1960s and are internationally recognised as 'best practice' in terms of both management and research[1]. A fishery for blue swimmer crabs (the Shark Bay Crab Managed Fishery) is based primarily in Carnarvon but operates throughout the waters of Shark Bay. The GCB also supports the majority of the catch of deep sea crabs off the coast of WA as part of the West Coast Deep Sea Crustacean Managed Fishery.

Molluscs

Captured Species	Aquatic zone	Ecological Risk
Molluscs (Pearl Oysters)	Nearshore	LOW
Molluscs (Scallops)	Inshore	MEDIUM

The stock of pearl oysters in the bioregion (Zone 1 of the Pearl Oyster Managed Fishery) is considered to be **Sustainable-Adequate**. The low risk reflects minimal levels of fishing mortality.

Catches in the Shark Bay Scallop Managed Fishery vary widely depending on the strength of recruitment. Extreme enviornmental events, such as that observed in 2010-11, also impact on scallop stocks. Current stocks of scallops in northern Shark Bay and Denham Sound are classed as **Sustainable-Adequate**.

Crustaceans

Captured Species	Aquatic zone	Ecological Risk
Crustaceans (Crabs)	Nearshore	LOW
Crustaceans (Prawns)	Inshore	HIGH
Crustaceans (Deep Sea Crabs)	Offshore	MEDIUM

Blue swimmer crab stocks in Shark Bay have rebuilt following declines in 2011-12 that were attributed to the impacts of anomalous environmental conditions and heavy fishing pressure from trawl and trap sectors. Peak

1 Kangas, M. et al. 2019. Resource Assessment Report No. 3. Scallop Resource. Department of Primary Industries and Regional Development, Western Australia.

spawning, recruitment and biomass levels have been stable since 2018.

Spawning and recruitment indices for western king prawns in Exmouth Gulf are above their thresholds, but only slightly, and catch rates are low relative to previous years. As a result this stock is currently assessed as **high** risk.

Prawn stocks in Shark Bay are considered **adequate**.

Stocks in the West Coast Deep Sea Crustacean Managed Fishery, that operates primarily in the GCB, are considered **adequate** with the fishery being re-certified by the MSC in 2021.

Listed species

A variety of endangered, threatened and protected[1] (ETP) species can be found within the GCB including cetaceans, dugongs, marine turtles, sea snakes, elasmobranchs, seahorses and pipefish, and sea/shore birds. These species are protected by various international agreements and national and State legislation. Primary pieces of legislation include the *Environment Protection and Biodiversity Conservation Act 1999* (Cth), the *Biodiversity Conservation Act 2016* (WA), and the *Fish Resources Management Act 1994* (WA). Captures of listed species in commercial and charter fisheries are recorded and their status at release are monitored and reported.

Commercial fishing regulations implemented in the 1970s and 1980s preclude the use of large-mesh gillnets and long-lines throughout the region, to prevent the incidental entanglement of dugongs and turtles. These controls have also provided protection for the large shark species which are a feature of this region. Bycatch reduction devices ('grids') have been mandatory in all trawl nets in this bioregion since the early 2000s and have further increased the protection for sharks, rays and turtles encountered on the trawl grounds. In a further effort to protect sharks and rays, line-fishery vessels are not permitted to use wire snoods.

Fish

Listed species	Risk
Fish	MEDIUM

Increasing the understanding of the number and nature of the interaction of the Exmouth Gulf prawn trawl fishery with sawfish was raised as an issue through the MSC certification process.

Other fisheries in this bioregion have a low number of interactions with listed fish species.

Non-Fish

Listed species	Risk
Birds and Reptiles	MEDIUM
Mammals	LOW

Sea snakes are the largest component of the ETP species bycatch in the trawl fisheries of this bioregion. Programs to identify and understand interactions with sea snakes have been implemented in a number of trawl fisheries around the state. Trials of a new bycatch reduction device (BRD) aimed at reducing sea snake captures indicate this is highly effective, reducing sea snake landings by 81%. The effectiveness of this BRD will be further assessed through an FRDC project.

Turtles are occasionally encountered in trawl catches but are typically returned to the sea alive. Grid BRDs are compulsory on trawl nets, which has largely eliminated the capture of turtles.

Other fisheries in this bioregion have very few marine mammal interactions. Deep sea crustacean fishing gear has been assesed as a low entanglement risk for whales.

Habitats and Ecosystems

A high level of protection of the ecosystems and habitats within the GCB is ensured by limiting the area of the bioregion that is available to commercial fishing activity.

More than 90% of benthic habitats out to the 200 m depth contour are not trawled, and in practical terms are fully protected from trawling (Gascoyne Ecosystem Management Table 1). There are extensive trawl closures inside the 200 m depth zone in both Shark Bay and Exmouth Gulf that provide protection to sensitive benthic habitats including coral reef, seagrass and sand flats. These areas also provide significant nursery, breeding and feeding habitats for many retained and listed species. There is also a large area from Point Maud to Tantabiddi Well off the Ningaloo Coast (23° 07.30' S to 21° 56.30' S) that is closed to all commercial fishing activities (Gascoyne Overview Figure 5).

The key habitats occurring in depths of less than 40 m (where the vast majority of relevant fisheries resources are located and fishing activities are undertaken in this bioregion) include:

Coral reefs: The Ningaloo ecosystem has the only major coral reef system in the bioregion. The Ningaloo Reef is the largest continuous reef area in WA and is considered one of Australia's most significant fringing coral reef systems.

Mangroves: The eastern coast of Exmouth Gulf supports one of the largest areas of mangroves in the region. These areas are thought to be

1 Note that being on the listed species list does not automatically indicate that a species is either threatened, or endangered.

significant sources of nutrients that contribute to the prawn fishery of the Gulf and provide nursery areas for juvenile fish and invertebrates.

Seagrasses: The central Gascoyne coast and Shark Bay support major seagrass communities, which play important roles in sedimentary processes, food chains and nutrient cycling. Smaller seagrass beds also occur in the eastern and southern sections of Exmouth Gulf. Seagrass beds provide important nursery habitats for many finfish and invertebrate species, such as spangled emperor. The 2011 MHW event caused significant (35%) losses of seagrass and carbon from the Shark Bay system. The impacts of this are yet to be understood, but medium to long-term changes in productivity of some fisheries species is possible.

Sand banks: Extensive sand areas support seagrasses and provide substrate for microalgae in all areas, particularly Ningaloo Reef. In both Exmouth Gulf and Shark Bay, shallow sand banks provide productive habitat and nursery areas for local prawn and finfish stocks. Within the deeper central areas of Shark Bay and Exmouth Gulf, bare sandy/muddy bottom habitats provide the main habitat for juvenile and adult prawns within the trawl areas.

Other habitats in the GCB include algal communities, rocky shore communities, hard and soft-bottom benthic communities, and pelagic mid-water communities.

Using the Integrated Marine and Coastal Regionalisation for Australia (IMCRA) scheme, the bioregion has been divided into four meso-scale ecosystems; Ningaloo, Zuytdorp, Shark Bay and Exmouth Gulf (Gascoyne Overview Figure 1). DPIRD assesses risks posed by fishing activites within each ecosystem.

Habitats

Habitat	Aquatic zone	Current Risk Status
Gascoyne Coast	Marine (Ningaloo/Zuytdorp)	NEGLIGIBLE
Gascoyne Coast	Exmouth Gulf	MEDIUM
Gascoyne Coast	Shark Bay	LOW

Protection of habitats within Ningaloo occurs mainly through the use of spatial zoning throughout the Ningaloo Marine Park (NMP). A new marine park will be established within Exmouth Gulf that will provide greater protection of habitat and the continuation of low impact commercial fishing operations. The main risk to coral habitat is from tourism and other boating related activities. There are no major pressures on seagrass communities, which are in general small and patchily distributed in this region.

The remainder of the marine ecosystems are predominantly mud/sand bottoms. The majority of non-trawl based fishing takes place over habitats in depths of 20-250 m, depending on which species is being targeted. The Gascoyne Demersal Scalefish Managed Fishery operates in this ecosystem and is based on using hooks and lines, resulting in no detectable impacts to benthic habitats. Fishing typically occurs over patches of hard bottom around the entrance to Shark Bay and the adjacent ocean. Fishing does not normally occur over sensitive seagrass or hard coral habitats. The West Coast Deep Sea Crustacean Fishery also operates in this area in depths from 150-1,200 m. Crab traps are mainly set over mud bottom and occasionally bring up solitary corals or sponges that get entangled in the pot. The footprint of the pots and effort levels are both extremely small in relation to the extent of this habitat. There are thus few direct impacts of fishing activity to these habitats.

In Exmouth Gulf, there is protection in place for all sensitive habitats and restrictions on the level of impacts that can occur in less sensitive habitats. Trawling is focused in the deeper central and north-western sections of the Gulf which is primarily mud. The total area trawled each year is monitored and has to remain below 40%.

Seagrass beds are spatially separated from trawling activities and are protected within the permanent nursery area closure along the southern and eastern sections of Exmouth Gulf. A better understanding of benthic habitats was a key component of maintaining MSC certification for the Exmouth Gulf Prawn Managed Fishery (EGPMF). Research has focused on increasing the knowledge of benthic habitats (e.g. FRDC project 2015/027,) and their overlap with the footprint of the fisheries. In recognition of these improvements, the recent re-certification in 2020 did not contain any requirements for additional research. In a recent ERA[1], the risk level of impacts of the EGPMF on the various types of habitat in Exmouth Gulf was assessed as between negligible and medium.

Benthic habitats and communities of Shark Bay have been described and mapped (Department of Consevation and Land Management, 1996). There is extensive seagrass throughout the eastern and western gulfs, while corals can be found primarily along the eastern coast of the western gulf, and the eastern coasts of Dirk Hartog, Dorre and Bernier islands. Almost all of these areas are part of the Shark Bay Marine Park and are permanently closed to trawling activities. These permanent trawl closures also protect the majority of coral habitats in the eastern and western gulfs. The few unprotected areas where corals occur (e.g. Egg Island and Bar Flats) are not part of the actively trawled areas. The main

1 DPIRD. 2020. Western Australian Marine Stewardship Council Report Series No. 17: Ecological Risk Assessment of the Exmouth Gulf Prawn Managed Fishery. Department of Primary Industries and Regional Development, Western Australia.

areas where trawling occurs, in the central Bay, north Cape Peron and in the northern area of Denham Sound, are sand/shell habitat.

A better understanding of benthic habitats and the overlap with the fishery footprint is also a key component of maintaining MSC certification for the Shark Bay Prawn Managed Fishery. Recent research focused on increasing the knowledge of benthic habitats and the overlap with the fishery footprint. In recognition of these improvements, there are no active habitat conditions for this MSC certified fishery. In a recent ERA[1], the risk level of impacts of the invertebrate fisheries on the various types of habitat in Shark Bay was assessed as between negligible and low.

Ecosystems

Ecosystem	Aquatic zone / category	Current Risk Status
Gascoyne Coast	Marine (Ningaloo/Zuytdorp)	MEDIUM
Gascoyne Coast	Exmouth Gulf	LOW
Gascoyne Coast	Shark Bay	MEDIUM

Ningaloo is protected via the establishment of NMP which covers a total area of 4,566 km^2 from the shoreline to the 3 nm limit of State Waters. Approximately 34% of the current park is zoned as no-take sanctuary areas. A significant level of research and monitoring has been undertaken in NMP by the Department of Biodiversity, Conservation and Attractions (DBCA), CSIRO, AIMS, and universities.

An assessment of the community structure and trophic level of all commercially caught fish species in the GCB over 30 years found no evidence of systematic changes that could indicate an unacceptable impact on this ecosystem from fishing (Hall and Wise, 2011)[2].

Approximately 25% of Exmouth Gulf is trawled. Trawling is prohibited in a designated nursery area in the southern and eastern section of the Gulf. The nursery area covers 344 nm^2 and represents 28% of Exmouth Gulf. A major project surveying biodiversity inside and outside the trawl grounds in Exmouth revealed that trawled areas have similar diversity to the larger adjacent untrawled areas, indicating that the current level of trawling activity does not affect overall biodiversity and cannot be distinguished from other sources of variation in community structure.

In a recent ERA[2], the risk posed by the EGPMF to the ecosystem structure in Exmouth Gulf was assessed as between negligible and low. As part of the establishment of a new marine park, the potential cumulative impacts of proposed developments must be compatible with the protection of the environmental, social and cultural values of Exmouth Gulf.

In a recent ERA[3], the risks posed by the invertebrate fisheries on the food web in Shark Bay were assessed as between negligible and medium. A previous study of biodiversity in Shark Bay found no significant difference in the fish and invertebrate abundance, species richness, evenness or diversity between trawled and untrawled areas (Kangas et al. 2007)[4].

Another recent ERA assessed the West Coast Deep Sea Crustacean Managed Fishery as a medium risk to ecosystem structure in the marine zone.

1 DPIRD. 2020. Western Australian Marine Stewardship Council Report Series No. 16. Ecological Risk Assessment of the Shark Bay Invertebrate Fisheries. Department of Primary Industries and Regional Development, Western Australia.
2 Hall NG, and Wise BS. 2011. Development of an ecosystem approach to the monitoring and management of Western Australian fisheries. FRDC Report – Project 2005/063. Fisheries Research Report No. 215. Department of Fisheries, Western Australia. 112p.
3 DPIRD. 2020. Western Australian Marine Stewardship Council Report Series No. 16. Ecological Risk Assessment of the Shark Bay Invertebrate Fisheries. Department of Primary Industries and Regional Development, Western Australia.
4Kangas MI, Morrison S, Unsworth P, Lai E, Wright I, and Tho mson A. 2007. Development of biodiversity and habitat monito ring systems for key trawl fisheries in Western Australia. Final FRDC Report 2002/038. Department of Fisheries, Western Au stralia. Fisheries Research Report No. 160. 333p.

FISHERIES

SHARK BAY INVERTEBRATE RESOURCE STATUS REPORT 2025

J. How, I. Koefoed, R Marks, S Evans, S. Wilkin, S. Brown

OVERVIEW

The Shark Bay Invertebrate Resource (SBIR) is accessed by three managed commercial fisheries; the Shark Bay Prawn Managed Fishery (SBPMF), Shark Bay Scallop Managed Fishery (SBSMF), and the Shark Bay Blue Swimmer Crab Managed Fishery (SBCMF). Additionally, blue swimmer crabs are taken by recreational fishers through a variety of methods, though the overall level of catch is relatively low (~8 t; Taylor et al., 2019).

The SBPMF uses low opening, otter prawn trawl systems within inner Shark Bay (Kangas et al. 2015) to target western king prawns (WKP; *Penaeus latisulcatus*), brown tiger prawns (BTP; *Penaeus esculentus*), and lesser quantities of blue endeavour (*Metapenaeus endeavouri*) and coral prawns (*Metapenaeopsis* sp.). These vessels also retain Ballot's Saucer scallops (*Ylistrum balloti*) as byproduct, with catches reported against the SBSMF. These vessels hold a 'B' class licence, which permits retention of scallop according to a quota whilst prawn fishing, distinct from the 'A' class licence where vessels use different nets (larger mesh) to solely target scallops. There is a formal catch share arrangement between these two classes for scallops, with a 70:30 split between A and B class licences. The SBCMF targets the blue swimmer crab (BSC; *Portunus armatus*) through dedicated crab trap vessels as well as trawl vessels which are permitted to retain crab according to a quota whilst operating in the SBPMF and SBSMF.

In October 2015, the SBPMF received Marine Stewardship Council (MSC) certification and was successfully recertified in December 2020 with no conditions. The fisheries accessing the SBIR were also accredited for export under the provisions of the Australian Government's EPBC Act in 2025 for five years. A more detailed account of the resource is provided in Kangas et al. (2015). (https://library.dpird.wa.gov.au/fr_msc/2/).

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery	Total Catch 2024: 2,709.t	Acceptable
Recreational fishery (blue swimmer crab)	~8 t	Acceptable
EBFM		
Indicator species		
Western King Prawn	Medium risk: Relative biomass above threshold	Adequate
Brown Tiger Prawn	Low risk: Relative biomass above target	Adequate
Scallop: Denham Sound	Medium risk: November index above threshold	Adequate
Scallop: Northern Shark Bay	Medium risk: November index above threshold	Adequate
Blue Swimmer Crab	Low risk: Relative biomass above target	Adequate
Ecological		
Bycatch	Low risk	Adequate
Listed Species	Medium risk	Adequate
Habitat	Low risk	Adequate
Ecosystem	Medium risk	Adequate
Economic (GVP $24.4 m)	Medium risk	Acceptable
Social (Level 3)	Low risk	Acceptable
Governance	Medium risk	Acceptable
External Drivers – Other	Medium risk	Acceptable
External Drivers – Climate change	High risk (saucer scallop, blue swimmer crab, tiger prawn, king prawn)	

SUMMARY STATISTICS

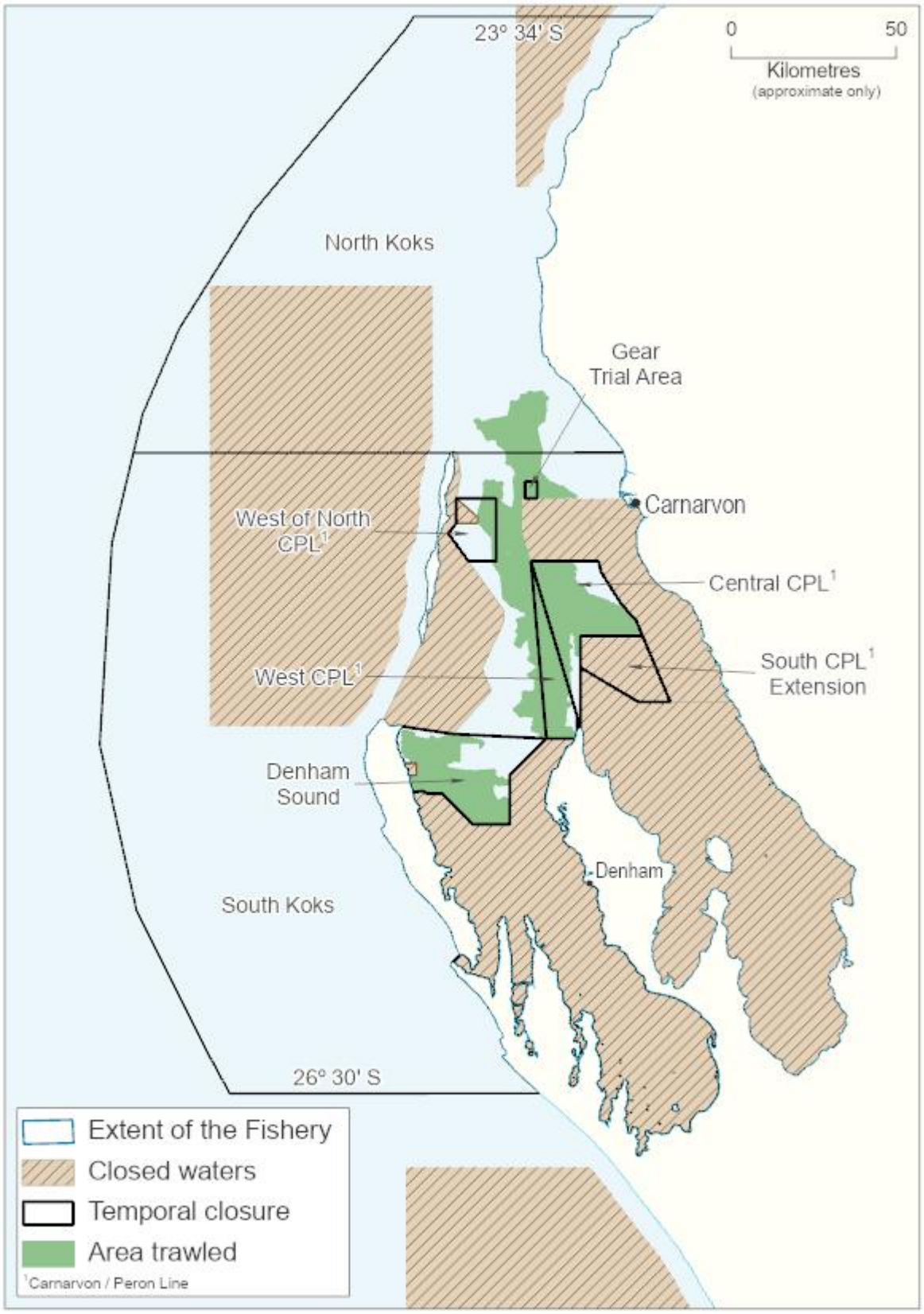
Statistics	Previous season (2023)	Current season (2024)	Further description
Total catch (t)	2,085 t K: 640 Tg: 226 Sc: 850 C: 369	2,710 t K: 446 Tg: 308 Sc: 1,403 C: 446	A decline in prawn catches was offset by increased landings of scallops and crabs. Additional catch comprised of byproduct species
Main byproduct species[1] (t)	CO (69.5)	CO (51.5)	Reduction in coral prawns due to effort reduction.
Commercial effort	SBPMF: 18,917 (adj. hrs) SBSMF:430 (vessel days) SBCMF: 99,592 trap lifts	SBPMF: 16,458 (adj. hrs) SBSMF: 709 (vessel days) SBCMF: 79,345 trap lifts	SBPMF effort reduced though management restrictions (e.g. reduction in headrope, and spatial and temporal closures).
Participation (vessels)	Trap: 3 Trawl:14	Trap: 3 Trawl:16	Vessel numbers have stabilised following the head rope reduction in the SBPMF.
Beach price (state avg./kg)[2]	K: $14.31 Tg: $14.80 Sc: $8.68 C: $10.90 kg	K: $ 13.45 Tg: $16.14 Sc: $8.98 C: $10.84	Beach prices across most species changed little in the last financial year.
Bycatch species (t)			Limited current data available (see Kangas et al. 2007 for previous data).
Listed species interactions	SS: 2485, SG: 62, T: 86, R 1, SF: 4, GS: 1	SS: 2360, SG: 52, T: 43, SF: 2, D: 1	The reduction in interactions is likely due to reductions in effort and changes in spatial effort distribution. Environmental and seasonal influences also play a role in interaction numbers.

Key to table: For fisheries: SBPMF: Shark Bay Prawn Managed Fishery, SBSMF: Shark Bay Scallop Managed Fishery, SBCMF; Shark Bay Crab Managed Fishery. For target species: K = King prawns, Tg = Tiger prawns, Sc = Scallops, C = Crab (blue swimmer). For bycatch species: CO = Coral prawns. For listed species: SS = Sea Snake, SG = Syngnathids, T = Turtle, R = Rays, SF = Sawfish, GS = Grey nurse shark; D = Dolphin

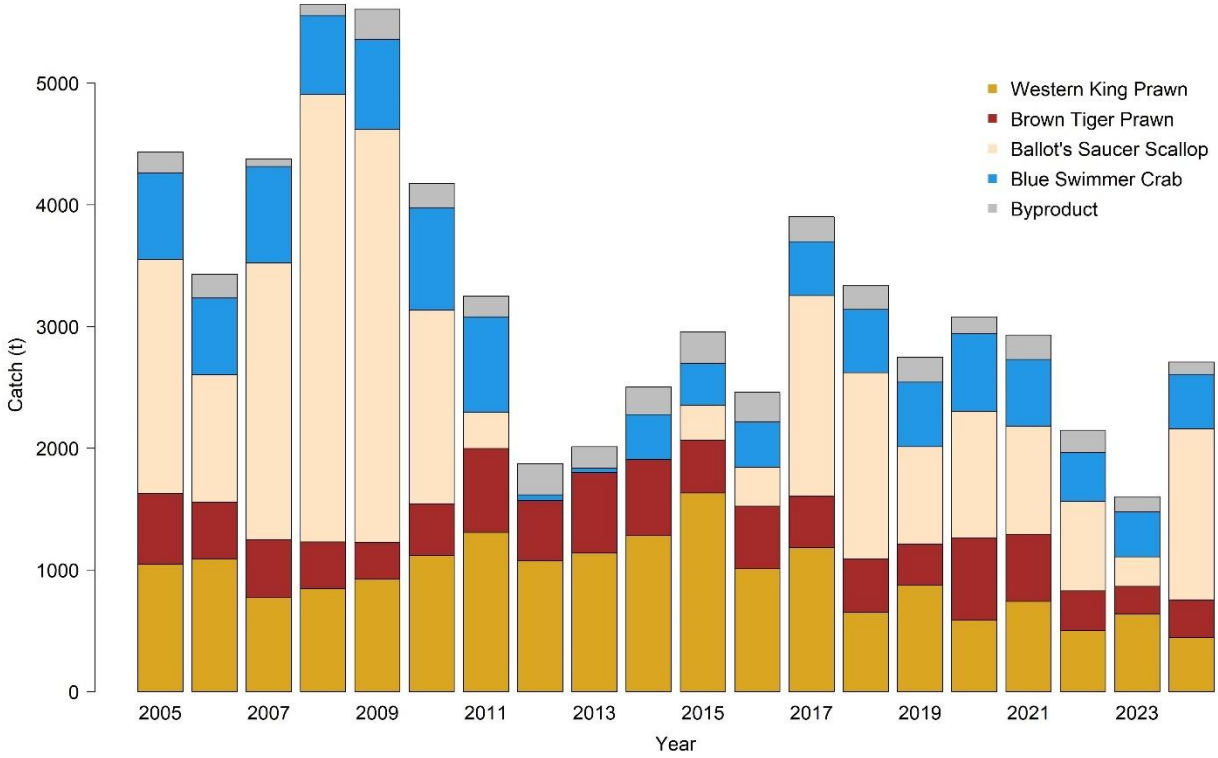
CATCH AND LANDINGS

The majority (>90%) of catch by weight (whole weight) was target species of the 3 fisheries accessing the SBIR (Shark Bay Invertebrate Figure 2). In 2024, scallop catches (1,403 t) form the main component of target species catch (whole weight) with catches of blue swimmer crab and western king prawn similar in landings (~445 t) followed by brown tiger prawn (308 t). Smaller landings of coral (~50 t) and blue endeavour prawns (<4 t) also occurred, along with mixed finfish, mantis shrimp, cuttlefish, squid, bugs (*Thenus orientalis*), and octopus.

[1] Those species whose 10-year average is greater than 2% of the total catch of the Resource
[2] Prices for the 2022-23 (2023) and 2023-24 (2024) financial years



SHARK BAY INVERTEBRATE FIGURE 1.
Boundaries of the Shark Bay Prawn Managed Fishery for the 2024 fishing season. 'Closed waters' are inclusive of Fishery, State, and Commonwealth imposed trawl closures.



SHARK BAY INVERTEBRATE FIGURE 2
Annual catches in the Shark Bay Invertebrate Resource by species.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

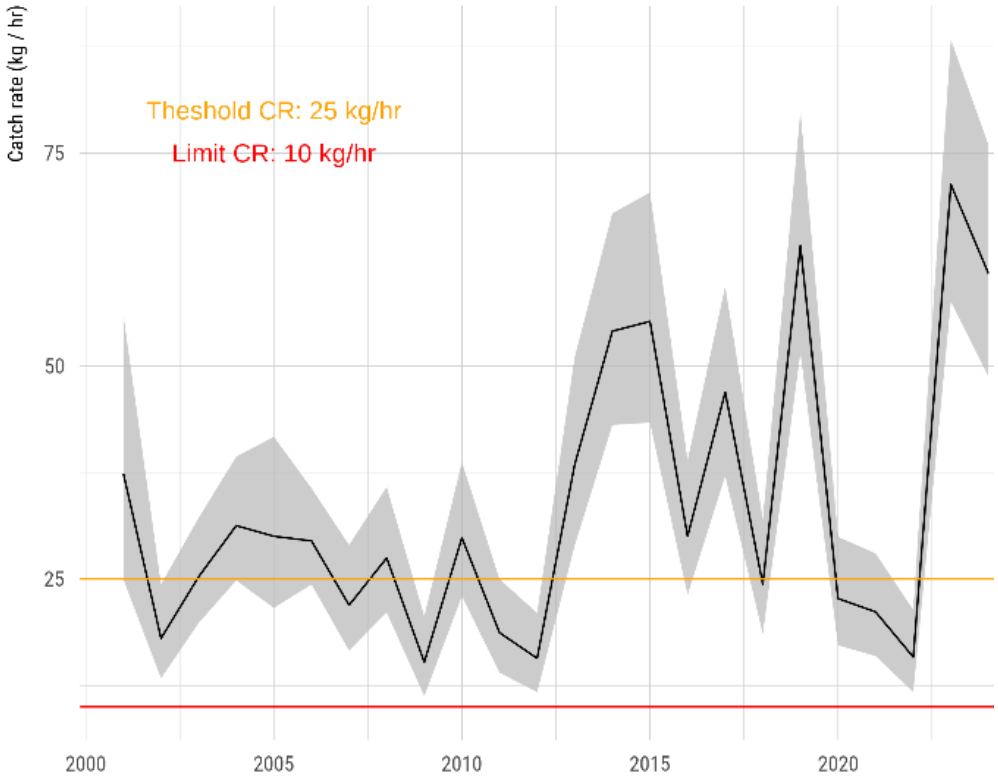
The status of the stocks within the SBIR are assessed annually using a weight-of-evidence approach to produce an overall risk level to the stocks. Each species is considered as a single stock within the SBIR, except for scallops which are assessed separately for Denham Sound and Northern Shark Bay.

Western king prawns (Sustainable-Adequate)

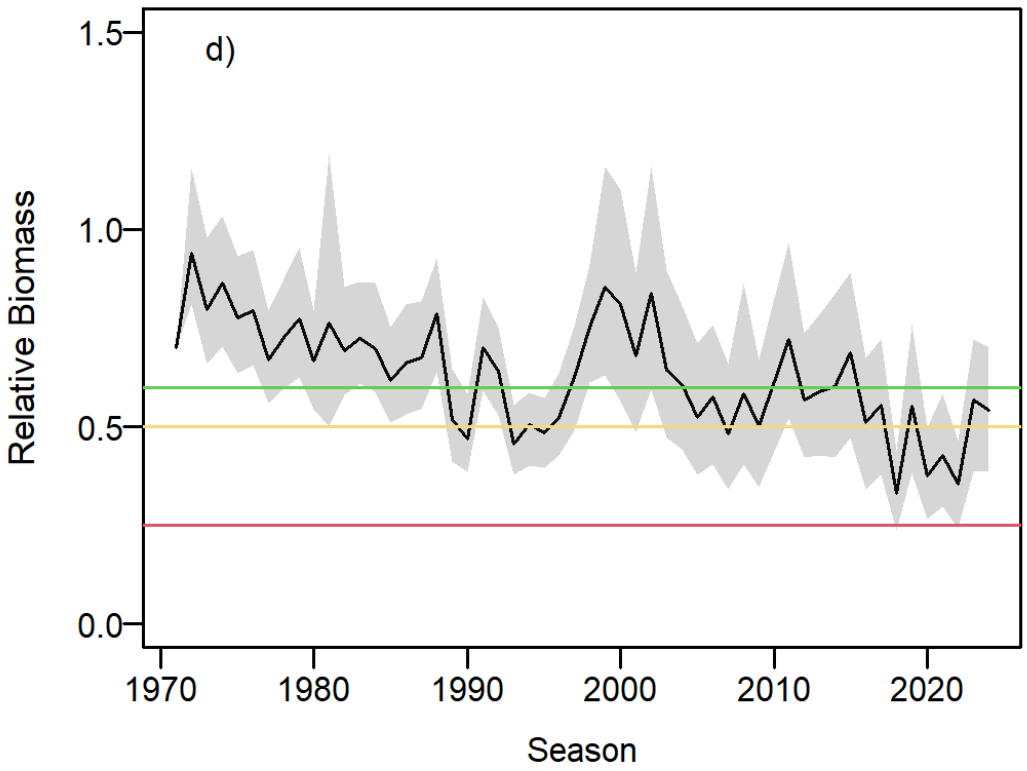
The status of the stock is primarily based on fishery-independent indices of recruitment and spawning stock levels relative to specified reference points in the harvest strategy (HS) (DPIRD 2022). Biomass dynamic modelling has also been developed for the stock utilising standardised commercial catch rates.

In 2024, the mean spawning stock survey index was 60.9 kg/hr, which is well above the threshold reference level (25 kg/hr) and is the highest on record (Shark Bay Invertebrate Figure 3). Previous modelling has indicated this reference level is close to the biomass at MSY (B_{MSY}), and this is further supported by results from a newly developed biomass dynamics model, which estimated the relative biomass in 2024 to be 0.52K (Shark Bay Invertebrate Figure 4). This is above the threshold of 0.5K (B_{MSY}), and a marked improvement in relative biomass levels compared to the early 2020s.

With spawning indices and relative biomass estimates above the respective thresholds, the overall risk to western king prawns in 2024 was assessed as being **medium** risk.



SHARK BAY INVERTEBRATE FIGURE 3
Tweedie GLM mean and 95% confidence intervals (shaded areas) for the western king prawn spawning index (kg/hr). The threshold catch rate is in orange and the limit catch rate is in red.



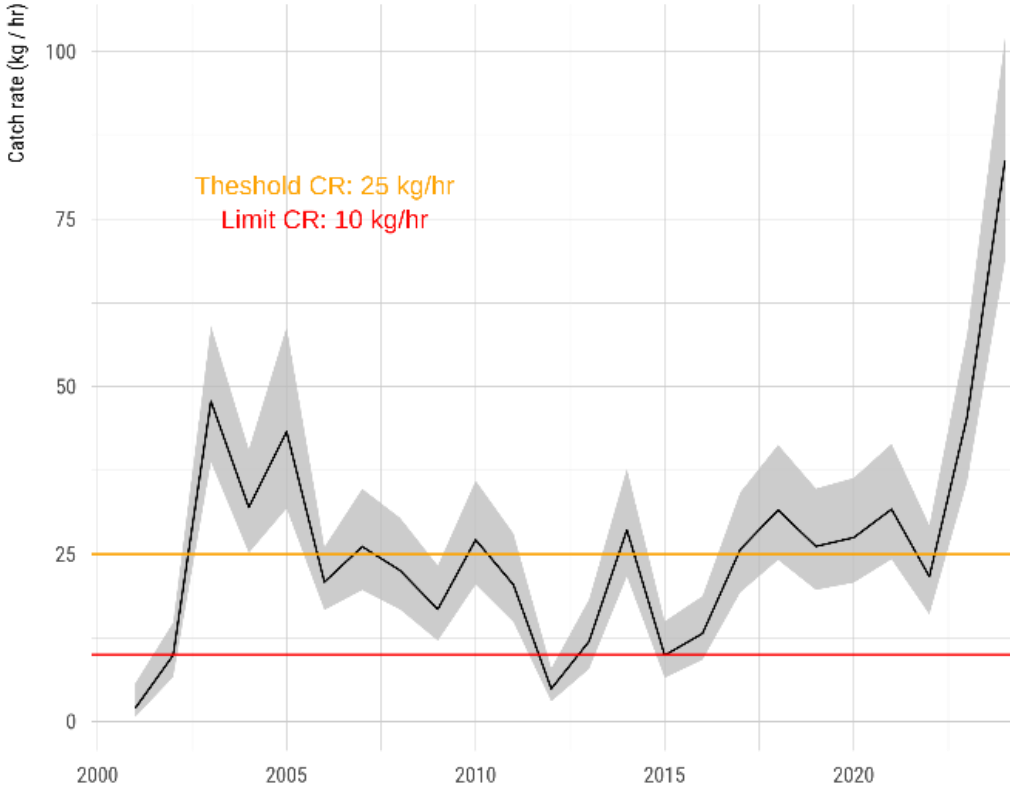
SHARK BAY INVERTEBRATE FIGURE 4
Trends in relative biomass estimates for western king prawns produced by the state-space biomass dynamics model. Reference lines are: 0.25K (limit; red), 0.5K (threshold; yellow), and 0.6K (target; green), uncertainty (± 95 % CL) is shown by the shaded area around the relative biomass estimate.

Brown tiger prawns (Sustainable-Adequate)

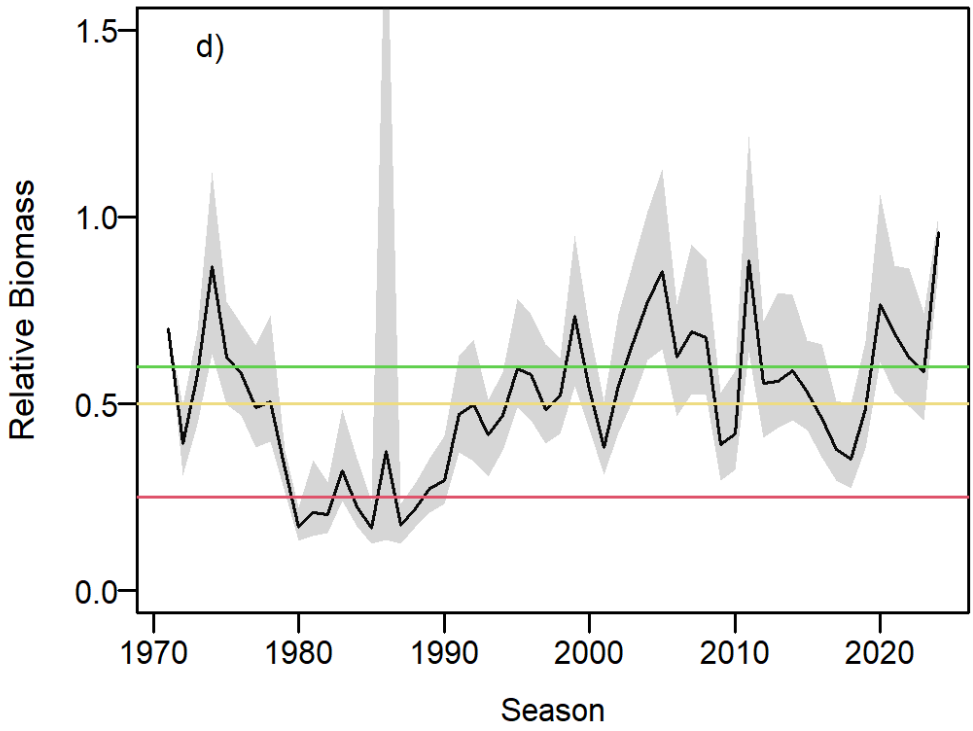
A spawning stock-recruitment relationship exists for brown tiger prawns (Penn et al. 1995; Caputi et al. 1998), and the maintenance of adequate spawning stock is a key management objective (Kangas et al. 2015).

The Northern Carnarvon Peron Line (NCPL) fishing area remained closed again for the entire 2024 season to protect spawning stocks of both brown tiger and western king prawns. This resulted in the spawning stock index reaching 83.7 kg/hr in 2024, which is the highest level on record, and well above the threshold reference level of 25 kg/hr (Shark Bay Invertebrate Figure 5). Previous modelling has indicated this reference level is close to the biomass at MSY (B_{MSY}), and this is further supported by results from a newly developed biomass dynamics model, which estimated the relative biomass in 2024 to be 0.96K. This is well above the target of 0.6K (Shark Bay Invertebrate Figure 6).

There was a slight increase in catch from 2023, coupled with the spawning index and relative biomass estimates well above threshold levels in 2024 the overall risk to brown tiger prawns is assessed as **low** risk.



SHARK BAY INVERTEBRATE FIGURE 5
Tweedie GLM mean and 95% confidence intervals (shaded areas) for the brown tiger prawn spawning index (kg/hr). The threshold catch rate is in orange and the limit catch rate is in red.



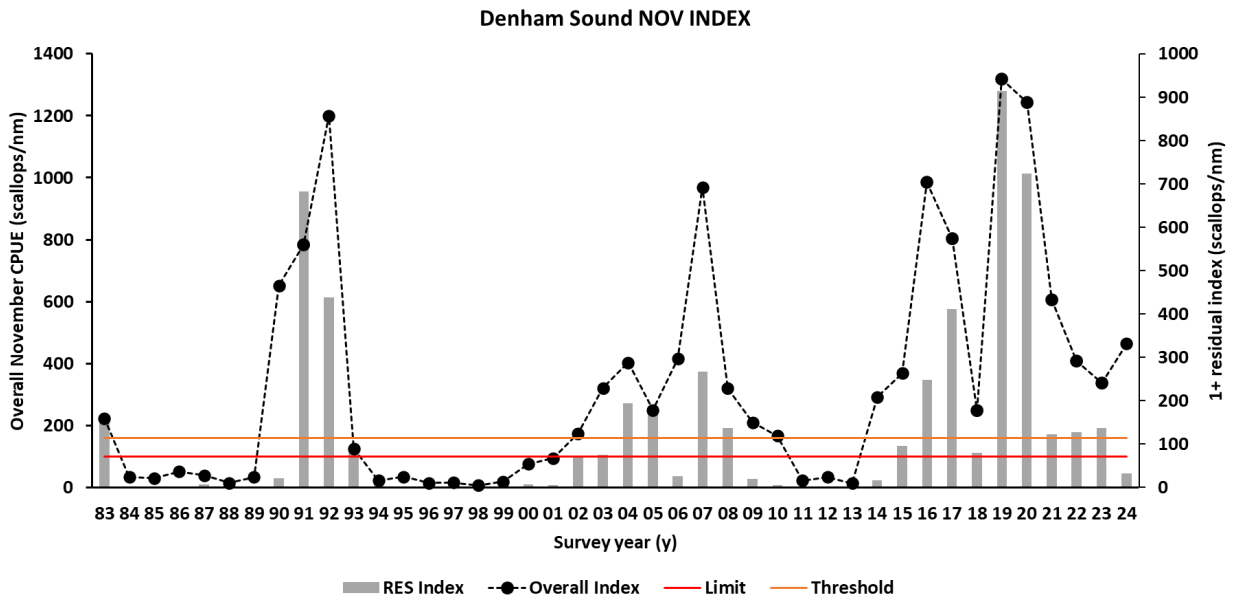
SHARK BAY INVERTEBRATE FIGURE 6
Trends in relative biomass estimates for brown tiger prawns produced by the state-space biomass dynamics model. Reference lines are: 0.25K (limit; red), 0.5K (threshold; yellow), and 0.6K (target; green), uncertainty (± 95 % CL) is shown by the shaded area around the relative biomass estimate.

Scallops (Sustainable-Adequate)

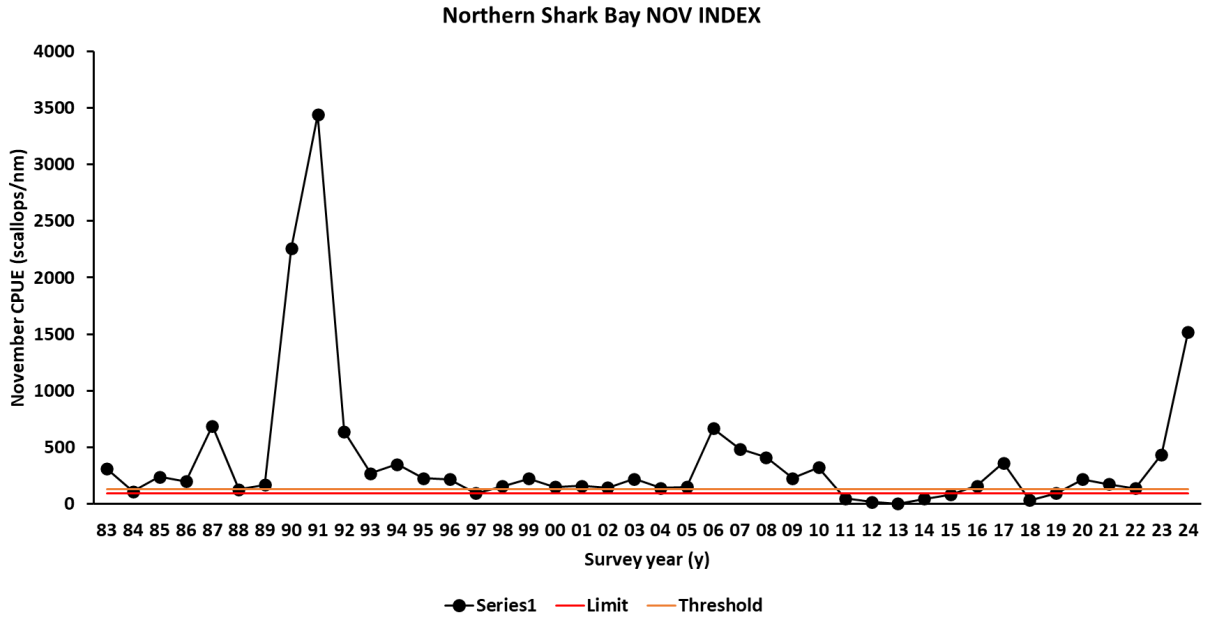
The status of the stocks in Shark Bay are determined from the annual fishery-independent survey of recruitment (0+) and residual (1+) stock carried out in November–December since the 1980s (Caputi et al. 2014). Additional multi-species surveys have been conducted in recent years during February/March and June, which are used to inform the TACC and scallop season management arrangements to maintain adequate levels of the breeding stocks.

In Denham Sound (DS), the November 2024 survey index of 464 sc/nm was well above the threshold (160sc/nm; Shark Bay Invertebrate Figure 7). However, the residual component of this index was 32 sc/nm which is the lowest since the fishery re-opened in 2015. DS scallop fishing was stopped after the June 2024 survey owing to concerns over the size and abundance of scallops. The greater numbers of residual scallops were in the central and western parts of the sound, and a closure prohibiting all trawling (including for prawns) to protect these residual scallops was introduced. The overall risk to scallops in Denham Sound was assessed as **medium** risk.

In Northern Shark Bay (NSB), the annual survey index in November 2024 of 1,519 sc/nm was well above the threshold level of 130 sc/nm and at its highest level since the early 1990s (Shark Bay Invertebrate Figure 8). This was aided by an increased residual index but primarily elevated by the marked increase in the recruitment index. Industry fishing during November and December 2024 indicated reduced residual numbers compared to elevated recruit numbers. An industry agreement to stop fishing until early 2025 was enacted to protect the strong recruitment cohort. The overall risk to scallops in NSB was assessed as **medium** risk.



SHARK BAY INVERTEBRATE FIGURE 7
Annual November overall index (dotted line) of scallops from Denham Sound from 1983-2024, relative to the threshold (orange) and limit (red) reference levels. Residual index for November presented in grey bars.



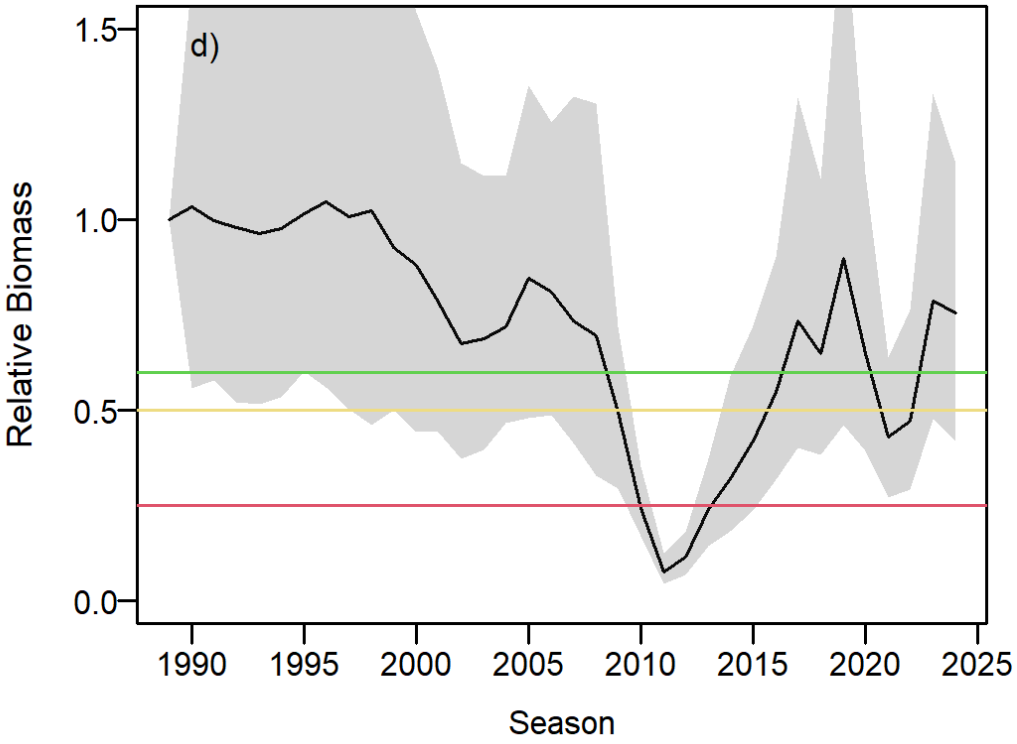
SHARK BAY INVERTEBRATE FIGURE 8
Annual November index of scallops (n/nautical mile) in Northern Shark Bay relative to the threshold (orange) and limit (red) reference points, from 1983-2024.

Blue Swimmer Crab (Sustainable-Adequate)

The primary harvest strategy metrics are derived from multi-species fishery-independent survey conducted in February, June, and November each year.

The recruitment index (1,243 kg/nm^2) and spawning index (1,547 kg/nm^2) were above their respective 991 kg/nm^2 and 200 kg/nm^2 limit reference points. The legal harvestable index (701 kg/mn^2) was above the threshold level (350 kg/nm^2). The legal index was incorporated into a biomass dynamics model, which estimated the relative biomass in 2024 to be 0.76K (Shark Bay Invertebrate Figure 9). This is above the target of 0.6K (B_{MSY}), and a marked improvement in relative biomass levels compared to the early 2020s (Shark Bay Invertebrate Figure 9).

With spawning, recruitment and legal indices above their respective reference levels, and relative biomass above target level, the overall risk to blue swimmer crabs in 2024 was assessed as being **low** risk.



SHARK BAY INVERTEBRATE FIGURE 9
Trends in relative biomass estimates for blue swimmer crabs produced by the state-space biomass dynamics model. Reference lines are: 0.25K (limit; red), 0.5K (threshold; yellow), and 0.6K (target; green), uncertainty (± 95 % CL) is shown by the shaded area around the relative biomass estimate.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Bycatch

The overall quantity of bycatch caught in Shark Bay trawl nets is moderate relative to other subtropical trawl fisheries. Bycatch composition is a mixture of small fish species generally not taken by other sectors, significant quantities of small blue swimmer crabs (under commercial size) and other crustacean species that are normally returned alive. At times, quantities of seagrass that have broken off the shallow seagrass banks (not trawled), are moved onto the trawl grounds by tides and currents and are caught in nets.

A 2002-03 study of the bycatch of trawled and un-trawled areas of Shark Bay indicated highly diverse fish and invertebrate fauna (Kangas and Morrison 2013; Kangas et al. 2007) with no significant differences between trawled and un-trawled areas for species richness, diversity, or evenness for the major faunal assemblages.

Bycatch composition for a subset of sites sampled in 2002-03 has been resampled in 2015, 2017, and 2021 and 2024 as part of the bycatch action plan for this fishery. The majority of the 20 most common species of fish and invertebrates recorded in 2002-03 were still generally amongst the top 20 in recent samples with no major change in faunal species composition in almost 20 years of trawling.

Bycatch reduction devices (BRDs) have been fully implemented since 2003, with all boats required to fish with a ‘grid’, which allows larger marine animals to escape trawl nets and a secondary fish escape device (FED) fitted in each net. An ecological risk assessment (DPIRD 2020) identified that the overall risk to bycatch species from trapping was negligible and from trawling was **Low**.

Protected species

Protected species including whales, dolphins, dugongs, turtles, and sea snakes are particularly abundant in Shark Bay. However, only sea snakes are seen in trawl catches in notable numbers, and most are returned to the sea alive. Protected species reporting by skippers has improved in the last seven years following the DPIRD’s targeted education and monitoring of daily logbooks. Interactions with protected species are also recorded during departmental fishery-independent surveys in the fishery. The implementation of BRDs (grids) in the fishery has reduced the occasional capture of turtles in trawl nets. An ecological risk assessment (DPIRD 2020) identified that trawling posed a **medium** risk to protected species.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

As a result of the extensive permanent and temporary closures first introduced in the 1960s, the fleet operates in approximately 5-8% of the overall legislated area of the fishery. Inside Shark Bay, trawl fishing is focused in the deeper areas (predominantly sand/mud/shell habitats) of the central bay, north of Cape Peron, and the northern area of Denham Sound. The majority of sponge/coral habitats are contained within specific trawl closures to protect these areas (Kangas et al. 2015).

Trawl gear has relatively little physical impact on the benthic environment which is predominantly mud and sand habitat. Performance measures for habitat impacts relate to the spatial extent of trawling within the SBPMF. In 2023, the total area trawled, at approximately 1851 km^2 (540 nm^2), was 12% of the inner Shark Bay (below the target of <20%), and 4.5% of the total fishery. The fishery impacts are therefore considered to pose a **low** risk to habitats within Shark Bay.

Ecosystem interactions

Although prawn species are managed at relatively high levels of annual harvest, the impact of the catch on local food chains is unlikely to be significant due to the high natural mortality of prawns, the large extent of non-trawled nursery areas and the variable biomass levels of prawns resulting from variable environmental conditions. Because of this natural variation in prawn populations, most prawn predators are opportunistic, and it is unlikely that the commercial take of prawns impacts significantly on the upper trophic levels of the Shark Bay ecosystem. Gear modifications to reduce unwanted catch have further lessened the impact the fishery has on the wider Shark Bay food chain. Any interaction of discarding and provisioning over the long term likely represents a steady-state ecosystem structure and function. Fishery impacts on the ecosystem are therefore considered to represent a **medium** risk.

SOCIAL AND ECONOMIC OUTCOMES

Social

This industry is a significant contributor to regional employment. In 2024, there were 16 trawl vessels which were actively accessing the SBIR. Based on average crewing of trawlers consisting of a skipper, mate and 4 crew, the trawl fleet would directly engage around 96 fishers. Four vessels were actively trapping in the SBCMF. However, due to vessel replacements, only 3 vessels were actively fishing at any one time. Trap vessels each have a master and 2 crew, supporting 9 fishers. Therefore, it is likely that this resource supports in excess of 100 fishers with additional staff in support / processing roles on shore. The SBCMF supports a recreational component which is a regionally important recreational fishery (~8 t boat-based only; Taylor et al. 2019). Subsequently, the SBIR has a Level 3 social amenity.

Economic

The SBIR was estimated to be worth approximately $24.4 million in 2024, with most of the value derived from the target species of the 3 fisheries accessing the resource: western king prawns and brown tiger prawns, scallops, and blue swimmer crabs. The overall value of catch makes this a Level 5 Resource (> $20 million). Ex-vessel (beach) prices for prawns vary, depending on the type of product and the market forces operating at any one time. Average prices per kg in 2024 were similar to 2023 values. **Medium** risk.

GOVERNANCE SYSTEM

Harvest Strategy

The SBPMF is managed in accordance with the SBP Harvest Strategy (DPIRD 2022). The revised version was published in June 2022. Key updates to the strategy incorporated some preliminary findings of FRDC Project 2019-015, including development of a performance indicator in relation to prawn size composition and the use of a proxy to determine B_{MSY} to allow the use of findings from the final FRDC Project 2019-015 (e.g. biomass dynamics model). The primary management objective is to maintain the spawning biomass of each target species at a level where the main factor affecting recruitment is the environment.

The SBSMF is managed in accordance with the SBS Harvest Strategy and the SBCMF is managed in accordance with the SBC Harvest Strategy.

Annual Catch Tolerance Levels

Total landings of brown tiger prawns and western king prawns were below their respective annual catch tolerance ranges and their predicted catch range. However, these ranges are based on data from seasons where fishing effort was much higher than in 2024. Due to management arrangements, the effort in 2024 was the lowest this century. This means that, while the overall catch was low, the mean nominal CPUE for 2024 was very high for brown tiger prawns and within the normal range for western king prawns.

Blue swimmer crab catches comprised 89.3% of the TACC, while scallop quota in Northern Shark Bay was also attained. Therefore, the annual fishing levels adopted in 2024 are considered **acceptable**.

Compliance

It is a requirement that all vessels in the fishery are fitted with an Automatic Location Communicator (ALC). The implementation of an ALC enables the department to monitor the fleet using a Vessel Monitoring System (VMS) and manage compliance with temporal and spatial closures. DPIRD also undertakes regular vessel inspections to ensure fishing is being undertaken in accordance with the governing legislation (e.g. gear requirements, catch reporting).

Consultation

Management meetings are held annually between DPIRD and licensees, in conjunction with the Industry Consultation Unit of the Western Australian Fishing Industry Council (WAFIC). These meetings provide an opportunity for DPIRD, WAFIC and industry to discuss research outcomes and initiatives, management of the fishery and industry issues.

Season arrangements are developed each year in consultation between DPIRD and licensees. During the season, DPIRD and licensees undertake collaborative management to ensure the protection of smaller prawns, scallop and crab stocks and to maintain the spawning stock biomass.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

Following MSC recertification in December 2020, the SBPMF has undergone three subsequent audits with no conditions. Reassessment will commence in 2025, and Shark Bay Scallop and Crab will be included as additional units of assessment.

In response to the western king prawn spawning index being below the threshold for three years in a row, and brown tiger prawns being below their threshold in 2022, a phased headrope reduction was implemented in 2023. Following an initial 33% reduction (down to 486 m total headrope), in 2024 headrope was reduced by 50% (down to 364.5 m total headrope).

To complement the SBP Harvest Strategy and considering sustainability concerns, in 2024 DPIRD continued using a set of guidelines for in-season decision to adjust management arrangements based on survey results.

In 2024, DPIRD commenced the Shark Bay Invertebrate Trawl and Trap Fisheries Strategic Review Project (Review) to assess current SBPMF, SBSMF and SBCMF operations, and identify where improvements could be made to the long-term management approach and framework. This includes the development of annual season arrangements for each fishery to address industry issues and achieve Review principles and sector objectives. The Review will involve extensive industry consultation and is anticipated to be finalised at the end of 2025. Review outcomes and recommendations will be implemented from 2026.

EXTERNAL DRIVERS

Environment

The major environmental factors influencing these stocks appear to be:

i) water temperature, which is typically influenced by the Leeuwin Current strength, and is positively correlated with the growth and catchability of prawns and scallop survival. The temperature in late winter to autumn also positively relates to the recruitment of brown tiger prawns the following year (Caputi et al. 2021).

ii) turbidity during flood events, which is likely to increase production due to lower natural mortality, and to flush prawns from nursery areas onto the trawl grounds.

iii) the frequency and strength of northerly wind reversals (from the dominant southerly winds experienced in Shark Bay), which are important for transporting eggs and larvae to inshore nursery habitats during key spawning months. The trend towards cooler and earlier winters, as well as warmer summers is being monitored, and the effect on egg production, recruitment, and the strength of the autumn spawning stocks is being assessed.

Climate Change

Shark Bay Invertebrate Resource Table 1 provides a summary of the climate vulnerability risk assessment outcomes for the key invertebrate target species in the SBIR.

For these species, the rate of change and seasonal extremes in SST, riverine flood discharges, severity of tropical cyclones, duration of MHW events and seagrass coverage can all highly influence stock productivity. All target species and the bay itself has been identified to be at **high** risk from climate change. Saucer scallops and blue swimmer crabs had demonstrable negative effects associated with high SSTs and MHW events and thus there is high confidence that projected increase in SSTs, MHW days and ocean acidification will further adversely impact this stock by 2050.

Other

Globally, the prawn market suffered due to the excess supply of cheap prawns flooding the market and driving prices down.

The industry has sought to maximise the return from byproduct species in the fishery where possible. **Medium** risk.

SHARK BAY INVERTEBRATE RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for the key target species in the Shark Bay invertebrate resource.

Indicator species	Sensitivity	Exposure	Climate Change risk
Saucer scallop	Medium	Demonstrable negative effects are evident	High
Blue swimmer crab	Medium	Demonstrable negative effects are evident	High
Brown tiger prawn	High	Negative effects unlikely	High
Western king prawn	Medium	Negative effects are possible	High

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WEST COAST DEEP SEA CRUSTACEAN RESOURCE STATUS REPORT 2025

E. Tuffley and A. Remaj



OVERVIEW

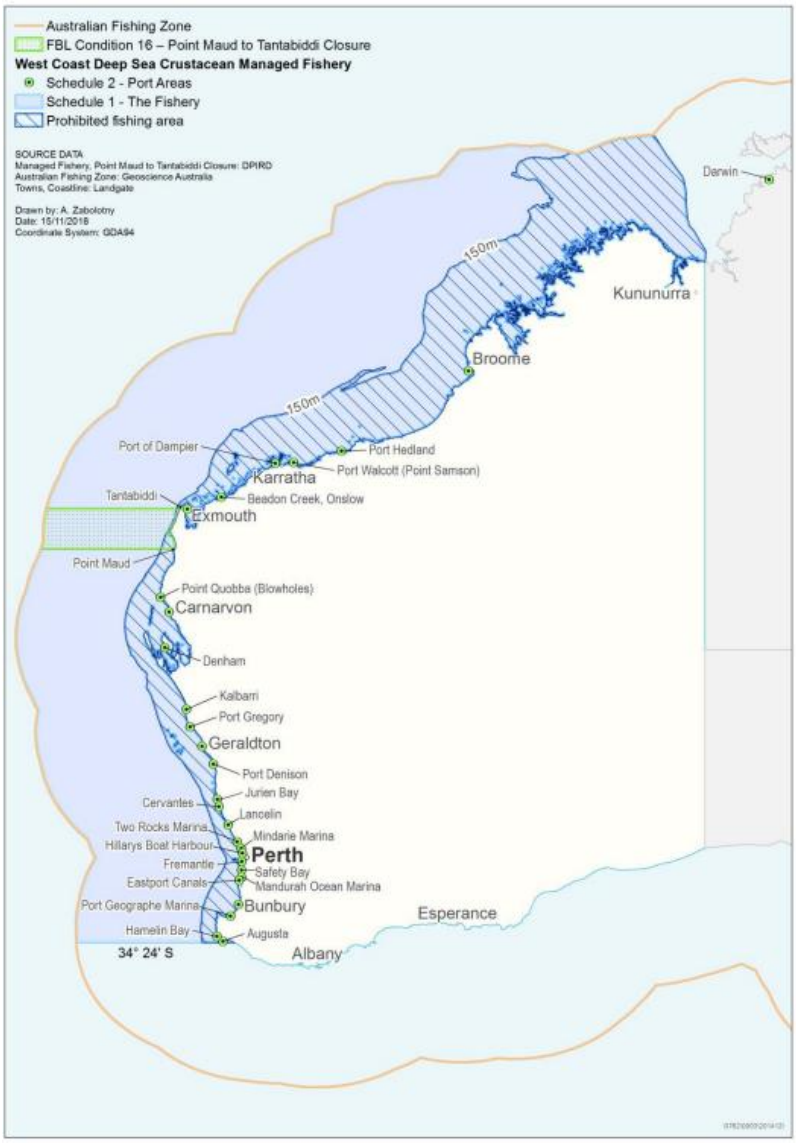
The West Coast Deep Sea Crustacean resource consists of crystal crab (snow) (*Chaceon albus*), champagne crab (spiny) (*Hypothalassia acerba*) and giant crab (*Pseudocarcinus gigas*). The resource is mainly accessed by the commercial West Coast Deep Sea Crustacean Managed Fishery (WCDSCMF), which primarily targets crystal crabs. The West Coast Rock Lobster Managed Fishery (WCRLMF) also retains a small amount of champagne crabs as byproduct of deep-water rock lobster fishing. The WCDSCMF is a pot-based fishery using baited pots operated in a long-line formation in shelf edge waters (>150 m in depth) off the West Coast and Gascoyne Bioregions (see How et al. 2015). The fishery is primarily managed using a Total Allowable Catch (TAC). In 2016 and 2020, the WCDSCMF achieved Marine Stewardship Council (MSC) certification, confirming the sustainable management of the fishery.

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery (WCDSCMF) TAC: 123.2 t crystal crab 20.02 t champagne crab 0.98 t giant crab	Total catch (WCDSCMF) 2024 season: 121.9 t crystal crab 4.5 kg champagne crab 0.83 t giant crab	Acceptable
Recreational fishery (NA)	NA	NA
EBFM		
Indicator species		
Crystal crab (*Chaceon albus*)	Medium risk: Relative biomass above threshold	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Low risk	Adequate
Habitat	Low risk	Adequate
Ecosystem	Medium risk	Adequate
Economic (GVP $6.95 m; 2023-24)	Moderate risk	Acceptable
Social (low amenity)	Low risk	Acceptable
Governance	Medium risk	Acceptable
External Drivers – Other	High risk	Acceptable
External Drivers – Climate change	High risk (Crystal crab, Champagne crab, Giant crab)	

SUMMARY STATISTICS

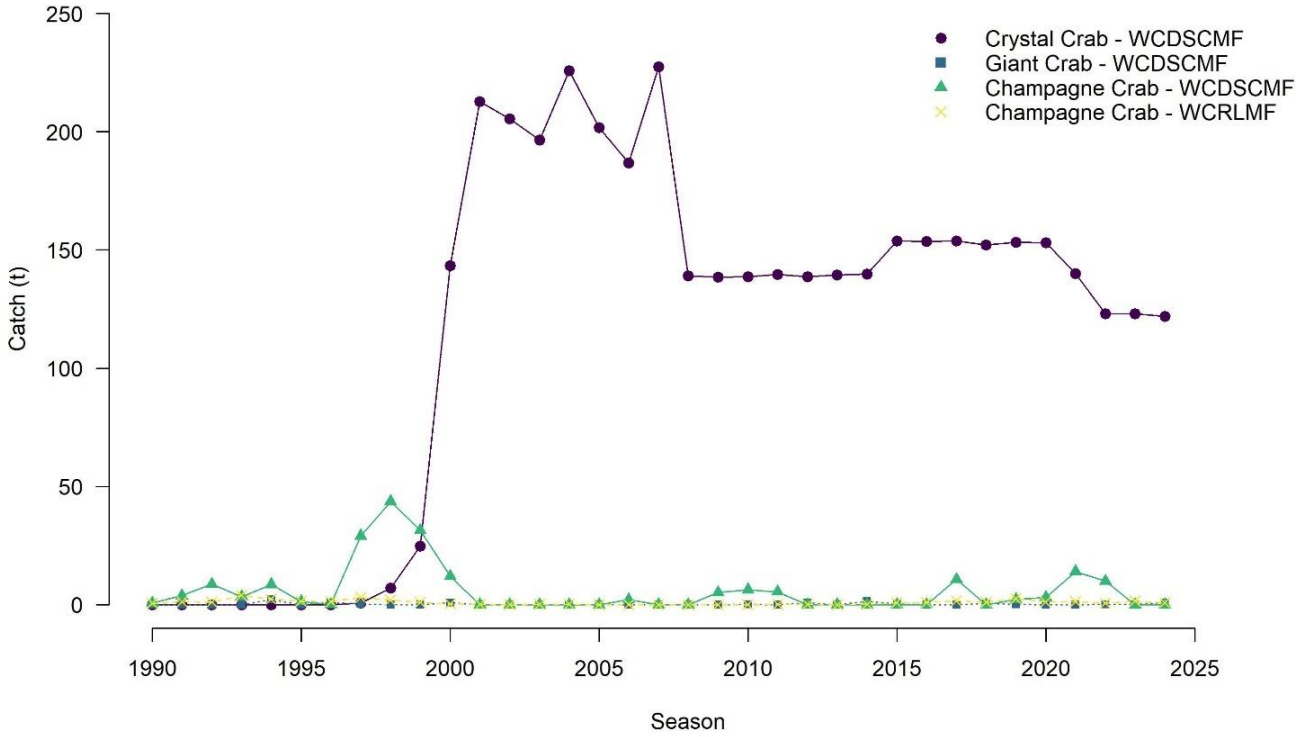
Statistics	Previous season	Current season	Further description
Commercial catch	Total Catch 2023: 123.1 t crystal crab (WCDSCMF) 1.7 t champagne crab (WCRLMF) 0.136 t giant crab (WCDSCMF)	Total Catch 2024: 121.9 t crystal crab (WCDSCMF) 4.5 kg champagne crab (WCDSCMF) 0.9 t champagne crab (WCRLMF) 0.83 t giant crab (WCDSCMF)	All species were within their 2024 quota.
Commercial effort (pot lifts, WCDSCMF)	75,938 total	80,150 total	Below threshold level implemented for assessing ecological impacts of the fishery (How et al. 2015).
Participation (WCDSCMF)	Seven licence holders Three vessels	Seven licence holders Three vessels	Two vessels solely targeted crystal crab. One vessel retained crystal, giant, and champagne crabs.
Listed species interactions (WCDSCMF)	One reported humpback whale entanglement in WCDSC gear	Zero	



DEEP SEA CRUSTACEAN FIGURE 1.
Location and boundaries of the West Coast Deep Sea Crustacean Managed Fishery and approved Port Areas.

CATCH AND LANDINGS

In 2024, a total of 123.7 t of the resource was retained by the two fisheries accessing it, comprising 121.9 t of crystal crab, 0.937 t of champagne crab, and 0.83 t of giant crab. Since 2000 the vast majority of the resource landed has been crystal crabs by the WCDSCMF.



DEEP SEA CRUSTACEAN FIGURE 2
Retained catch (t; whole weight) by species and fishery (WCDSCMF - West Coast Deep Sea Crustacean Managed Fishery, WCRLMF - West Coast Rock Lobster Managed Fishery) accessing the West Coast Deep Sea Crustacean Resource in 2024.

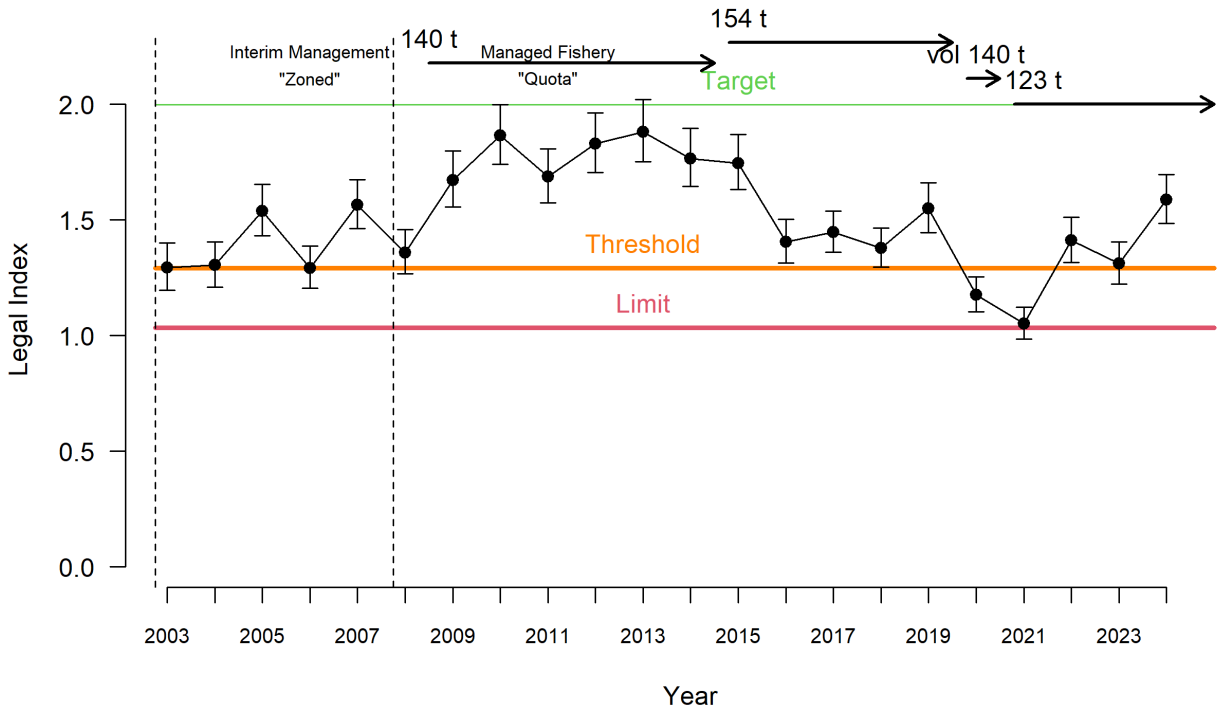
INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Crystal crab

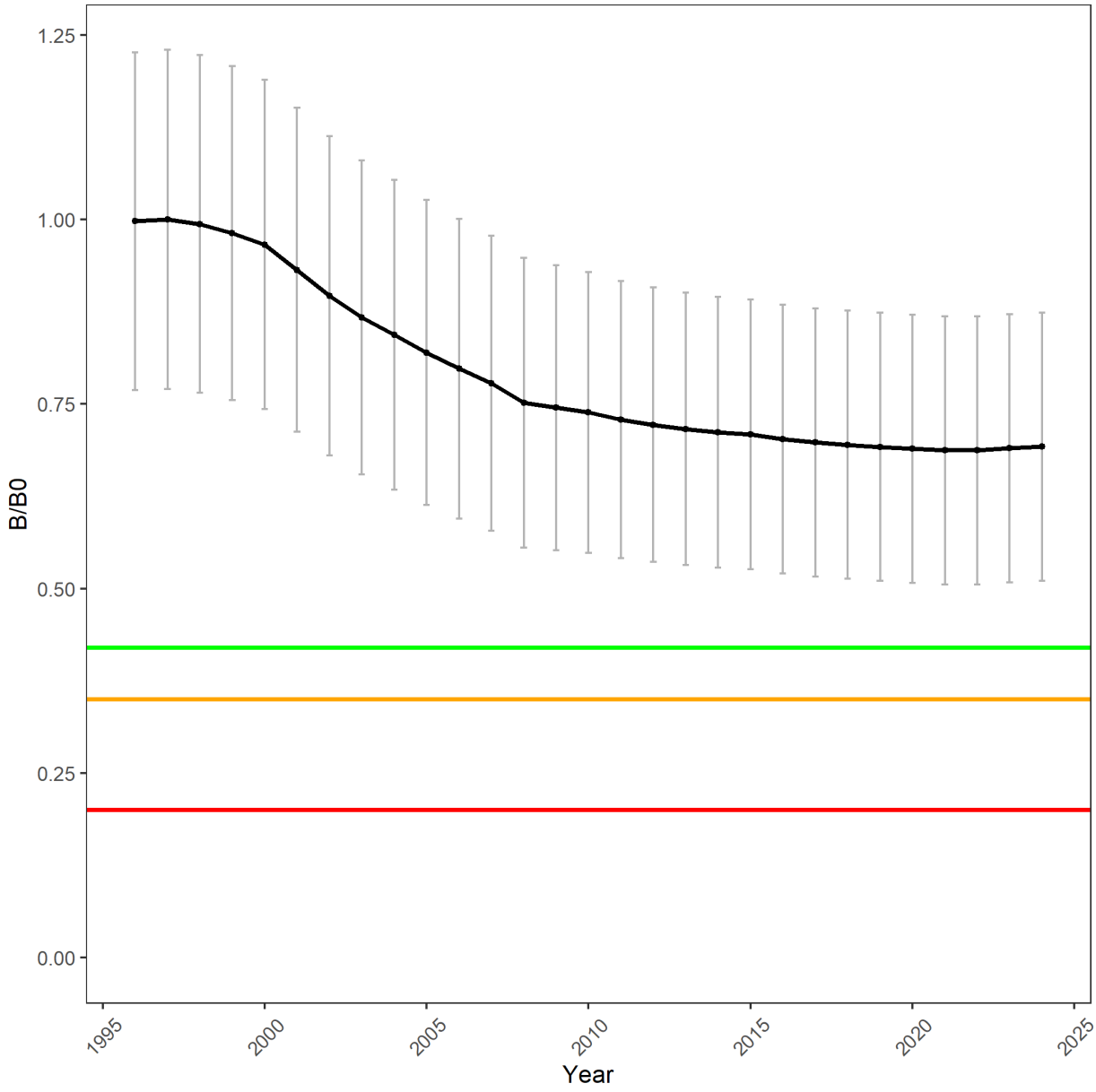
Commercial catch rates, standardised for fishing efficiency, skipper, soak time, month, water depth and latitude, were above the threshold level (Deep Sea Crustacean Figure 2).

Relative biomass was modelled using an integrated biomass model, IMuLT (de Lestang & Punt, unpublished), designed specifically for modelling crustacean stocks. Data sources used included commercial catch, commercial and fishery independent catch rates, length frequencies obtained from onboard monitoring, remote stereo cameras and fishery independent surveys. The models suggest that since 2008, the overall relative biomass has remained stable, with only a very gradual decrease over the past 12 years (Deep Sea Crustacean Figure 3). The current model estimates indicate that the overall biomass of crystal crabs is above the provisional target. There are no biomass reference points in the current WCDSCMF harvest strategy. Provisional limits have been adopted from the South Coast Crustacean Harvest Strategy (DPIRD, 2023), target = B_{42}, threshold = B_{35}, and limit = B_{20}.

The sustainability of the stock is therefore considered **adequate**.



DEEP SEA CRUSTACEAN FIGURE 3.
Annual modelled standardised catch rate (± 95% CI) of legally retainable crystal crab (kg / potlift) and associated reference points (based on the reference period 2003-2012; DoF 2020). Seasonal TACs are denoted by arrows with accompanying text (vol = voluntary TAC).



DEEP SEA CRUSTACEAN FIGURE 4.
Fishery wide relative biomass estimate for crystal crab, with ~95% confidence intervals. Provisional target (green), threshold (orange), and limit (red) based on the South Coast Offshore Crustacean Resource of Western Australia Harvest Strategy (DPIRD 2023).

BYCATCH AND PROTECTED SPECIES INTERACTION

An ecological risk assessment conducted in 2022 assessed the risk of the WCDSCMF fishing activities on bycatch and ETP species as a negligible and low risk, respectively (How et al. 2023).

Bycatch

The gear used in this fishery generates minimal bycatch. Therefore, the level of bycatch is considered to pose a **negligible** risk.

Protected Species

The pots and ropes used in deep sea crab longlines have minimal capacity to interact with protected species. There were no reported interactions of WCDSC gear with a protected species in 2024.

Low risk.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

Fishing activity associated with the WCDSCMF resource has been assessed as a **negligible** risk for habitats (How et al. 2023). However, recent MSC recertification noted a lack of detailed information on the fishery's interactions with habitat. An MSC funded project, utilising underwater camera and light systems on pots, has been initiated to address this condition. Initial results indicate that mud is the predominant habitat over which fishing gear is deployed.

Ecosystem

Fishing activity associated with the WCDSCMF resource is considered to generate an overall **medium** risk to ecosystem structure (How et al. 2023).

The habitat and ecosystem performance measures for the fishery, as identified in the Harvest Strategy (DoF, 2020), are that:

- Fishing impacts are considered to generate an acceptable level of risk to ecological processes within the ecosystem, i.e. moderate risk or lower.
- Fishing impacts on each ecological resource / asset impacts are considered to generate an acceptable level of risk, i.e. moderate risk or lower.
- The area fished is ≤ 125 (10' x 10') blocks.
- Fishing effort is ≤ 169 000 trap lifts.

All the performance measures were met.

SOCIAL AND ECONOMIC OUTCOMES

Social

The WCDSCMF is considered to have a low social amenity value (Level 1). This fishery is based on vessels that employ a skipper and 2-3 crew. The product is landed live at ports between Carnarvon and Fremantle, generating some additional economic activity and benefits. There were 3 commercial vessels operating in 2024. There is negligible recreational effort in this fishery. **Low** risk.

Economic

The GVP (gross value of production) for the fishery was approximately $6.95 million (based on the average beach price for the financial year 2023-24), with the majority of the catch sold live to domestic markets.

Moderate risk.

GOVERNANCE SYSTEM

Harvest Strategy

The West Coast Deep Sea Crustacean Harvest Strategy 2020-2025 (see DoF, 2020) is the basis for the setting of the TAC for the WCDSCMF. Standardised catch rates of crystal crabs are assessed against specified biological reference levels (Figure 3).

For 2024:

- The standardised catch rate of legal crystal crabs was above the threshold level.
- The catches of champagne and giant crab were both within their respective TAC ranges.

Annual Catch Tolerance Levels

For the 2024 season (1 January – 31 December 2022), the crystal crab (A Class Units) quota was 123.2 t. With an annual tolerance range of > 90%, and based on the catch of 121.9 t, the annual catch is **acceptable**. The quota of champagne (B Class Units) and giant crab (C Class Units) remained at 20.02 t and 0.98 t, respectively. The catch of these two species was 4.5 kg and 0.83 t, respectively. The low catch of champagne crab was related to marketability and not stock sustainability.

Compliance

The compliance program is developed using a risk assessment process. Intelligence led investigations, particularly TAC verification, are undertaken at unload inspections.

Consultation

Management meetings are held between DPIRD and licensees, in conjunction with the Industry Consultation Unit of the Western Australian Fishing Industry Council (WAFIC). These meetings provide an opportunity for DPIRD, WAFIC, and industry to discuss research outcomes and initiatives, TAC recommendations, management of the fishery, and industry issues.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Annual surveillance audits are conducted under the MSC standard, which are attended by DPIRD, licence holders and WAFIC.

In 2025, consultation was undertaken with licence holders to review and update the Harvest Strategy for the resource. It is expected that a new Harvest Strategy will be in place by the end of 2025.

Management Initiatives

Management initiatives in 2025-26 will focus on a review of the WCDSCMF Harvest Strategy aimed at incorporating biological performance indicators from the new stock assessment method. This will likely include biologically relevant refence levels and harvest control rules for the resource to assist in guiding TAC setting in the future.

EXTERNAL DRIVERS

Climate Change

West Coast Deepsea Crustacean Resource Table 1 provides a summary of the climate vulnerability risk assessment outcomes for the key target species in the WCDSCMF. All key target species are deemed to be at **high risk** from climate change.

For these deepwater species, the impact of climate change near the sea floor is poorly understood. Both the crystal and champagne crab species can move up and down the shelf to

maintain constant temperature and likely to be resilient to small increases in ocean temperatures. For the giant crab that is limited to reef structures and cannot move into deeper depths to maintain contact temperatures, this stock is likely to move into the South Coast bioregion under a warming ocean climate.

WEST COAST DEEPSEA CRUSTACEAN RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for the key target species in the WCDSCMF.

Indicator species	Sensitivity	Exposure	Climate Change risk
Crystal crab	Medium	Negative effects are possible	High
Champagne crab	Medium	Negative effects are possible	High
Giant crab	Medium	Negative effects are possible	High

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GASCOYNE DEMERSAL SCALEFISH RESOURCE STATUS REPORT 2025

E. Fisher, D. Fairclough, L. Rynvis, M. Watt



OVERVIEW

The Gascoyne Demersal Scalefish Resource (GDSR) includes over 80 demersal species inhabiting inshore (20-250 m deep) and offshore (>250 m deep) waters in the Gascoyne Coast bioregion (GCB). The GDSR is primarily targeted by commercial, charter, and recreational boat-based line fishers. Indicator species selected for monitoring and assessing the status of the inshore suite of the GDSR include the oceanic stocks of snapper and goldband snapper, while indicators for the offshore suite include greybanded grouper and ruby snapper.

The main commercial fishery targeting the GDSR, the Gascoyne Demersal Scalefish Managed Fishery (GDSMF), use mechanised handlines to target primarily snapper and goldband snapper. Other demersal species caught include tropical snappers, emperors, and groupers. Licensed charter and private recreational vessels targeting the GDSR out of Denham, Carnarvon, and around the Ningaloo-Exmouth area, catch a similar range of demersal species (Jackson et al. 2020).

The GDSR has been managed under a formal Harvest Strategy since 2017 (DPIRD 2017). Stock assessments of key indicator species are undertaken periodically to determine stock status and set the total allowable commercial catch (TACC) for snapper and other mixed demersal species, and to manage recreational fishing.

A Recovery Plan was implemented for the oceanic snapper stock in 2018 (DPIRD 2020), following a stock assessment that showed the stock was below the limit reference level (Jackson et al. 2020). Management measures introduced in 2018 to recover the stock included a substantial reduction of the snapper TACC and the introduction of an annual closure at northern Bernier Island to fishing for snapper from 1 June to 31 August to protect key spawning aggregations.

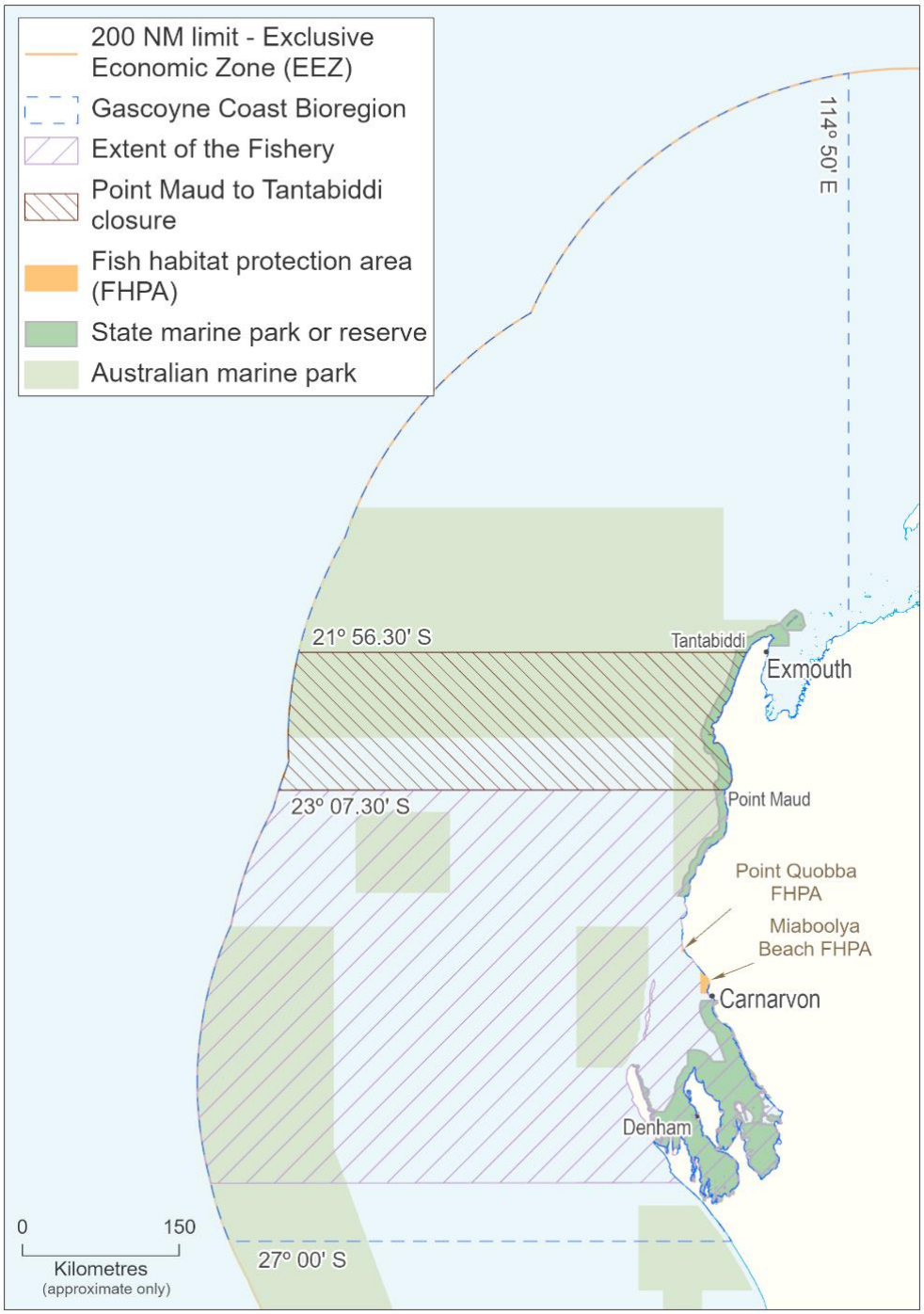
SUMMARY FEATURES

Asset (Allowable catch)	Outcome	Status
Commercial sector: <286 t in 2023-24 (Snapper 59.1 t + other demersals 227 t)	2023-24: 157 t (Snapper 44 t + other demersals 113 t)	Acceptable
Recreational sector	Recreational 2023-24 (boat only): 53 t* Charter 2023-24: 53 t**	Acceptable
EBFM		
Indicator species		
Snapper	Medium risk: $B \approx$ Threshold (2024)	Sustainable – Recovering
Goldband snapper	Low risk: $B >$ Target (2022)	Sustainable – Adequate
Ecological		
Bycatch	Negligible risk	Acceptable
Listed Species	Negligible risk	Acceptable
Habitat	Negligible risk	Acceptable
Ecosystem	Low risk	Acceptable
Economic (GVP $1-5 m)	Medium risk	Acceptable
Social (High amenity)	Medium risk	Acceptable
Governance	Medium risk	Acceptable
External Drivers – Other	Low risk	Acceptable
External Drivers – Climate change	Low risk (goldband snapper), High risk (snapper)	

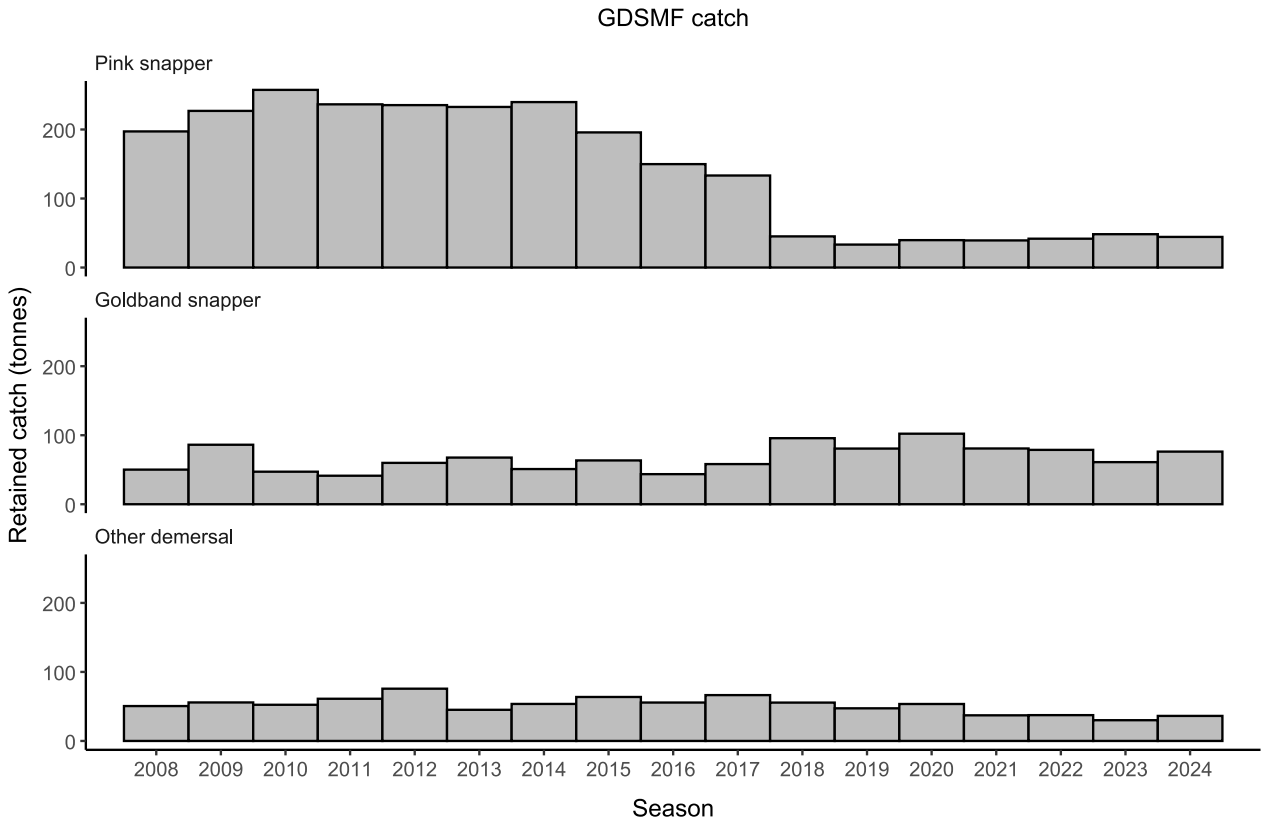
*Top 15 demersal species in oceanic waters of the GCB (excl. inner gulfs of Shark Bay), from 2023-24 statewide survey (Ryan et al. 2025) **Top 10 demersal species/groups in the GCB (comprising 48 t from oceanic waters and 5 t from inner gulfs of Shark Bay)

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Commercial retained catch (demersal)	2022-23 GDSMF: 139 t	2023-24 GDSMF: 157 t	Catch of indicator species in 2023-24: Snapper: 44 t Goldband snapper: 76 t
Commercial effort	2022-23 GDSF: 307 days (8 vessels)	2023-24 GDSF: 424 days (11 vessels)	
Charter retained catch (demersal)	2022-23 51 t	2023-24 53 t	GCB; top 10 demersal species
Charter effort	2022-23 1,607 trips (36 vessels)	2023-24 1,453 trips (32 vessels)	GCB Charter effort in 2023-24 by area: Ningaloo: 892 trips (25 vessels) Carnarvon/Shark Bay: 561 trips (14 vessels) Note some vessels operate in both areas.
Recreational retained catch (demersal)	2020-21 67 t (95% CI 46–89)	2023-24 53 t (95% CI 36–71)	GCB oceanic waters (excl. inner Shark Bay; top 15 demersal species (boat-based)
Recreational effort	2020-21 55,290 days	2023-24 37,087 days	GCB (boat-based)
Beach price	2022-23 Snapper: $11.3/kg Goldband: $10.72/kg	2023-24 Snapper: $11.16/kg Goldband: $11.43/kg	Domestic market supply and demand.
Bycatch	-	-	Limited data suggest line fishing for demersal species using baited hooks is highly selective for fishes.
Listed species interactions	2022-23 Charter (GCB): 1 Potato cod	2023-24 GDSMF: 1 Grey nurse shark	Mandatory reporting by commercial and charter fishers suggests line fishing interactions with listed species are rare.



GASCOYNE DEMERSAL SCALEFISH FIGURE 1.
Waters of Gascoyne Coast bioregion including Gascoyne Demersal Scalefish Managed Fishery, 'Point Maud to Tantabiddi Well' fishing closure, and State and Commonwealth marine parks.



GASCOYNE DEMERSAL SCALEFISH FIGURE 2.
Commercial catches of snapper, goldband snapper, and other demersal species taken by GDSMF vessels in oceanic waters of the Gascoyne Coast bioregion since 2007-08. Note catches are reported by fishing season (1 Sep – 31 Aug).

CATCH AND LANDINGS

Reviews of available catch data for the demersal suite and indicator species of the GDSR are undertaken annually in line with the Gascoyne Demersal Scalefish Resource Harvest Strategy 2017 – 2021 (Department of Fisheries 2017). Since the implementation of the oceanic snapper Recovery Plan (DPIRD 2020), this review process has considered the total removals of snapper, comprising both retained catches and estimated post-release mortality (PRM) of fish released/discarded after capture. This current review incorporates information from the commercial sector from the 2023-24 season, from charter fishing for the 2023-24 financial year, and for boat-based recreational fishing in 2023-24.

Commercial sector

Commercial catches of demersal scalefish retained by the GDSMF in 2023-24 of 157 t, comprising 44 t snapper and 113 t of other species, were well below the overall Total Allowable Commercial Catch (TACC) of 286 t in place for that season (comprising TACCs of 59 t snapper and 227 t mixed demersal species).

Total removals of snapper by the GDSMF in 2023-24 were estimated as 47 t (including 3 t PRM) and were below the 60 t recovery benchmark in place for the commercial sector for that fishing season.

Recreational sector

The boat-based recreational harvest range for the top 15 demersal species in the Gascoyne Coast excluding the inner gulfs of Shark Bay (representing 79% of the resource kept catch by numbers) was 53 t (95% CI 36–71) in 2023-24 (Ryan et al. 2025). The boat-based recreational harvest range of demersal species in the inner Shark Bay was 22 t (95% CI 11–33) in 2023-24 (Ryan et al. 2025).

Demersal scalefish catches retained by charter fishers in the GCB were 48 t (oceanic) and 5.5 t (inner Shark Bay) in 2023-24.

Total removals (including estimates of PRM) of oceanic snapper by recreational and charter fishers in 2023-24 were estimated as 11 t and 15 t, respectively, below the overall recovery benchmark for the recreational sector of 40 t (25 t recreational and 15 t charter).

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Snapper (Sustainable – Recovering)

The 2024 integrated (Level 5) model assessment of the oceanic snapper stock in the GCB (Fisher et al. 2025), which incorporated data up to 2023, indicates a steadily increasing relative female spawning biomass (B_{rel}) in recent years, accompanying marked reductions in fishing mortality (*F)*, associated with a decrease in catch to low levels) and several recent years of above-average recruitment into the fishery (2016-2018 cohorts). The point estimate of B_{rel} in 2023 was at 0.33 of the unfished level (60% CI = 0.27-0.39, corresponding to a 0.7 probability of being above the threshold level of 0.3). The estimate of *F* in 2023 was 0.07 yr^{-1}, below the target reference level of 0.09 yr^{-1} corresponding to two-thirds of the estimated natural mortality (*M*) for this stock. The risk to Gascoyne oceanic snapper is assessed as **medium** and the stock is classified as **sustainable-recovering**.

Model projections for different future catch scenarios of 75-150 t annually in 2025, 2026, and 2027 (i.e. until the next full assessment of the GDSR is due), and assuming constant average recruitment over this period, suggest that an increase in annual total removals to 150 t per year would not markedly impact on the estimated probability (>0.9) of meeting the next (2027) recovery milestone for the stock of B_{rel} being above the threshold reference level. Note that as snapper exhibits interannual variation in recruitment, the trajectory could differ.

Goldband snapper (Sustainable – Adequate)

The 2022 catch curve and equilibrium biomass analysis (Level 3) assessment of goldband snapper in the Gascoyne (Jackson et al. 2025), based on age composition data from 2018-20, estimated that the average long-term *F* of 0.07 yr^{-1} has remained below the target level of 0.11 yr^{-1} (2/3*M*) for this stock. The female B_{rel} in 2018-20 was estimated as 0.66 (95% CI = 0.59-0.72), well above the threshold reference level of 0.3 (proxy for B_{MSY}). The risk to goldband snapper in the Gascoyne is assessed as **low** and the stock is classified as **sustainable-adequate**.

BYCATCH AND LISTED SPECIES INTERACTIONS

Bycatch

Line fishing for demersal species using baited hooks is highly selective. The GDSMF catch comprises a large number of demersal species of medium to high market value, with very few species captured that are not retained. The risk to bycatch species is assessed as **negligible**.

Listed Species

As line fishing is highly selective, direct interactions with protected species by commercial, charter, and recreational fishers in the waters of the GDSMF are rare. In 2023-24, the GDSMF reported one interaction with a grey nurse shark (*Carcharias taurus*), which was released alive. The risk to protected species is assessed as **negligible**.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

Line fishing is the main method used by commercial and recreational fishers to target the GDSR. This fishing method has limited physical impact on the benthic environment. The risk to benthic habitats is assessed as **negligible**.

Ecosystem

As the commercial quota management system and recreational fishing regulations limit catches to a relatively small percentage of the total available biomass, there is limited effect on the food chain. The risk to the ecosystem is assessed as **low**.

SOCIAL AND ECONOMIC OUTCOMES

Social

The GDSR provides high social amenity through local employment in commercial fishing and fish processing, but also through recreational fishing and fishing-related tourism around Shark Bay and Ningaloo. In 2023-24, 11 active GDSMF vessels fished for a total of 424 days, typically with a crew of 2-3.

An estimated 753,000 WA residents went recreational fishing in 2023-24 (DPIRD 2024). The recreational fishing participation rate in WA (26%) is higher than the Australian average (21%) (Moore et al. 2023). The boat-based recreational fishing effort in the GCB in 2023-24 (37,087 boat days and 139,000 line fishing hours) was slightly lower than in 2020-21 (55,290 boat days and 207,000 line fishing hours; Ryan et al. 2025). In 2023-24, 32 charter vessels reported a total of 10,107 client fishing days in the GCB. The risk to the social amenity of the GDSR is assessed as **medium.**

Economic

The estimated GVP of the GDSMF was in the $1-5 million range in 2023-24**.** All the product from this fishery supplies domestic fish markets, mostly in Perth.

Recreational fishing in WA contributes over 9,000 jobs and over $1.1 billion per year to the economy and supports economic activity in many regional locations (Moore et al. 2023). A significant amount of this value is derived from boat-based fishing for demersal species in the GCB. The risk to the economic value is assessed as **medium**.

GOVERNANCE SYSTEM

Harvest Strategy

The GDSR has been managed under a formal Harvest Strategy since 2017 (DPIRD 2017). It defines the ecological, economic, and social objectives, and outlines the performance measures and reference levels used to monitor how those objectives are achieved. A Recovery Plan for the oceanic snapper stock in the GCB has been in place since 2018. This includes explicit milestones to ensure an appropriate rate of recovery for the stock.

Allowable Catch Tolerance Levels

In the 2023-24 fishing season (1 Sep – 31 Aug), GDSMF catches of snapper (44 t) and other demersal species (113 t, including 76 t goldband snapper) were below the respective TACCs of 59 t and 227 t in place at the end of this season. In 2023-24, the estimated total removals of oceanic snapper by the commercial sector were 47 t (including 3 t PRM), below the recovery benchmark of 60 t in place for this sector. The current levels of commercial catch and total removals of snapper are **acceptable**.

Total removals of snapper by boat-based recreational and charter vessels in oceanic waters of the GCB were estimated to be 11 t (including 3 t PRM) and 15 t (including 0.4 t PRM), respectively, in 2023-24 (noting ~60% of boat-based recreational snapper catches in the GCB are taken in the inner gulfs of Shark Bay). Collectively, the 26 t total removals of snapper by charter and recreational fishers in this year were below the recreational sector recovery benchmark of 40 t and thus is considered **acceptable**.

Compliance

The GDSMF is managed through a combination of area closures, gear restrictions, and the use of output controls in the form of ITQ allocations. Compliance with nomination requirements and area boundaries is effectively monitored through a satellite-based Vessel Monitoring System (VMS). DPIRD undertakes regular compliance inspections at sea and landing ports. Catch and disposal records must be lodged for snapper and other demersal scalefish separately.

Consultation

A GDSR Harvest Strategy Reference Group, comprising of representatives of the commercial, recreational and charter fisheries as well as DPIRD scientists and managers, meets annually to provide advice on strategies aimed at meeting the objectives of the GDSR Harvest Strategy and oceanic snapper Recovery Plan. Management meetings between DPIRD and GDSMF licensees are coordinated by the Industry Consultation Unit of the Western Australian Fishing Industry Council (WAFIC), while recreational consultation is facilitated by Recfishwest under a Service Level Agreement. Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

In 2024, the GDSMF was accredited a Wildlife Trade Operation (WTO) for export approval under the Australian Government's *Environmental Protection and Biodiversity Conservation Act 1999.* As the GDSR is managed under a formal Harvest Strategy and the 2024 oceanic snapper assessment shows that the stock is recovering at an acceptable rate (meeting milestones of the Recovery Plan), the Governance risk is assessed as **medium.**

EXTERNAL DRIVERS

Climate Change

Gascoyne Demersal Scalefish Resource Table 1 provides a summary of the climate vulnerability risk assessment outcomes for indicator species of the GDSR. Oceanic snapper is deemed at **high** risk and goldband snapper at **low** risk from climate change.

Snapper is at its northern range in the GCB where warmer ocean temperatures, MHW events could impact spawning success and recruitment. Goldband snapper that inhabit deeper (80-150 m) waters may be less likely to be impacted by increasing SST and MHW events. In fact, under a warmer climate the Gascoyne stock may experience a lengthened spawning period that could lead to increased productivity and further shift southwards in distribution.

GASCOYNE DEMERSAL SCALEFISH RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for the indicator species in the GDSR.

Indicator species	Sensitivity	Exposure	Climate Change risk
Snapper (oceanic)	Medium	Demonstrable negative effects are evident	High
Goldband snapper	Low	Remote or potentially positive effect	Low

Other

Under the Offshore Constitutional Settlement, commercial vessels licensed by the Australian Government may operate in waters off the

Gascoyne coast, outside the 200 m isobath, as part of the Western Deepwater Trawl Fishery. This fishery primarily targets deepwater bugs, with very low catches of ruby snapper reported in recent years (Keller et al. 2024). The risk of external factors to the GDSR is assessed as **low**.

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GASCOYNE INNER SHARK BAY SCALEFISH RESOURCE STATUS REPORT 2025

G.Jackson and D.Nolan



OVERVIEW

The Gascoyne Inner Shark Bay Scalefish Resource comprises 20–30 scalefish species taken by commercial and recreational fishers in the waters of the Eastern Gulf, Denham Sound, and Freycinet Estuary in inner Shark Bay.

The commercial Shark Bay Beach Seine and Mesh Net Fishery (SBBSMNF) uses mainly beach seine netting to target four species/groups: whiting (mostly yellowfin whiting, *Sillago schomburgkii*), sea mullet (*Mugil cephalus*), tailor (*Pomatomus saltatrix*), and western yellowfin bream (*Acanthopagrus morrisoni*). A small number of commercial net fishing licenses operate as the Carnarvon Open Access Nearshore Net Fishery to the north and south of Carnarvon using beach seine nets to target sea mullet.

Most recreational fishing in Shark Bay is boat-based using hook and line to catch pink snapper (*Chrysophrys auratus*, three separate stocks), grass emperor (*Lethrinus laticaudis*), whiting (*Sillago spp.*), mackerel (*Scomberomorus* spp., *Grammatorcynus bicarinatus*), blackspot tuskfish (*Choerodon schoenleinii*), goldspotted rockcod (*Epinephelus coioides*), western butterfish (*Pentapodus vitta*), and tailor (*Pomatomus saltatrix*). A limited number of licensed charter vessels operate out of Denham and Monkey Mia.

SUMMARY FEATURES

Asset (Allowable catch)	Outcome	Status
Commercial fishery (SBBSMNF, 235–335 t)	Total Catch 2024: 125 t	Acceptable
Recreational fishery (Pink snapper, 26 t)	Charter 2024: <2 t Recreational 2023-24 (boat only) – Pink snapper 3–18 t (95% CI)	Acceptable in Eastern Gulf, Denham Sound and Freycinet Estuary
EBFM		
Indicator species		
Commercial fishery - Whiting	Medium risk: Biomass above target (2023)	Adequate
Commercial fishery - Yellowfin Bream	Medium risk: Biomass above target (2023)	Adequate
Recreational fishery - Pink snapper (3 stocks)	Low risk: Biomass of all 3 stocks above target (2015)	Adequate
Ecological		
Bycatch	Low risk	Acceptable
Listed Species	Negligible risk	Acceptable
Habitat	Negligible risk	Acceptable
Ecosystem	Low risk	Acceptable
Economic (GVP $1–5 m)	Moderate risk	Acceptable
Social (High amenity)	Moderate risk	Acceptable
Governance	Moderate risk	Acceptable
External Drivers – Other	Low risk	Acceptable
External Drivers – Climate change	Low risk (Yellowfin whiting, Yellowfin bream), High risk (Pink snapper - inner gulf stocks, Sea mullet, Tailor)	

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Commercial catch	2023 Total scalefish: 131 t SBBSMNF: 131 t	2024 Total scalefish: 125 t SBBSMNF: 125 t	Catches reported for calendar year.
Commercial catch (target species)	2023 Whiting: 80 t Sea Mullet: 25 t Tailor: 8 t Western Yellowfin Bream: 13 t Pink snapper: 0.5 t	2024 Whiting: 75 t Sea Mullet: 30 t Tailor: 3 t Western Yellowfin Bream: 14 t Pink snapper: 0.3 t	Catches reported for calendar year.
Commercial effort	2023 SBBSMNF: 527 days (4 vessels)	2024 SBBSMNF: 405 days (6 vessels)	Effort reported for calendar year.
Charter catch (Pink snapper only)	2023 EG: 0.5 t DS: 2.8 t FE: 1.1 t	2024 EG: 0.1 t DS: 0.6 t FE: 0.7 t	Eastern Gulf (EG), Denham Sound (DS), Freycinet Estuary (FE). Catches reported for calendar year.
Recreational catch (Pink snapper only)	2018-19 EG: 2.1 t (95% CI 0.8–3.4) DS: 4.6 t (95% CI 3.4–5.9) FE: 11.5 t (95% CI 4.318.7)	2023-24 3–18 t (95% CI)	Recreational harvest of snapper is combined across the 3 stocks, boat-based fishing only (Ryan et al. 2025).
Recreational effort	2018-19 EG: 4,302 boat trips DS: 3,368 boat trips FE: 926 boat trips	2023-24 6,812–14,350 boat days (95% CI)	Recreational fishing effort is combined across the 3 stocks, boat-based fishing only (Ryan et al. 2025).
Beach price	2023 Whiting: $5.8/kg Western yellowfin bream: $6.9 Tailor: $5.8	2024 Whiting: $5.8/kg Western yellowfin bream: $6.9 Tailor: $5.8	Domestic market supply and demand.
Bycatch	-	-	SBBSMNF - limited data available.
Listed species interactions	-	-	SBBSMNF - interactions with listed species are relatively rare.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Pink Snapper Inner Gulf Stocks (Sustainable-Adequate)

The 3 separate biological stocks found in inner Shark Bay (i.e. Eastern Gulf, Denham Sound, Freycinet Estuary) are predominantly fished by the recreational and charter sectors. Commercial catches of pink snapper are relatively small (<1–2 t) and limited to bycatch taken by the SBBSMNF.

Recreational fishing in inner Shark Bay steadily increased from the 1960s through to the 1990s with all three snapper stocks becoming over-exploited by the mid to late 1990s. Reductions in catch levels resulted from additional management arrangements progressively introduced from 1998 onwards. This included notional Total Allowable Recreational Catches (TARCs) implemented in each area in 2003. See Annual Catch/Catch Rate Tolerance Levels for catches in 2024.

Stock assessments (2015) that incorporated age composition data up to 2013 indicated that the spawning biomass of all three stocks was estimated to be above the target level (40% unfished level) in 2015. More recently, Catch-MSY analyses (2020) indicated that all three stocks have continued to build under existing management arrangements and that stocks are well above target levels (Rogers et al. 2023). On the basis of the evidence available, these pink snapper stocks are considered to be **sustainable-adequate.**



GASCOYNE INNER SHARK BAY FIGURE 1.
Commercial and recreational fishing areas of inner Shark Bay.

Whiting (Sustainable-Adequate)

The commercial catch of whiting taken by the SBBSMNF is mostly yellowfin whiting (70–90%) combined with smaller quantities of goldenline whiting (*S. analis*), western trumpeter whiting (*S. burrus*), and western school whiting (*S. vittata*). Yellowfin whiting in Shark Bay are regarded as a 'northern' stock that is managed separately to a 'southern' stock found in the nearshore waters of the lower south-west (see West Coast Nearshore and Estuarine Scalefish Resource status report).

In 2024, the commercial catch of all whiting species taken by the SBBSMNF decreased slightly to 75 t but remained below the target catch range (93–127 t). However, catch per unit effort (CPUE) increased substantially to 184 kg/boat day, well above the threshold catch rate (75 kg/boat day). The commercial catch of whiting in inner Shark Bay was relatively stable at ~90–120 t for a period of nearly 30 years from 1990 onwards (Inner Shark Bay Figure 2) but declined in recent years due to the large decline in commercial fishing effort (see Annual Catch/Effort Tolerance Levels). Whiting (mostly yellowfin) are the most retained nearshore species group taken by boat based recreational fishers in inner Shark Bay (Ryan et al. 2025).

A 2023 assessment using a state space biomass dynamics model indicated that yellowfin whiting biomass was above B_{MSY}, and fishing mortality is below F_{MSY} (Ferguson et al. 2023). From this assessment, the risk level for yellowfin whiting was determined as Medium.

Based on the evidence available, whiting stocks in inner Shark Bay are classified as **sustainable-adequate**.

Sea Mullet (Sustainable-Adequate)

In 2024, the commercial catch of sea mullet taken by the SBBSMNF increased slightly to 30 t but remained well below the target catch range (77–144 t). This maintains the lower level of catches observed since 2000, down from the higher levels reported from 1990–2010 that typically ranged from 100–150 t. The CPUE in 2024 increased to 73 kg/boat day, above the threshold catch rate

(62 kg/boat day). While the low landings of sea mullet in recent years have partially reflected higher levels of commercial fishing effort directed at the more valuable whiting species, there may be some longer-term effect of changes in environmental conditions in the Shark Bay region related to climate change that are impacting on sea mullet abundance.

Sea mullet taken in fisheries in the Gascoyne and West Coast bioregions are assumed to be from a single stock. The sea mullet catch in inner Shark Bay represents approximately a quarter of the total commercial catch taken in WA, with the majority taken in the West Coast bioregion (see West Coast Nearshore and Estuarine Scalefish Resource status report) where a similar decline in catches since the 1990s has also been observed.

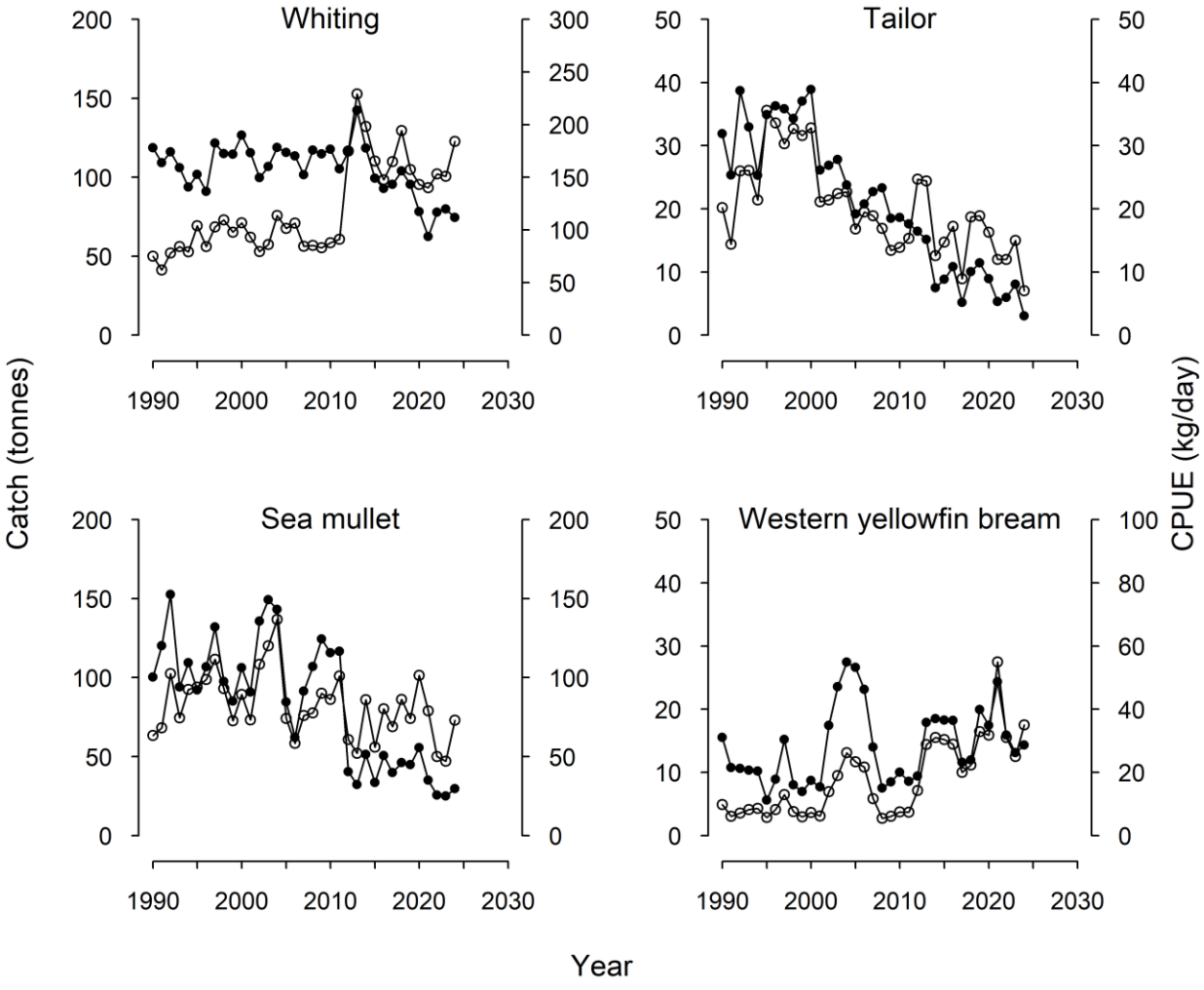
Based on the evidence available, sea mullet in inner Shark Bay is classified as **sustainable-adequate**.

Tailor (Sustainable-Adequate)

In 2024, the commercial catch of tailor taken by the SBBSMNF decreased to 3 t remaining well below the target catch range (25–40 t). This maintains the declining trend in tailor catches observed since 2000. The CPUE in 2024 also declined substantially 8 kg/boat day (15 kg/boat day in 2023) and remained well below the threshold level (21 kg/boat day). While the low landings of tailor that have been a feature of the fishery in recent years are partly attributed to local processing restrictions, as with sea mullet, there may also be some longer-term effect of changing environmental conditions on tailor abundance in the Shark Bay region.

The tailor catch in inner Shark Bay represents approximately half of the total commercial catch taken in WA, with the remainder taken in the West Coast bioregion (see West Coast Nearshore and Estuarine Scalefish Resource status report).

Based on the evidence available, the tailor stock is classified as **sustainable-adequate.**



GASCOYNE INNER SHARK BAY FIGURE 2.
Commercial catches (●) and CPUE (○) of whiting, tailor, sea mullet and western yellowfin bream taken by SBBSMNF 1990–2024.

Western Yellowfin Bream (Sustainable-Adequate)

In 2024, the commercial catch of western yellowfin bream taken by the SBBSMNF increased slightly to 14 t, remaining within the target catch range (7–15 t). The CPUE increased to 35 kg/boat day, remaining well above the threshold catch rate (5 kg/boat day). Large variations in catches of yellowfin bream are a feature of the Shark Bay fishery, and are attributed to highly variable recruitment, which is typical of this species and is mostly environmentally driven. The increase in both catches and CPUE reflect another strong year class moving through the fishery as was previously observed in 2002–2007, 2013–2016, and more recently, since 2019.

A recent assessment (2023) that used state space biomass dynamics models indicated that western yellowfin bream has recovered from early historical overfishing and current biomass was above B_{MSY}, and fishing mortality had been below F_{MSY} since the early 1960s (Jackson and Evans-Powell 2023). From this assessment, the risk level for western yellowfin bream was determined as Medium.

Based on the evidence available, western yellowfin bream in inner Shark Bay is classified as **sustainable-adequate.**

BYCATCH AND PROTECTED SPECIES INTERACTIONS

An ecological risk assessment conducted in 2024 assessed the risk of SBBSMNF activities on bycatch and listed species as a low and negligible risk, respectively (Smith et al. 2025).

Bycatch

Bycatch is minimal in the SBBSMNF because netting operations selectively target specific schools of fish seasonally and therefore the level of bycatch is considered a **low** risk.

Protected species

As nets are actively set and hauled, if any listed species such as dugongs, dolphins, or marine turtles are caught (rare events), they are immediately released, therefore the level of interactions with protected species is considered a **negligible** risk.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

Seine netting occurs over shallow sand banks and other naturally dynamic nearshore environments. These fishing activities in association with the low frequency of fishing in any one location is considered to represent a **negligible** risk**.**

Ecosystem

Food chain effects are considered to be low due to the low level of fishing effort in commercial net fishing operations. The juvenile components of the stock of these key species are likely to be subject to large, mostly environmentally driven fluctuations in abundance even in the absence of fishing, resulting in significant variability in annual recruitment strength. The fishery impacts overall on the ecosystem are considered to represent a **low** risk.

SOCIAL AND ECONOMIC OUTCOMES

Social

In 2024, 6 vessels operated in the SBBSMNF, employing around 12–14 fishers. Commercial fishing and associated fish processing are still important sources of employment and income in Denham.

An estimated 753,000 WA residents went recreational fishing in 2023-24 (DPIRD 2024). The recreational fishing participation rate in WA (26%) is higher than the Australian average (21%) (Moore et al. 2023). Shark Bay is a very popular recreational fishing destination especially during the winter months and school holidays. The annual boat-based recreational fishing effort in inner Shark Bay in 2023-24 was 10,581 boat days (95% CI 6,812–4,350) (Ryan et al. 2025), which is within historical levels for the 3 stocks combined.

The Inner Shark Bay Scalefish Resource therefore provides a high social amenity and is considered to represent a **moderate** risk**.**

Economic

The estimated GVP of the SBBSMNF in 2024 was in the range $1–5 million that represents a **moderate** risk. Product from this fishery supplies domestic fish markets (Perth and Sydney).

Recreational fishing in WA contributes over 9,000 jobs and over $1.1 billion per year to the economy and supports economic activity in many regional locations (Moore et al. 2023). A significant amount of this value is derived from boat and shore-based fishing in the inner gulfs of Shark Bay.

GOVERNANCE SYSTEM

Harvest Strategy

The harvesting strategy for the SBBSMNF is based on a *constant exploitation approach* (where the catch varies in proportion to variations in stock abundance). The SBBSMNF is managed through input controls in the form of limited entry, gear

restrictions (e.g. vessel size, net length, and mesh size), and permanently closed waters.

The recreational and charter fishery in Shark Bay is managed using a combination of output controls including daily bag, possession, size, and gear limits. Recreational fishers operating from a boat are required to hold a current Recreational Fishing from Boat Licence (RFBL), while net fishers require a Recreational Net Fishing Licence. Pink snapper stocks are managed to notional maximum acceptable catch levels (TACC and TARC, set in 2003): Eastern Gulf (11.25 t recreational; 3.75 t commercial), Denham Sound (11.25 t recreational; 3.75 t commercial), and Freycinet Estuary (3.75 t recreational; 1.25 t commercial).

Annual Catch Tolerance Levels

Commercial:

Total fishing effort in the SBBSMNF was 405 boat days in 2024; effort was 23% lower than in 2023, representing the lowest year on record and was due to two of the most experienced skippers fishing substantially less for a variety of reasons. While the total commercial catch in 2024 at 125 t was again well below the target catch range (235–335 tonnes), given the historically low levels of fishing effort, the commercial catch level can be considered **acceptable**.

In 2024, the commercial catch of pink snapper taken by the SBBSMNF was <0.3 t, well within the notional TACC (9 t - all 3 areas combined).

Recreational:

Recreational (includes charter) catch tolerance levels are currently in place for pink snapper only.

The boat-based recreational harvest range for pink snapper in the inner gulfs of Shark Bay was steady at 11 t (95% CI 3–18) in 2023-24 compared with 8 t (95% CI 3–13) in 2020-21, 16 t (95% CI 5–27) in 2017-18, 24 t (95% CI 11–38) in 2015-16, 13 t (95% CI 7–18) in 2013-14 and 13 t (95% CI 6–20) in 2011-12 (Ryan et al. 2025). In 2024, a total of <2 t pink snapper was reported by charter vessels in inner Shark Bay.

Recreational catches of snapper in the Eastern Gulf, Denham Sound and Freycinet Estuary were assumed to be within the respective notional TARCs and are considered **acceptable**.

Compliance

DPIRD undertakes regular compliance inspections at-sea and on land.

Consultation

DPIRD undertakes consultation directly with licensees on operational issues. Consultation on recreational fishing regulations or relevant commercial management changes is undertaken through the peak bodies Recfishwest and the Western Australian Fishing Industry Council (WAFIC) respectively. Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

A formal review of net fishing management arrangements in Shark Bay is underway. The statutory consultation with affected stakeholders commenced in 2024 and has continued in 2025. This review aims to assess and potentially revise current policies governing net fishing practices to ensure ongoing sustainability and alignment with environmental and regulatory objectives.

A formal harvest strategy for the nearshore scalefish resource in inner Shark Bay, which would include the main species targeted by the SBBSMNF and the Carnarvon Open Access Nearshore Net Fishery (but would exclude demersal scalefish species such as pink snapper) remains to be developed.

EXTERNAL DRIVERS

Environment

The Shark Bay ecosystem has been assessed as being at extreme risk due to the effects of climate change (Shaw and Sutton 2023). Extreme but occasional events including cyclones, riverine floods (Gascoyne and Wooramel Rivers in 2010-2011, and more recently in 2018), and marine heatwaves (summers of 2010-11 and 2024-25) had significant impacts on marine habitats (e.g. seagrasses; Arias-Ortiz et al. 2018, Strydom et al. 2020) and important invertebrate species (e.g. blue crabs and scallops) (Pearce et al. 2011, Caputi et al. 2014). The impact of these events on key scalefish species in Inner Shark Bay is unknown.

Climate Change

Gascoyne Inner Shark Bay Scalefish Resource Table 1 provides a summary of the climate vulnerability risk assessment outcomes for the key target species in the SBBSMNF. Both yellowfin whiting and yellowfin bream were deemed to be at **low** risk while sea mullet, tailor and all three pink snapper stocks were deemed at **high** risk from climate change.

Pink snapper, sea mullet and tailor stocks inside Shark Bay are close to their northern distributional limit. There have been marked declines in commercial catches of sea mullet and tailor since 2000s which may in part be due to the warming ocean conditions and marine heatwave events inside Shark Bay. In contrast, both yellowfin whiting and yellowfin bream stocks have shown an increase in catches since the 2010s which suggests that the warmer climate may be favouring increased recruitment and survival of these species.

GASCOYNE INNER SHARK BAY SCALEFISH RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for the key target species in the SBBSMNF.

Indicator species	Sensitivity	Exposure	Climate Change risk
Yellowfin whiting	Low	Negative effects are unlikely	Low
Yellowfin bream	Medium	Remote or potentially positive effect	Low
Tailor	Medium	Negative effects are possible	High
Sea mullet	Medium	Negative effects are possible	High
Pink snapper – Denham Sound	Medium	Negative effects are possible	High
Pink snapper – Eastern Gulf	Medium	Negative effects are possible	High
Pink snapper - Freycinet	Medium	Negative effects are possible	High

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NORTH COAST BIOREGION



NORTH COAST BIOREGION

ABOUT THE BIOREGION

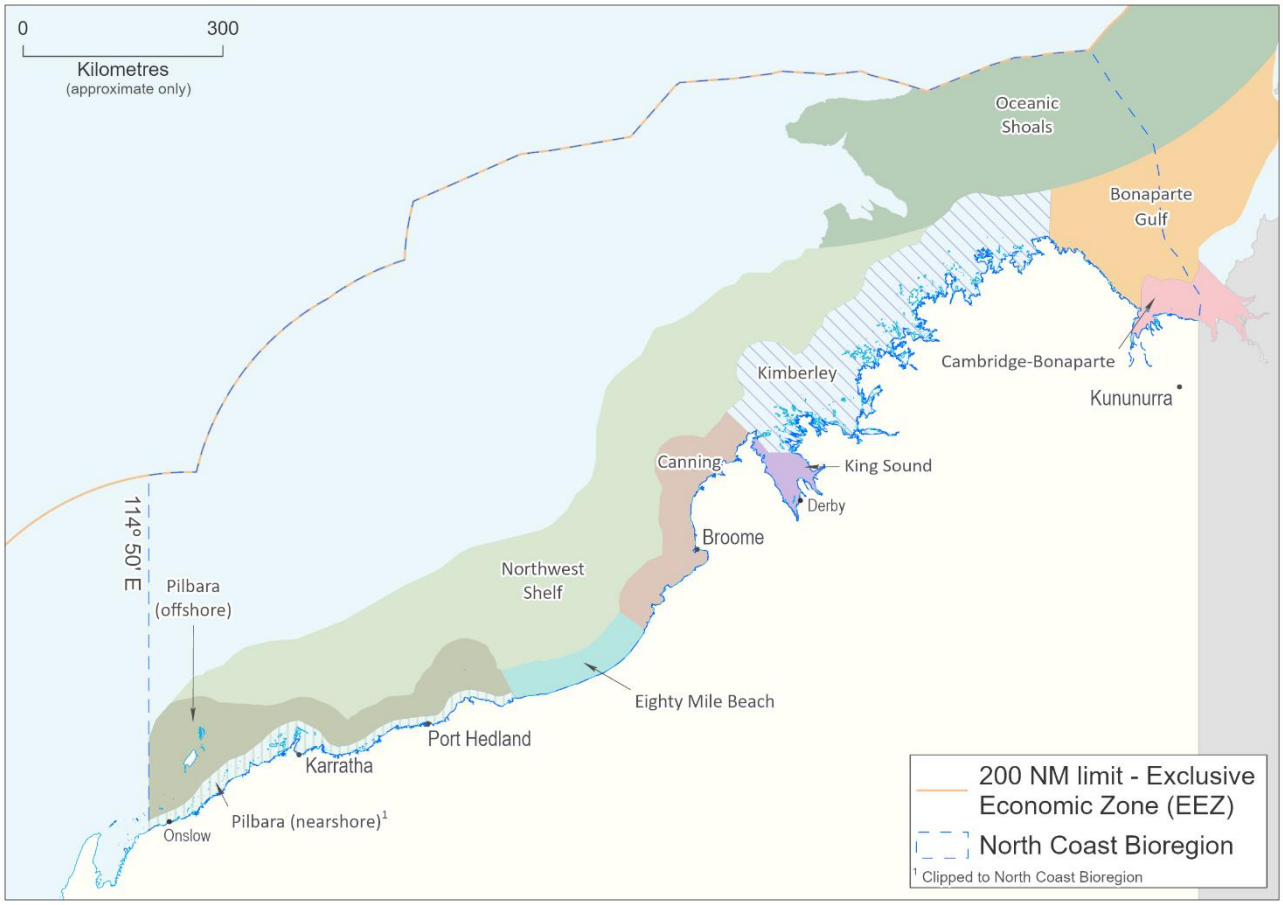
The North Coast bioregion (NCB) extends from Onslow to the WA/NT border. The oceanography of this bioregion (North Coast Bioregion Overview Figure 1) includes waters of Pacific Ocean origin that enter through the Indonesian Archipelago bringing warm, low salinity waters polewards via the Indonesian Throughflow and Holloway Currents, which flow seasonally and interact with Indian Ocean waters. The Integrated Marine and Coastal Regionalisation for Australia (IMCRA V 4.0) scheme divides the NCB into 10 meso-scale regions: Pilbara inshore, Pilbara offshore, North West Shelf, Eighty Mile Beach, Canning, King Sound, Oceanic Shoals, and Kimberley (North Coast Bioregion Overview Figure 1).

Ocean temperatures range between 22°C and 33°C, with localised higher temperatures in coastal waters, particularly along the Pilbara coastline. Fish stocks in the NCB are entirely tropical, with most having an Indo-Pacific distribution extending eastward through Indonesia to the Indian subcontinent and Arabian Gulf regions.

Coastal waters are generally low energy in terms of wave action but are heavily influenced by macro-tides, and are seasonally influenced by intense tropical cyclones, storm surges, and associated rainfall run-off. These cyclone events generate the bulk of the rainfall, although the Kimberley section of the coastline receives monsoonal rainfall over summer.

Significant river run-off and associated localised coastal productivity is associated with cyclone events, with run-off ceasing during winter. Despite localised areas of high productivity, the region is generally oligotrophic and large areas of the coastline receive no riverine input. The entire NCB is subject to very high evaporation rates (3 metres per year), although the Pilbara coastline is more arid than the Kimberley.

The macro-tidal regime is a result of the wide continental shelf and the convergence of ocean currents. Spring tides range from greater than 11 metres along the Kimberley section of the coast to more than 2 metres in the West Pilbara.



NORTH COAST BIOREGION OVERVIEW FIGURE 1
Map showing the North Coast bioregion and IMCRA (V 4.0) meso-scale regions: Pilbara nearshore, Pilbara offshore, North West Shelf, Eighty Mile Beach, Canning, King Sound, Oceanic Shoals, and Kimberley.

As a result of these factors, the generally tropical low-nutrient offshore waters, in the few small locations with large adjacent rivers, can be significantly influenced by rainfall run-off and tidal mixing to generate varying water quality in different sections of the NCB. Along the Kimberley coastline, waters are turbid and in areas locally productive, while the Pilbara Coast with its lower run-off and lesser tidal influence has clearer, low productivity waters more typical of the tropics.

The geography of the various sections of the coastline also differs. The Kimberley Coast is complex, with bays and estuaries backed by a hinterland of high relief. Tidal mudflats and soft sediments with fringing mangroves are typical of this area. The eastern Pilbara Coast is more exposed than the Kimberley, with few islands and extensive intertidal sand flats. Softer sediments and mangroves occur around the river entrances. The western Pilbara coastline is characterised by a series of significant but low-relief islands including the Dampier Archipelago, Barrow Island and the Montebello Islands. Nearshore coastal waters include rocky and coral reef systems, creating significant areas of protected waters. West Pilbara shorelines also include areas of soft sediment and mangrove communities.

The potential threats and risks to IMCRA ecosystems are often similar. For simplicity, risk ratings were allocated by grouping the ecosystems into two broad groups: estuarine or marine. However, if a particular ecosystem is unique and/or is exposed to different or significant threats, risks were allocated to these ecosystems separately.

SUMMARY OF ACTIVITIES POTENTIALLY IMPACTING THE BIOREGION

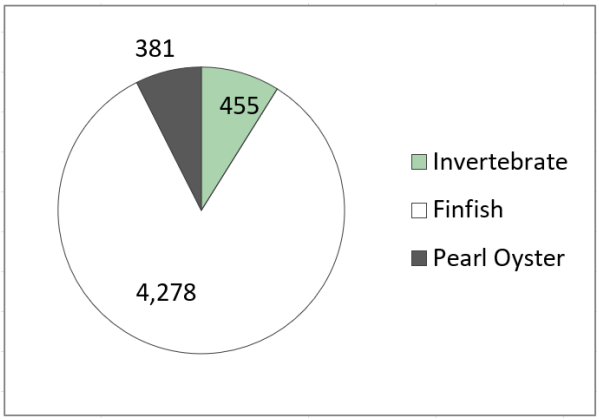
Commercial Fishing

There are a diverse range of resources within the NCB (e.g. Pearl Oyster; Northern Demersal Scalefish; Northern Estuarine, Nearshore and Embayment Scalefish and Invertebrates; Hand Collection; Northern Invertebrates) that support a wide range of State-managed commercial fisheries. These fisheries target a variety of species including finfish, crustaceans, molluscs, and echinoderms (North Coast Bioregion Overview Figure 2). The principal commercial fisheries in the NCB focus on tropical finfish, particularly the high-value snappers, cods, and emperors that are taken by the Pilbara trap, line and trawl fisheries, and the Northern Demersal Scalefish Fishery (trap and line). The typical catch is up to 3,000-4,000 t annually, making these fisheries the most valuable finfish sector in WA, with an estimated annual value of $10-20 million. A number of other finfish fisheries operate in the bioregion, including near-shore gillnetting for barramundi and threadfin (the Kimberley Gillnet and Barramundi Managed Fishery), and surface trolling for Spanish mackerel (the Mackerel Managed Fishery).

Another significant commercial fishery in this bioregion is based on the collection of pearl oysters (*Pinctada maxima*) for use in the aquaculture production of pearls. These are collected from fishing grounds primarily off Eighty Mile Beach, with smaller catches being taken around the Lacepede Islands (north of Broome). The Australia silverlip pearl oyster fishery was successfully recertified with MSC in 2023.

The NCB also has a number of small, limited-entry trawl fisheries for prawns, producing about 200-500 t annually. These fisheries include the Onslow, Nickol Bay, Broome, and Kimberley Prawn Managed Fisheries (collectively referred to as the North Coast Prawn Managed Fisheries). Two small trap-based crab fisheries also exist in the NCB, targeting blue swimmer crabs in the Pilbara (the Pilbara Developing Crab Fishery), and mud crabs in the Kimberley (the Kimberley Developing Mud Crab Fishery). Sea cucumbers (also known as bêche-de-mer or trepang) are collected by hand by divers and waders throughout the Kimberley region as part of the Bêche-de-Mer Fishery. Catches are mainly comprise two species, sandfish (*Holothuria scabra*) and redfish (*Actinopyga echinites*). The WA sea cucumber fishery recertified with MSC in 2025. The Trochus Fishery is a small fishery based on the collection of a single target species, *Tectus niloticus*, from King Sound and the Buccaneer Archipelago. This fishery is operated by Bardi Jawi and Mayala Traditional Owners, who have traditionally collected trochus in this area.

A traditional artisanal fishery targeting sea cucumbers also exists in an area south of Roti Island, encompassing Scott Reef, Browse Island, Cartier Island, and Ashmore Reef known as the MOU box. The MOU Box within the Australian Exclusive Economic Zone was established as part of a bilateral agreement between the governments of Australia and Indonesia. The MOU allows Indonesian fishers to continue fishing using traditional methods within Australian waters of the MOU Box under an agreement formalised in 1974.



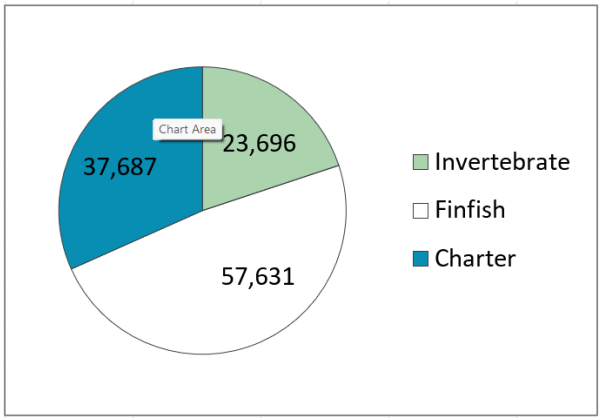
NORTH COAST BIOREGION OVERVIEW FIGURE 2
Contribution of finfish and invertebrates to the total commercial wild fishery catch originating from the North Coast bioregion. Numbers represent total catch in tonnes.

Recreational Fishing

Recreational fishing in the NCB typically has a distinct seasonal peak in winter when the population is increased by significant numbers of intra and inter-state tourists travelling through the area visiting the Onslow, Dampier Archipelago, and Broome sections of the coastline. This adds to the increased recreational fishing effort resulting from people employed in the operation of major developments in this region. Owing to the high tidal range, much of the angling activity is boat-based, with beach fishing limited to periods of flood tides and high water. The numerous creek systems, mangroves, rivers, and beaches provide shore and small boat fishing for a variety of finfish species including barramundi, tropical emperors, mangrove jack, trevallies, sooty grunter, threadfin, cods, catfish, and invertebrate species including blue swimmer crabs, mud crabs, and squid (North Coast Bioregion Overview Figure 3). Offshore islands, coral reef systems, and continental shelf waters provide recreational fishing opportunities for species including tropical snappers, cods, coral and coronation trout, sharks, trevally, tuskfish, tunas, mackerels, and billfish.

Vessel retrievals from key boat ramps have been monitored using remote cameras for previous state-wide surveys[1]. The typical seasonal pattern of vessel retrievals at Broome was not observed during the early stages of COVID-19 restrictions from March to August 2020[2]. Recent annual vessel retrievals are generally consistent with pre-pandemic patterns[3].

OBJ



NORTH COAST BIOREGION OVERVIEW FIGURE 3
Recreational catches (by number) in the North Coast bioregion. Finfish and invertebrate catches were as assessed in the statewide survey of boat-based recreational fishing in 2023-24. Charter boat catch is for the same period. Estimates of shore based recreational catch are unavailable.

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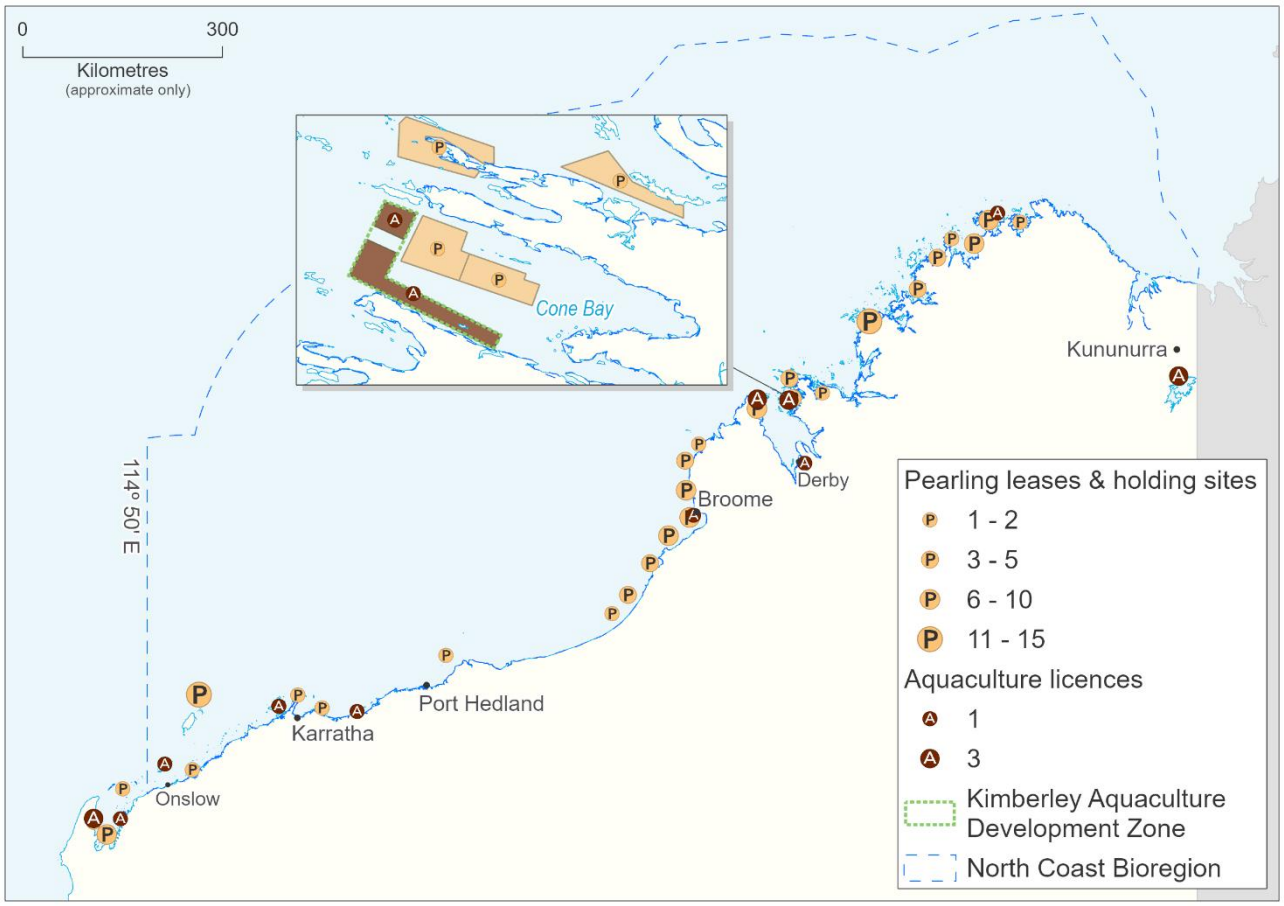
Aquaculture

Aquaculture in the NCB is dominated by the production of pearls from the oyster species *Pinctada maxima*. An overview of aquaculture activities in the NCB is detailed in North Coast Bioregion Overview Figure 4. A large number of pearl oysters for seeding is obtained from wild stocks and supplemented by hatchery-produced oysters, with major hatcheries operating at Broome and the Dampier Peninsula. Pearl farm sites are located mainly along the Kimberley coast, particularly in the Buccaneer Archipelago, Roebuck Bay, and at the Montebello Islands.



NORTH COAST BIOREGION OVERVIEW FIGURE 4
Overview of aquaculture activity in the North Coast bioregion, detailing locations of licensed finfish aquaculture facilities (A), and pearling leases (P). Also indicated is the Kimberley Aquaculture Development Zone.

Finfish aquaculture in the Kimberley region is dominated by barramundi farming within the Kimberley Aquaculture Development Zone, which was declared in August 2014. Located about 200 kilometres north-east of Broome, this zone encompasses almost 2,000 hectares of coastal waters within Cone Bay. The zone was declared after the completion of a strategic environmental study, which demonstrated the zone would be capable of producing 20,000 tonnes of finfish annually without significant environmental impact. Barramundi Group, already established within the zone, has been granted an aquaculture licence to grow up to 15,000 tonnes of barramundi and other marine finfish per year on a 1,344-hectare site. A second aquaculture licence has been granted to Aarli Mayi Aquaculture Project Pty Ltd, which is authorised to grow 5,000 tonnes per annum.

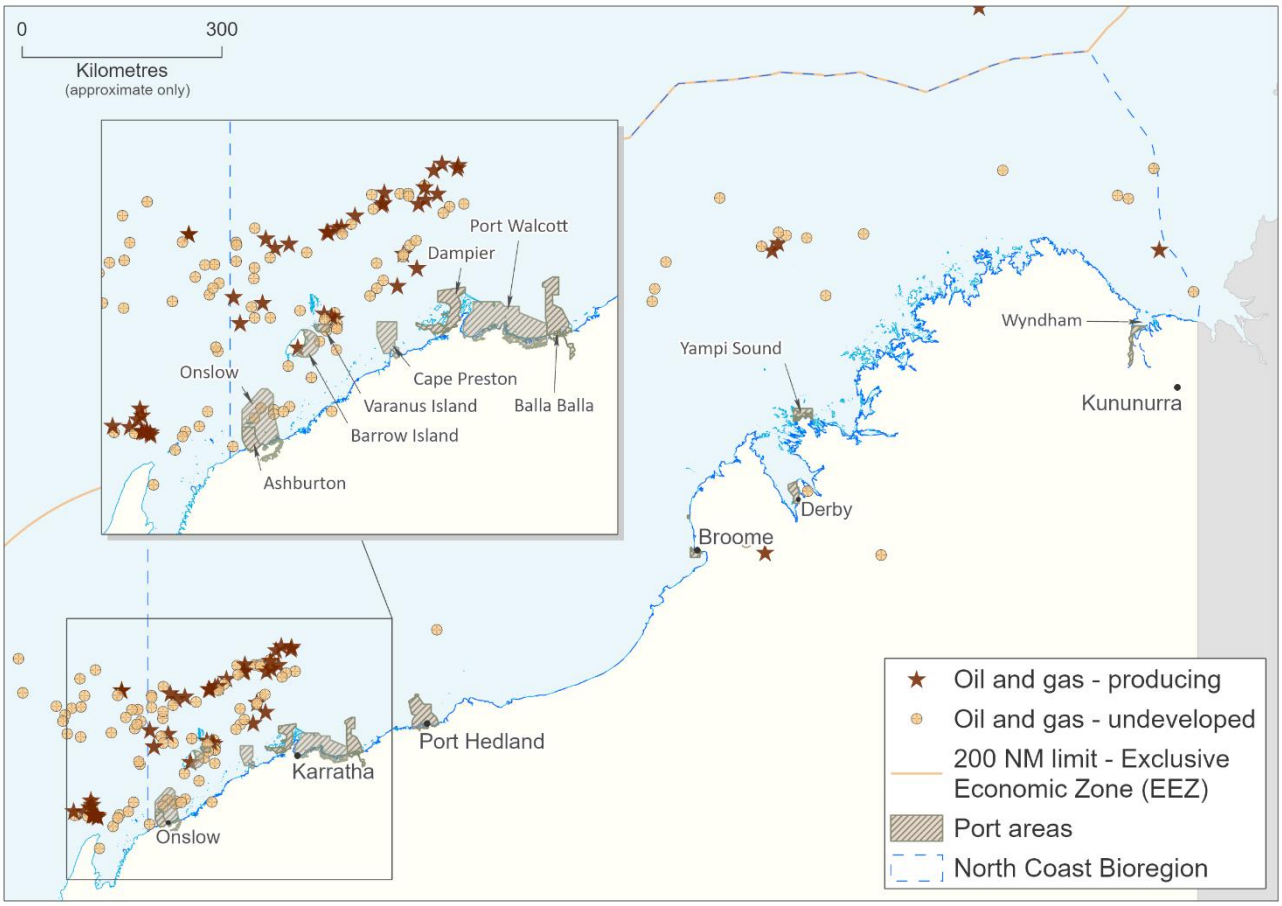
Aquaculture development is supported by the DPIRD's Broome Tropical Aquaculture Park (BTAP), which houses a commercial pearl oyster hatchery and the North Regional TAFE aquaculture training facility.

An indigenous project at One Arm Point operates a marine hatchery that focuses on a variety of ornamental and edible marine species.

Tourism

The marine tourism industry has experienced significant growth within the NCB, particularly along the Kimberley coast in recent decades. As coastal access is limited, tourists generally access the coast by boat from major population centres, such as Broome and Wyndham. Activities include charter fishing, diving, snorkelling, whale, turtle and dolphin watching, and sightseeing cruises.

Sites of greatest interest to tourists include places to fish, areas for sightseeing and secluded locations for general relaxation. Luxury cruises take tourists along the coastline and increasingly out to isolated coral atolls for fishing and diving. Primary dive locations include the Rowley Shoals, Scott Reef, Seringapatam Reef, Ashmore Reef, and Cartier Island.



NORTH COAST BIOREGION OVERVIEW FIGURE 5
North Coast offshore oil and gas production sites and major ports.

Oil and Gas Activity

Offshore oil and gas is a large and growing industry in the NCB. Within the bioregion, the Northern Carnarvon, Browse and Bonaparte Basins hold large quantities of gas, and multiple projects are in various stages of development, production and exploration (North Coast Bioregion Overview Figure 5). The upcoming decommissioning of older facilities is leading to proposed projects on the value of this infrastructure to commercial and recreational fisheries. The main disturbances associated with oil and gas exploration and production include noise pollution from seismic surveys, potential for fish movement / impact arising from seismic surveys, disturbance to the marine habitat through drilling and / or dredging activities, introduction of marine pest species, release of produced formation water, shipping and transport activities, and oil spills.

Shipping and Maritime Activity

The Kimberley Ports Authority and Pilbara Ports Authority operate in the NCB. The largest ports being Broome, Port Hedland, and Dampier (North Coast Bioregion Overview Figure 5). The Port of Broome provides vital support for the Browse Basin offshore oil and gas industry. Other business includes livestock export, cruise liner servicing, coastal trading vessels, pearling, fishing, and tourism charters. Port Hedland is the world's largest bulk exporter, with 99% of the total cargo volume constituting exports. The port primarily exports iron ore, along with salt, livestock, and petroleum products. The Port of Dampier services both the land-based iron ore reserves and the offshore gas fields of the Carnarvon Basin.

There are eight other ports in the NCB. In general, these ports and related export facilities are operated by resource companies. Most handle raw bulk commodity exports such as iron ore, crude oil, and salt.

An increase in shipping and port expansion associated with growth of the resources sector has potential implications for the marine environment. Potential threats include loss or contamination of marine habitats as a result of breakwater construction, dredging and sea dumping, oil spills, interactions between vessels and listed species, and the introduction of marine pests. DPIRD has surveillance in place for marine pests in key port areas to aid in the early detection of any unwanted aquatic species from other locations.

BIOREGIONAL SPECIFIC ECOSYSTEM MANAGEMENT

Within each bioregion there are a range of management measures that have been implemented to manage the potential impact of activities (See the Ecosystem Management Section for an overview). Management measures specific to the NCB follow.

Spatial Closures

Extensive fisheries closures in coastal and most offshore waters have been introduced to manage finfish trawling by Australian vessels (North Coast Bioregion Overview Figure 6). However, trawling is still permitted in a small number of limited locations, which in total represent less than 11% of the shelf waters (North Coast Ecosystem Management Table 1; see specific commercial trawl fishery reports elsewhere in this volume). This activity is carefully managed to ensure that impacts are acceptable. The trawling is subject to Ecologically Sustainable Development (ESD) requirements in accordance with the Australian Government's '*Guidelines for the Ecologically Sustainable Management of Fisheries*' under the *Environment Protection and Biodiversity Conservation Act 1999*. The extent of these areas means that a substantial part of the entire shelf region of the NCB could be classified as a marine protected area with an IUCN category of IV or higher (as per Dudley, 2008; and Day et al 2012[1]; North Coast Ecosystem Management Table 1).

In addition to these habitat-related trawl closures, the NCB has a number of marine protected areas with various management objectives (summarised in North Coast Bioregion Overview Figure 7). These include the Montebello Islands, Barrow Island, Rowley Shoals, Eighty Mile Beach, Yawuru Nagulagun / Roebuck Bay, Lalang-garram / Horizontal Falls, North Lalang-garram, Lalang-garram / Camden Sound and North Kimberley marine parks; the Barrow Island Marine Management Area proclaimed under the *Conservation and Land Management Act 1984*; and closures to fishing under section 43 of the *Fish Resources Management Act 1994* at Point Samson and the wreck of the Kunmunya Samson II (Delambre Reef).

In 2019, the WA Government announced the 'Plan for Our Parks' initiative to create additional marine parks and terrestrial conservation reserves. This initiative included the establishment of a new marine park in the Buccaneer Archipelago, which was formally created in July 2022. The Buccaneer Archipelago Marine Park consists of the Bardi Jawi Gaarra, Mayala and Lalang-gaddam marine parks. The Lalang-gaddam marine park is an amalgamation of the existing Lalang-garram / Camden Sound, Lalang-garram / Horizontal Falls, North Lalang-Garram and the newly created Maiyalam marine parks.

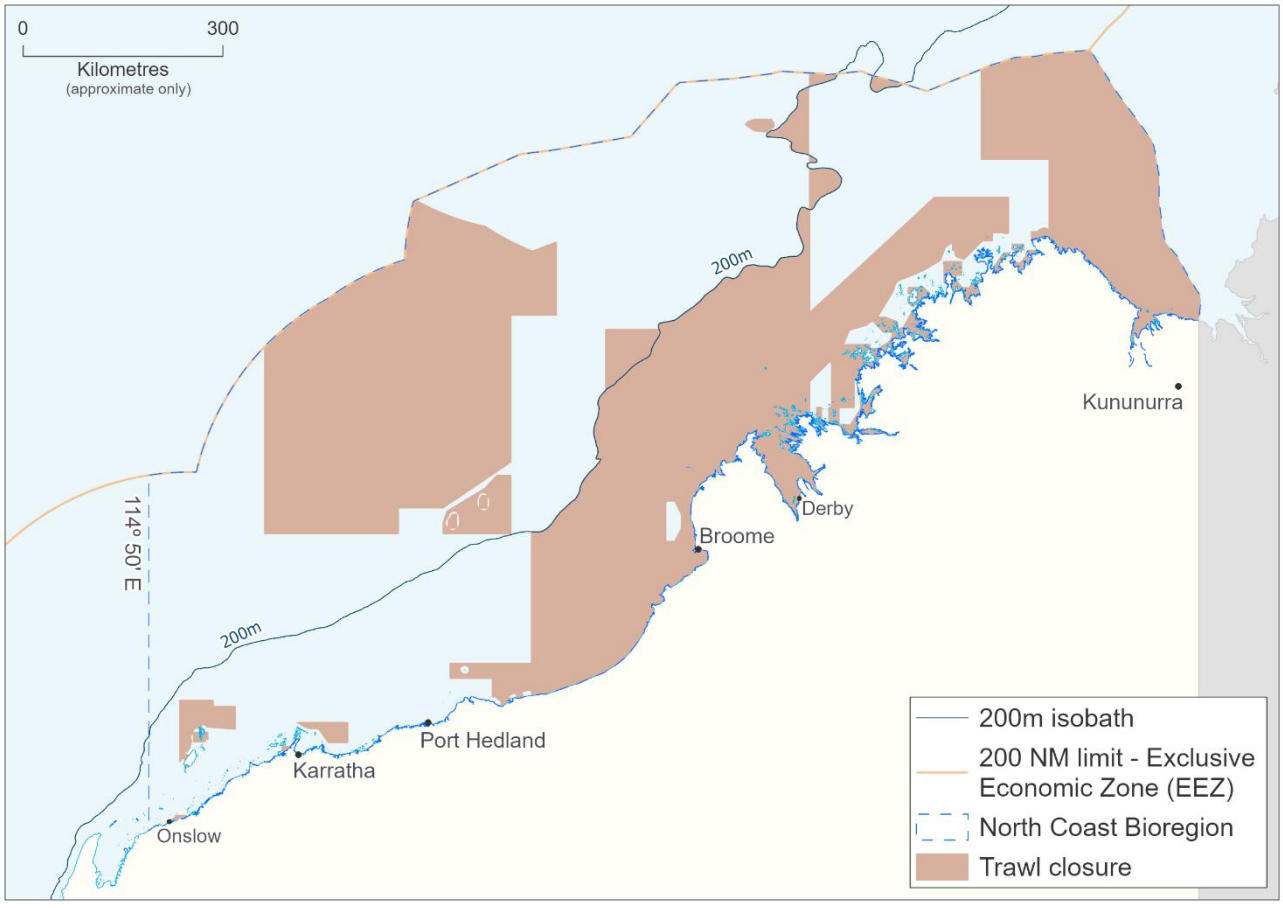
The Australian Government implemented an Australian Marine Park for the North-West Marine region (between Shark Bay and the Northern Territory border) in July 2018. This resulted in a network of marine parks off the coast of the NCB (see North Coast Bioregion Overview Figure 7). In 2025, WA's Commonwealth marine parks are being reviewed, with a major focus on expanding the network and increasing protection through new marine parks and sanctuaries.

1 Dudley N. (Ed.) 2008. Guidelines for applying protected area management categories. IUCN. Gland, Switzerland.
Day J, Dudley N, Hockings M, Holmes G, Laffoley D, Stolton S, Wells S. 2012. Guidelines for applying the IUCN Protected Area Management Categories to Marine Protected Areas. IUCN. Gland, Switzerland. 36p.

NORTH COAST ECOSYSTEM MANAGEMENT TABLE 1

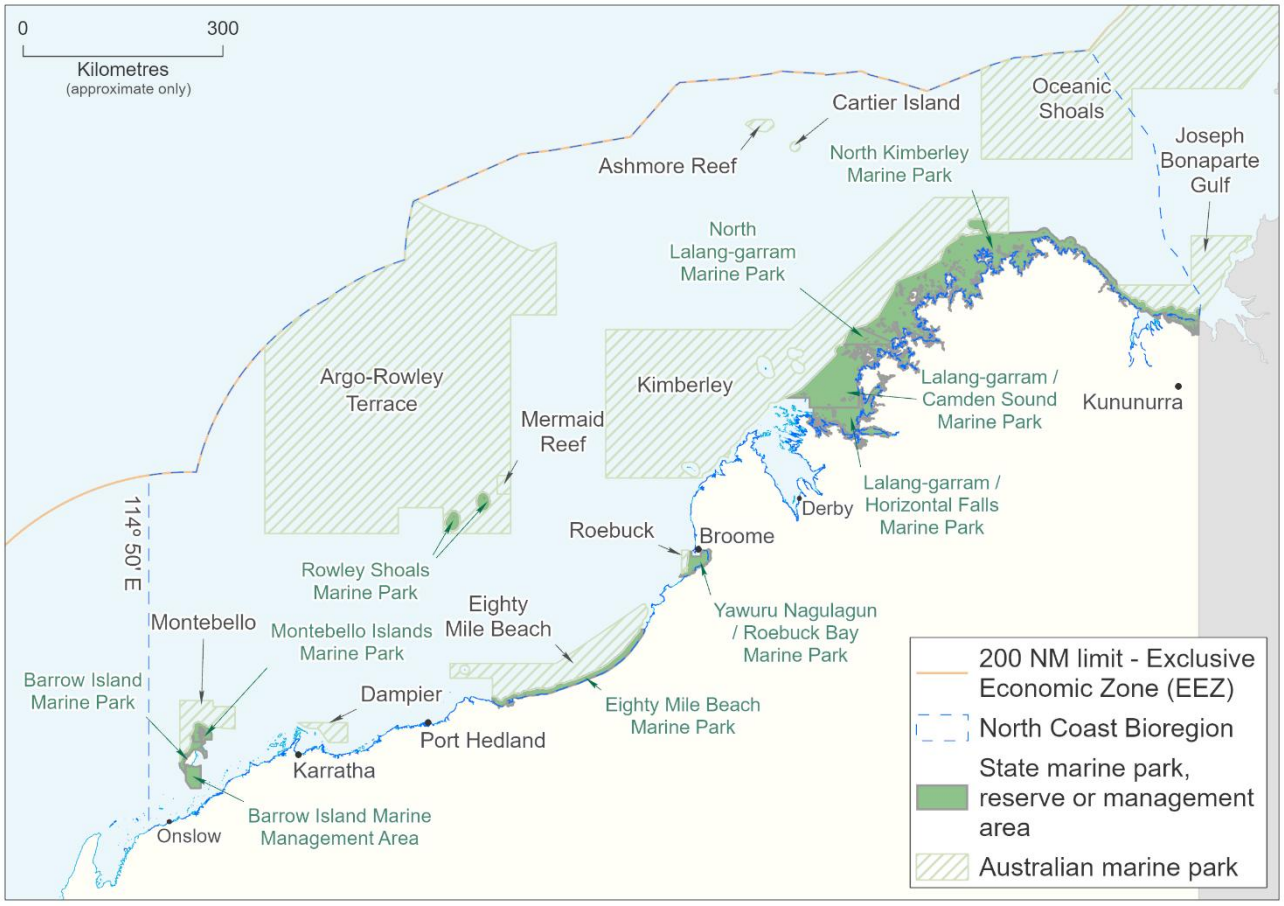
The areas and proportions of the North Coast bioregion making up State Waters and all continental shelf waters, out to 200 m depth, which are consistent with the IUCN criteria for classification as marine protected areas. This table does not include State or Commonwealth closures that are currently in the process of implementation. These areas will be included in future volumes, when their respective implementation processes are concluded.

IUCN category or equivalent	State Waters only (65,400 km²)				All Waters (837,500 km² (including State waters))			
	Fisheries		Existing MPA		Fisheries		Existing MPA	
	km²	%	km²	%	km²	%	km²	%
I	0	0	0	0	0	0	1,300	< 1
II	0	0	8,000	8	0	0	8,400	1
III	0	0	0	0	0	0	0	0
IV	19,100	19	8,800	9	149,200	16	9,300	1
V	0	0	440	< 1	0	0	0	0
VI	36,800	37	25,200	26	677,500	71	112,500	12



NORTH COAST BIOREGION OVERVIEW FIGURE 6

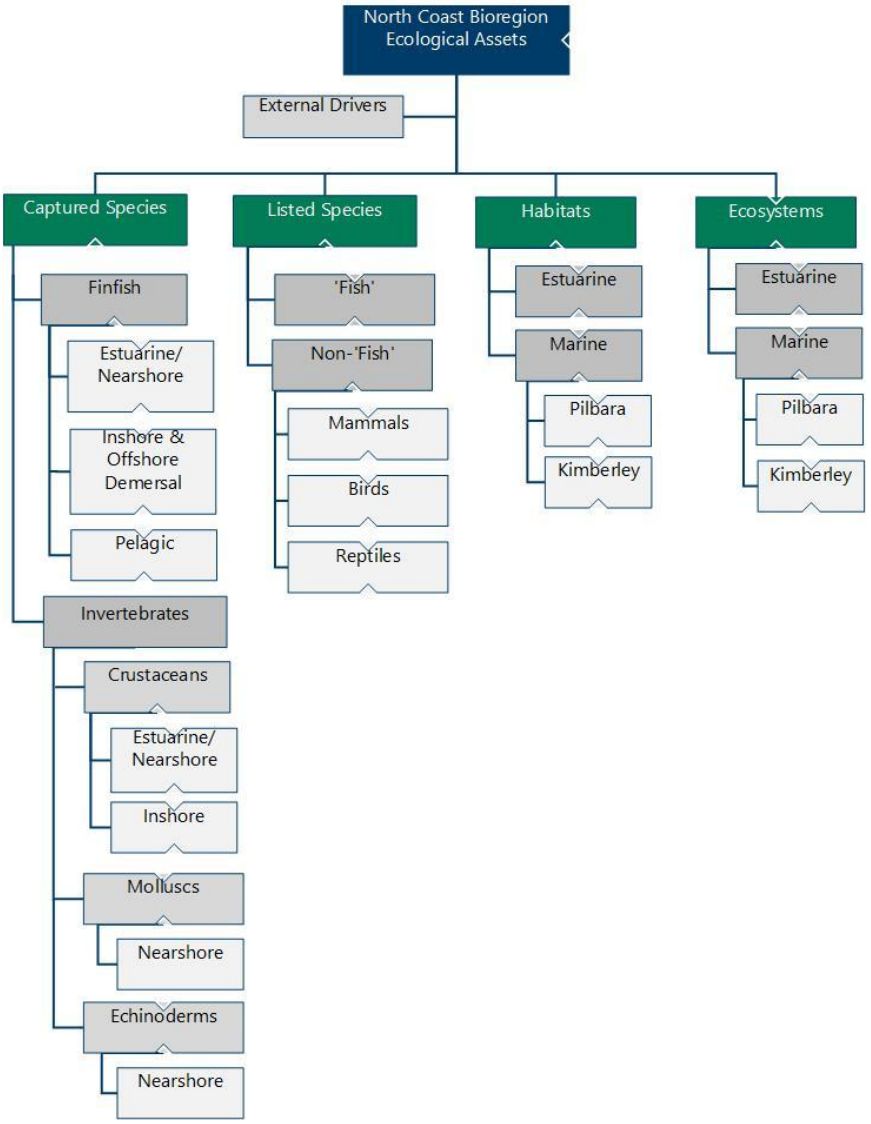
Map showing the North Coast bioregion and areas closed to all trawling. The areas permanently closed to trawling are consistent with IUCN marine protected area category IV.



NORTH COAST BIOREGION OVERVIEW FIGURE 7
Map showing the North Coast bioregion and State and Commonwealth marine parks and reserves along the northern WA coast.

ECOSYSTEM MONITORING AND STATUS

In order to assess the adequacy of management arrangements aimed at ensuring sustainability of the ecological assets within the NCB, DPIRD must identify and monitor trends in the condition of these resources. This is achieved through application of an Ecosystem Based Fisheries Management (EBFM) framework (Fletcher et al., 2010) to identify, in a hierarchical manner, the key ecological resources that require ongoing monitoring and assessment (see How to Use section for more details). The key ecological assets identified for the NCB are identified in North Coast Bioregion Overview Figure 8, and their current risk status are reported on in the following sections.



NORTH COAST BIOREGION OVERVIEW FIGURE 8
Component tree showing the ecological assets identified and separately assessed for the North Coast bioregion.

External Drivers

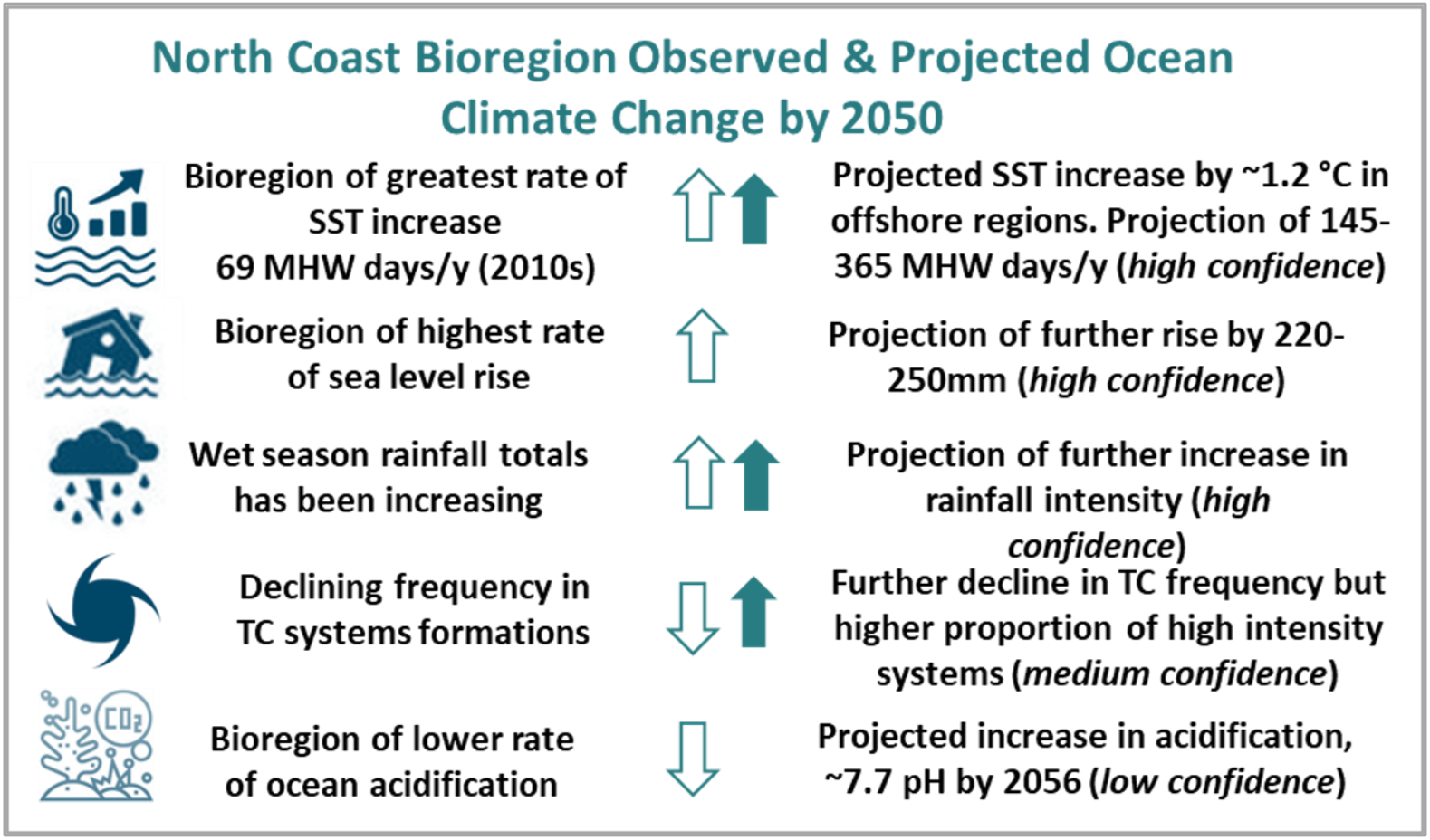
External factors include factors impacting at the bioregional level that are likely to affect the ecosystem as a whole and may not fall within the direct control of fisheries legislation (e.g. climate change). An understanding of these factors, which are typically environmental (cyclones, ocean currents) is necessary to fully assess the performance of the ecological resource. The main external drivers identified with potential to affect the NCB include climate, introduced pests and diseases, and oil and gas development activities.

Climate change

The NCB is the fastest warming bioregion to date and is predicted to experience a range of climate impacts and extremes in the coming decades.

A summary of the observed and projected bioregional predictions in key ocean climate variables is listed in North Coast Bioregion Overview Figure 9. This information supported the climate change risk assessment for the key indicator species in the managed resources from this bioregion.

North Coast Bioregion Overview



NORTH COAST BIOREGION OVERVIEW FIGURE 9
Observed and projected changes (by 2050) in the key ocean climate variables of sea surface temperature, marine heatwave duration, mean annual sea level, wet season (October-April) rainfall, tropical cyclone frequency, and ocean acidification for the North Coast bioregion. The open arrow indicates directional change or frequency while the solid arrow indicates projected change in intensity.

Oil and Gas Development Activity

External Drivers	Current Risk Status
Oil and Gas Development	LOW

While there are a number of specific oil and gas related offshore developments that are proposed in this region, at the overall ecosystem level there is only a low risk that the ecosystem will be altered measurably. In addition, State and Commonwealth marine protected areas, including totally protected zones, are currently in place or planned.

Captured Species

FINFISH

The principal fisheries in the NCB focus on tropical finfish, particularly the high-value snappers, cods, and emperors. These species are taken by the Pilbara Demersal Scalefish Fishery (trawl, trap and line sectors) and the Northern Demersal Scalefish Fishery (trap and line). The typical catch is in the order of 3,000-4,000 t annually at an estimated annual value of $20 million, making these fisheries the most valuable finfish sector in WA. A number of other finfish fisheries operate in the bioregion, including near-shore gillnetting for barramundi and threadfin (the Kimberley Gillnet and Barramundi Managed Fishery (KGBMF)), and surface trolling for Spanish mackerel (the Mackerel Managed Fishery).

Indicator species which reflect the characteristics of the broader exploited stocks are monitored in order to assess ecological risk to the ranges of species targeted.

Estuarine/ Nearshore (0-20 m depth)

Captured Species	Aquatic zone	Ecological Risk
Finfish	Estuarine/Nearshore	MEDIUM

The KGBMF is the only commercial finfish fishery operating in the nearshore and estuarine zones of the NCB. The primary target species are barramundi and threadfin. Stocks of barramundi and threadfin are considered to be at acceptable levels. Implementation of marine parks in the bioregion may have affected some commercial fishing activities.

Inshore and Offshore Demersal

Captured Species	Aquatic zone	Ecological Risk
Finfish	Inshore and Offshore demersal	SEVERE

There are 4 commercial fisheries, which use multiple methods to target demersal fish stocks. These fisheries include: the Pilbara Fish Trawl (Interim) Managed Fishery (PFTIMF); the Pilbara Trap Managed Fishery (PTMF); the Pilbara Line Fishery (PLF); and the Northern Demersal Scalefish Managed Fishery (NDSF).

These fisheries all target the tropical demersal scalefish suite in the Pilbara and Kimberley ecosystems. The trawl fishery lands the largest component of the catch, comprising more than 50 scalefish species. The demersal indicator species for the Kimberley are red emperor and goldband snapper while red emperor, Rankin cod and bluespotted emperor are used as indicator species in the Pilbara.

A 2023 assessment of the Pilbara indicator species assessed red emperor as severe risk and bluespotted emperor as medium. In addition, Goldband snapper in the west Pilbara was assessed as high risk. A 2025 assessment of the Kimberley indicator species assessed red emperor as high risk and goldband snapper as medium. The overall risk for the demersal suite is based on the highest risk and is therefore severe.

Pelagic

Captured Species	Aquatic zone	Ecological Risk
Finfish	Pelagic	MEDIUM

There are a large number of species in the pelagic suite in the NCB. The main commercial catch is Spanish mackerel, which is targeted by the Mackerel Managed Fishery. This stock is considered to be at an acceptable level. Few other pelagic species are exploited at any significant levels, and these stocks are lightly impacted by fishing.

INVERTEBRATES

The Pearl Oyster Managed Fishery is a significant commercial invertebrate fishery in the NCB, based on the collection of pearl oysters (*Pinctada maxima*) for use in the aquaculture production of pearls. The NCB also has a number of small, limited-entry trawl fisheries for prawns, typically producing approximately 500 t annually, valued at more than $10 million. Two small trap-based crab fisheries also exist in the bioregion, targeting blue swimmer crabs in the Pilbara (the Pilbara Developing Crab Fishery), and mud crabs in the Kimberley (the Kimberley Developing Mud Crab Fishery). Sea cucumbers (also known and bêche-de-mer or trepang) are collected by hand by divers and waders throughout the Kimberley region. Catches are mainly comprised of two species, sandfish (*Holothuria scabra*), and redfish (*Actinopyga echinites*).

The Trochus Fishery is a small fishery based on the collection of a single target species, *Tectus niloticus* from King Sound and the Buccaneer Archipelago. This fishery is operated by Bardi Jawi and Mayala Traditional Owners, who have traditionally collected trochus in this area.

Crustaceans

Captured Species	Aquatic zone	Ecological Risk
Crabs	Estuarine/ Nearshore	MEDIUM
Prawns	Inshore	MEDIUM

There is a small amount of fishing for mud crabs and blue swimmer crabs in some estuarine and inshore areas. Stocks of mud crabs are considered to be of significant value to the recreational sector and for social amenity.

There are a number of separate prawn stocks and fisheries within the NCB, and each has limited entry, seasonal, and area closures. Annual recruitment to these stocks is variable, which combined with the higher costs of operating in this region, has resulted in fishing effort being much lower in recent years.

Molluscs

Captured Species	Aquatic zone	Ecological Risk
Pearl oyster	Nearshore	LOW

The pearl oyster fishery only targets a very small section of the pearl oyster stock both spatially and within the available size range. The fishery has been MSC certified since 2017.

Echinoderms

Captured Species	Aquatic zone	Ecological Risk
Sea cucumbers	Nearshore	HIGH

The majority of the effort for sea cucumbers has been expended in the Kimberley region, although there have been several years with substantial effort directed into the Pilbara region. Kimberley sandfish (*Holothuria scabra*) and Pilbara redfish (*Actinopyga echinites*) are MSC certified.

The Pilbara sandfish stock is currently considered inadequate. A closure of the Pilbara sandfish fishery was implemented in 2023 until 2026 to promote stock recovery. A recent increase in illegal harvesting of sea cucumbers by foreign fishing vessels is regarded as a high risk to Kimberley sandfish.

Listed Species

A number of endangered, threatened and protected[1] (ETP) species can be found within the NCB, including cetaceans, dugongs, marine turtles, sea snakes, elasmobranchs, seahorses and pipefish, crocodiles, seabirds, and migratory shorebirds. These species are protected by various international agreements and national and State legislation. International agreements include:

- Convention on the Conservation of Migratory Species of Wild Animals 1979 (Bonn Convention);
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
- The Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds in Danger of Extinction and their Environment 1974 (JAMBA)[2];
- The Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment 1986 (CAMBA)[1];
- The Agreement between the Government of Australia and the Government of the Republic of Korea on the Protection of Migratory Birds 2007 (ROKAMBA)[1]; and
- Any other international agreement, or instrument made under other international agreements approved by the environment minister, including the EBPC Act 1999.

Primary pieces of national and WA legislation include the *Environment Protection and Biodiversity Act 1999* (Cth), the *Biodiversity Conservation Act 2016* (WA), and the *Fish Resources Management Act 1994* (WA).

Fisheries in the NCB that have reported interactions with ETP species include trawl fisheries (the Onslow Prawn Managed Fishery (OPMF), the Nickol Bay Prawn Managed Fishery (NBPMF), the Pilbara Fish Trawl Fishery (PFTF)), and the Kimberley Gillnet Barramundi Fishery (KGBF). ETP interactions with trawl fisheries are low, due to fishing arrangements, such as the use of bycatch reduction devices and the exclusion of trawling activities from most ETP species' primary habitat. Similarly, fishers in the KGBF actively avoid capturing ETP species. However, a small number of interactions have been reported with crocodiles and sawfish.

Fish

Listed species	Risk
Fish	LOW

The sawfish (Pristidae), speartooth shark (*Glyphis glyphis*), and the northern river shark (*Glyphis garricki*) are incidentally captured in small numbers by net fishing and trawlers. The area of these fisheries in which sawfish are vulnerable to capture is small relative to the total range of each species, suggesting limited impacts on each

1 A listed species list does not automatically indicate that a species is either threatened or endangered.

2 Further information on the CMS, JAMBA, CAMBA, and ROKAMBA is provided at www.environment.gov.au/biodiversity/migratory/index.html

population. There are requirements for increased resolution regarding the nature and consequence of interactions with ETP elasmobranchs.

Seahorses (Syngnathids) and pipefish (Solenostomids) are occasionally captured in trawl nets and fish/crab traps. The areas of each fishery in which syngnathids and solenostomids are vulnerable to capture is small relative to the total distribution of the species, which includes waters inshore of the fishery and fishery closed areas, as well as structured habitats where trawling does not occur.

Recent video observations indicate that the potato cod is present in high numbers at discrete locations within the Kimberley region where the NDSF operates. Potato cod (*Epinephelus tukula*), a totally protected species, rarely enter fish traps due to their large size and girth limiting their capacity to pass through the entrance funnel.

Non-Fish

Listed species	Risk
Mammals	HIGH
Reptiles and Birds	LOW

Bottlenose dolphins are incidentally captured by the Pilbara Fish Trawl Fishery (PFTIMF). These interactions were assessed as a High risk during an Ecological Risk Assessment (ERA) in 2025. The risk score was based on a high level of uncertainty about the size and distribution of dolphin populations. Management changes are underway in the PFTF, including effort reductions, implementation of an updated independent fishery monitoring and Bycatch Action Plan.

PFTF interactions with all other protected species are considered low risk to their populations.

Turtles are occasionally encountered in trawl catches but are typically returned to the sea alive. Grid bycatch reduction devices (BRDs) are compulsory on trawl nets, which has largely eliminated the capture of turtles and other large animals.

Crocodiles are occasionally captured in nearshore/ estuarine fisheries' nets and are typically released alive.

Habitats and Ecosystems

Coastal geography is extremely variable within the NCB, and its identified meso-scale ecosystems include a range of key habitats in depths of less than 40 m (where the vast majority of relevant fisheries resources are located and fishing activities are undertaken in this bioregion). Major habitats include:

Mangroves: Mangroves occur throughout the NCB, and within the Kimberley, and are considered to be very well developed and relatively pristine. The mangrove communities of Roebuck Bay and Eighty Mile Beach have been listed as Ramsar Wetlands of International Significance mainly due to the numbers of migratory wading birds they support.

Seagrasses: Seagrasses found in the bioregion are mainly comprised of tropical species. Twelve species have been identified throughout the NCB, including 1 endemic species (*Cymodocea angustata*). Within the NCB, seagrasses are generally found in shallow water environments near the mainland coast and offshore reefs and shoals.

Algae: Algal growth is restricted by the limited presence of hard substrates on the North West Shelf. Throughout the Kimberley, the effects of strong tidal currents and high turbidity result in low macroalgal diversity. Surveys in the Kimberley have identified 72 species of macroalgae in the southern Kimberley and 90 species (not including coralline algae) in the northern Kimberley, most of which are widespread tropical taxa.

Sponges and Filter-Feeding Communities: Sponges are found from tidal areas to the deep waters of the abyssal plain and generally occur as part of a mixed filter-feeding community. Species richness varies considerably throughout the bioregion, with both relatively low-diversity communities (< 25 species, e.g. Rowley Shoals), and exceptionally rich communities (> 250 species, e.g. Dampier-Port Hedland regions). Sponge communities throughout the bioregion are also broadly different. A study by the WA Museum found more than half the sponges identified at Mermaid, Scott, and Seringapatam Reefs were unique to a single reef (WAM, 2006).

Coral Reefs: Coral reefs in the NCB fall into 2 general groups: the fringing reefs around coastal islands and the mainland shore, and large platform reefs, banks and shelf-edge atolls on the mid and outer shelf. North of Cape Leveque, the Kimberley supports extensive nearshore reef systems. Areas of fringing reef include islands in the Buccaneer Archipelago, the Heyward Island group, islands of the Bonaparte Archipelago, and off mainland shores of Cape Voltaire and Cape Bougainville. Coral diversity is typically high, with surveys of the Buccaneer Archipelago recording 280 species of coral from at least 55 genera. Coral reefs are also well developed around offshore island such as Ashmore, Cartier, Hibernia, Seringapatam and Scott Reefs, Browse Island, and the Rowley Shoals.

Sand/Mud: Embayments along the Kimberley are known to have extensive muddy intertidal flats, and the majority of the offshore area is dominated by soft sediment seabeds. These are mainly sand/mud with occasional patches of coarser sediments.

In depths beyond 40 m, ecosystems include hard and soft bottom benthic communities, sand banks and pelagic communities. Given the low levels of

fishing activities in these depths, there is little detailed information on these environments.

A high level of protection of the ecosystems and habitats within the NCB is ensured based on the limited area of the bioregion that is available to commercial trawl fishing activity (North Coast Bioregion Overview Figures 6 and 7). If areas that are not trawled are taken into account, 89% of statewide benthic habitats out to the 200 m isobath are protected and may never have been trawled (North Coast Ecosystem Management Table 1). In addition to fisheries-related closures, the NCB has a number of marine protected areas described under the preceding 'Spatial closures' section.

DPIRD identifies and monitors trends in the condition of ecosystems and their associated habitats to ensure the long-term sustainability of both key ecological assets and the fisheries that depend on them.

Habitats

Habitats	Aquatic zone	Current Risk Status
North Coast	Estuarine	LOW
Kimberley	Marine	LOW
Pilbara	Marine	LOW

The majority of these fishing activities occur in mud/sand habitats in estuaries, tidal creeks, and embayments. Trawl activities are considered to have the highest impact of the methods used within the bioregion which also includes low impact activities of trap, gillnets, and hand collection-based fisheries. However, the spatial extent of trawling activities is small, and there are a variety of measures in place to manage any impacts. The spatial distribution of all fishing activities is also managed through the use of seasonal and area closures to protect sensitive habitats.

Ecosystems

Ecosystems	Aquatic zone	Current Risk Status
North Coast	Estuarine	NEGLIGIBLE
Kimberley	Marine	LOW
Pilbara	Marine	LOW

Given the large areas closed to both trawling and to all commercial fishing, there is a low risk that the level of fishing in the NCB is unacceptably changing the regional level community structure.

Assessments of the community structure and trophic level of commercially caught fish species in the region over the previous 30 years found no evidence of any systematic changes (Hall and Wise 2011[1)]. The majority of catch from each fishery is comprised of the main target species and catch compositions have remained stable throughout the history of each fishery. None of the main target species are known to be involved in any strong ecological interactions and their removal at current rates is unlikely to seriously or irreversibly alter community structure.

1 Hall NG, Wise BS. 2011. Development of an ecosystem approach to the monitoring and management of Western Australian fisheries. FRDC Report – Project 2005/063. Fisheries Research Report No. 215. Department of Fisheries, Western Australia. 112p.

FISHERIES



PILBARA PRAWN RESOURCE STATUS REPORT 2025

I. Koefoed, S. Wilkin, S. Brown, J. How

OVERVIEW

The Pilbara Prawn Resource (PPR) is accessed by 3 managed commercial fisheries: the Exmouth Gulf Prawn Managed Fishery (EGPMF), the Onslow Prawn Managed Fishery (OPMF), and the Nickol Bay Prawn Managed Fishery (NBPMF). All 3 fisheries are managed under effort controls, with the EGPMF and OPMF targeting brown tiger prawns (BTP; *Penaeus esculentus*), western king prawns (WKP; *Penaeus latisulcatus*), blue endeavour (*Metapenaeus endeavouri*), and lesser quantities of banana prawns (*Penaeus merguiensis*). The NBPMF primarily targets banana prawns while also catching BTP, WKP, and blue endeavour prawns in lower numbers.

All 3 commercial fisheries are managed under their own management plan, however, only the EGPMF has a formal harvest strategy. The management plans for all fisheries accessing the PPR include mandatory implementation of bycatch reduction devices (BRDs) (grids), and a secondary fish escape device (FED) fitted in each net.

Recreational prawn fishing is permitted in the EGPMF harvest strategy with restrictions on gear type (e.g. scoop, throw, or hand trawl nets), overall net size and mesh size, though annual recreational catch is very low.

All 3 fisheries were assessed under the provisions of the Australian Government's EPBC Act in 2025 and have been accredited for export for a period of 5 (EGPMF) or 3 (OPMF & NBPMF) years. Additionally, the EGPMF fishery received Marine Stewardship Council (MSC) certification in October 2015 and was successfully recertified in December 2020.

The five-yearly MSC recertification process recommenced in 2025. A more detailed account of the resource is provided in Kangas et al. (2015) (https://library.dpird.wa.gov.au/fr_msc/1/).

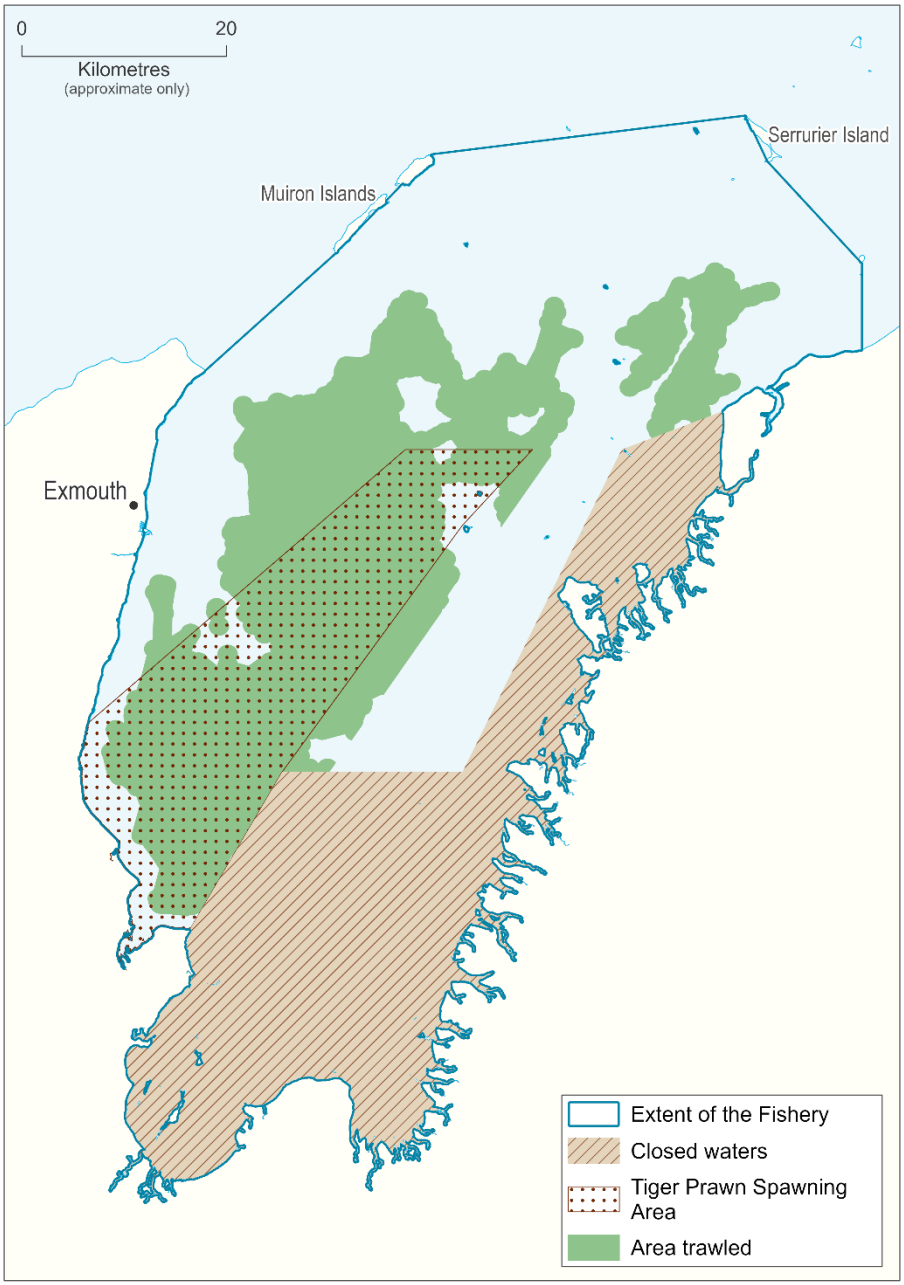
SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery (436–1,347 t)	Total Catch 2024: 816.2 t	Acceptable
Recreational fishery (NA)		NA
EBFM		
Indicator species		
Brown Tiger Prawn	Medium risk: Relative biomass above threshold	Adequate
Western King Prawn	High risk: Relative biomass above threshold	Adequate
Blue Endeavour Prawn	Medium risk: Relative biomass above threshold	Adequate
Ecological		
Bycatch	Low risk	Adequate
Listed Species	Medium risk	Adequate
Habitat	Medium risk	Adequate
Ecosystem	Low risk	Adequate
Economic (GVP $11.5 m)	Moderate risk	Acceptable
Social (3 amenity)	Moderate risk	Acceptable
Governance	Moderate risk	Acceptable
External Drivers – Other	High risk	Acceptable
External Drivers – Climate change	EGPMF: Low risk (endeavour prawn, banana prawn), High risk (tiger prawn, king prawn) NBPMF: Low risk (banana prawn) OPMF: Low risk (endeavour prawn), Medium risk (tiger prawn)	

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Total catch (t)	800 t K: 205 Tg: 323 En: 149 B:69	775 t K: 139 Tg: 327 En: 211 B: 98	Overall catch levels remain similar between seasons
Commercial effort	EG: 21,321 (adj. hrs) OP&NB: 161 boat days	EG: 20,603 (adj. hrs) OP&NB: 122 boat days	Slight decrease in effort coinciding with decline in overall catch. OPMF and NBPMF combined for confidentiality requirements
Participation (vessels)	EG: 6 OP: 1 NB 5:	EG: 6 OP&NB: 5	Stable.
Beach price (state avg. / kg.)	K: $14.31 Tg: $14.80 En: $9.00	K: $13.45 Tg: $16.14 En: $8.69	Price decrease for western king and blue endeavour prawns resulting from excess supply of similar prawn species to markets worldwide.
Main (>1% total catch) by-product species (t)	CO (17.3) CR (22.2) S (4.6)	CO (11.5) CR (13.1) S (11.1)	By-product species all < 2 % of total retained catch.
Listed Species interactions	10 (SF), 973 (SS), 18 (T), 5 (SG), 1 (D)	8 (SF), 685 (SS), 20 (T), 0 (SG), 0 (D)	Decline in all ETP interactions with the exception of a minor increase in turtle interactions.

Key to table: All commercial sector EG = EGPMF, OP = OPMF, NB=NBPMF. Target catch: K = King prawn, Tg = Tiger prawn, En = Endeavour prawn, B – Banana prawn. For bycatch species: CO = Coral prawn, CR = Blue Swimmer Crab, S = Squid. For listed species: SF = Sawfish, T = unknown turtle, SS = Sea snake, SG = Syngnathids. D = Dolphin. GVP* is presented on a seasonal basis.

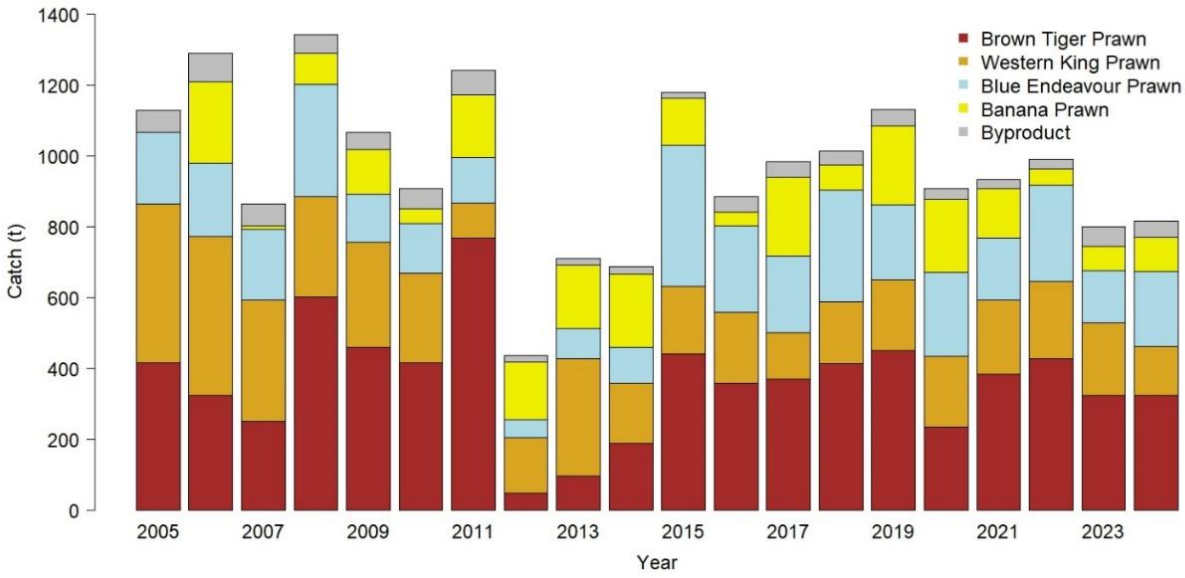


PILBARA PRAWN FIGURE 1.
Boundaries of the Exmouth Gulf Prawn Managed Fishery and the area trawled in 2024.

CATCH AND LANDINGS

Prawn catches have remained relatively steady over recent seasons. Brown tiger prawns are the main species retained, with considerable landings of western king, blue endeavour and banana prawns also reported (Pilbara Prawn Figure 2).

Recorded byproduct species include coral prawns, squid, blue swimmer crab (*Portunus armatus*), with small quantities of cuttlefish, bugs (*Thenus orientalis*), and octopus also retained.



PILBARA PRAWN FIGURE 2.
Annual catches from the Pilbara Prawn Resource of target (by species) and byproduct species.

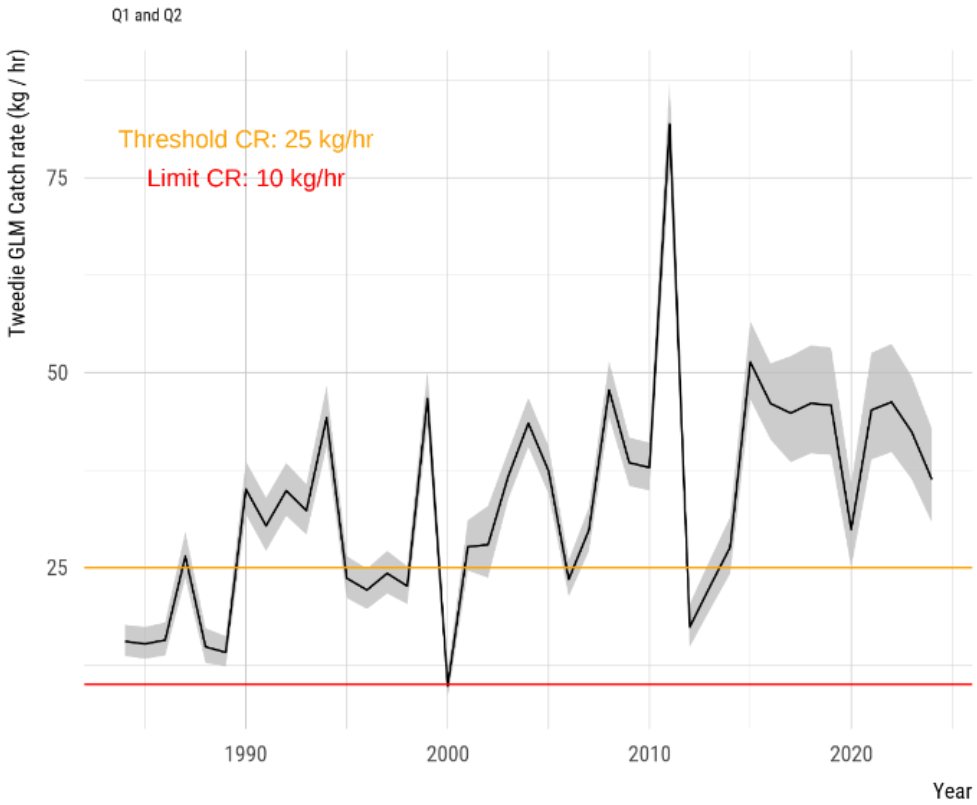
INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Brown tiger prawns (Sustainable-Adequate)

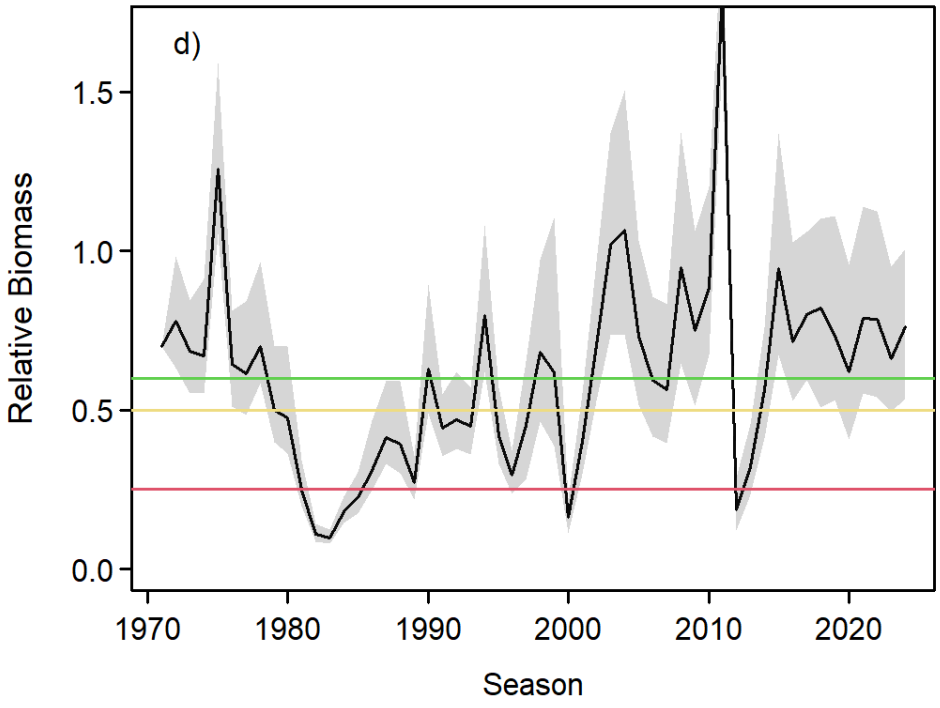
The status of the stock is assessed annually, using a weight-of-evidence approach primarily based on fishery-independent indices of recruitment, and spawning stock levels relative to specified reference points. Biomass dynamic modelling has also been developed for the stock utilising standardised commercial catch rates.

In 2024, the mean spawning stock survey index was 36.3 kg/hr, which is a decline on the 2023 level, but still well above the threshold reference level (25 kg/hr) (Pilbara Prawn Figure 3). Previous modelling has indicated this reference level is close to the biomass at MSY (B_{MSY}), and this is further supported by results from a newly developed biomass dynamics model, which estimated the relative biomass in 2024 to be 0.73K (Pilbara Prawn Figure 4). This is above the threshold of 0.5K (B_{MSY}) and continues a maintenance of relative biomass above the target (0.6K) reference level over recent season (Pilbara Prawn Figure 4).

With spawning indices and relative biomass estimates above the respective thresholds, the overall risk to brown tiger prawns in 2024 was assessed as being **medium** risk.



PILBARA PRAWN FIGURE 3.
Fishery-independent spawning stock survey mean catch rates of brown tiger prawns (kg/hr) and associated 95% confidence interval (shaded area) for August, September, and October combined for two areas (Q1 and Q2) in the EGPMF. The orange line indicates the threshold reference point (25 kg/hr) and the red line indicates the limit reference point (10 kg/hr).

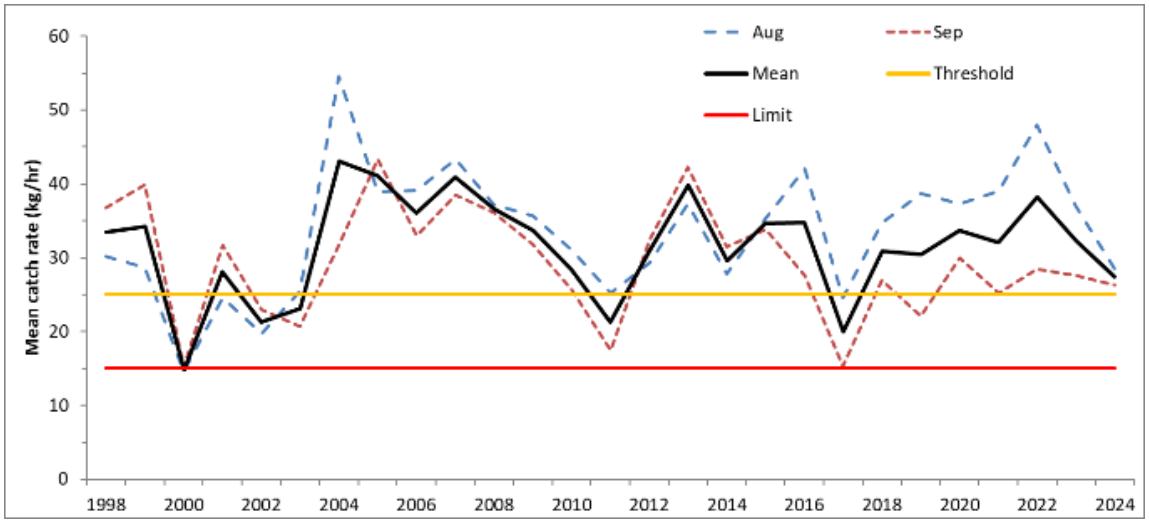


PILBARA PRAWN FIGURE 4.
Trends in relative biomass estimates for brown tiger prawns produced by the state-space biomass dynamics model. Reference lines are: 0.25K (limit; red), 0.5K (threshold; yellow), and 0.6K (target; green), uncertainty (± 95 % CL) is shown by the shaded area around the relative biomass estimate.

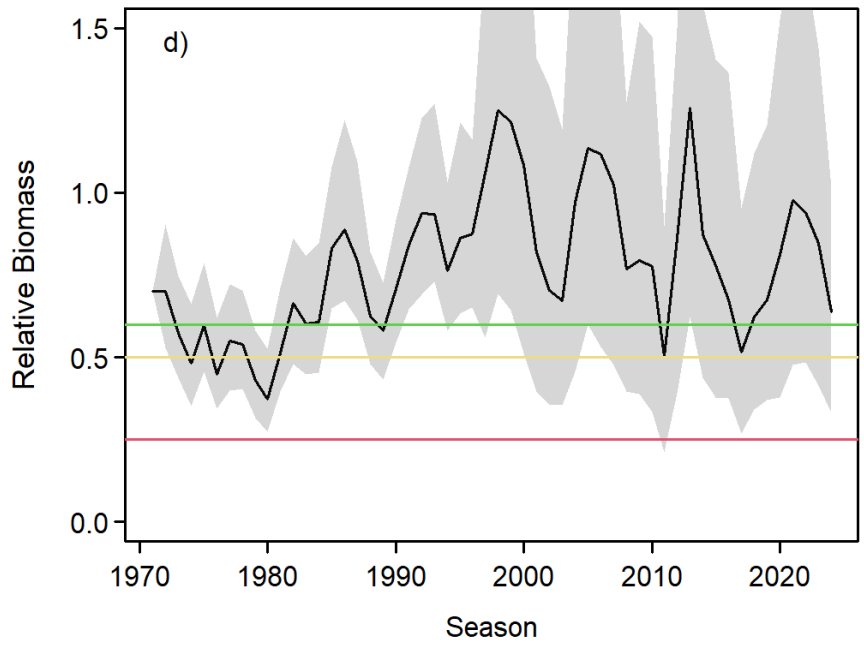
Western king prawns (Sustainable-Adequate)

The spawning stock index for 2024 (commercial catch rates in key western king prawn fishing grounds in August and September) was 27.4 kg/hr, which was above the threshold level (25 kg/hr) but has continued a gradual decline evident over the last few seasons (Pilbara Prawn Figure 5). The relative biomass of western king prawns in EGPMF appears to be cyclical, with the 2024 relative biomass estimated to be 0.57 in 2024 which is still above the threshold level (0.5K B_{MSY}) (Pilbara Prawn Figure 6) but continuing the decline trend of recent seasons.

The EGPMF spawning and recruitment indices are above their thresholds, but only slightly. Catch and catch rates in all fisheries either declined or remained low, relative to previous years. This results in weight-of-evidence assessments indicating the stock of western king prawns in the Pilbara is at **high** risk.



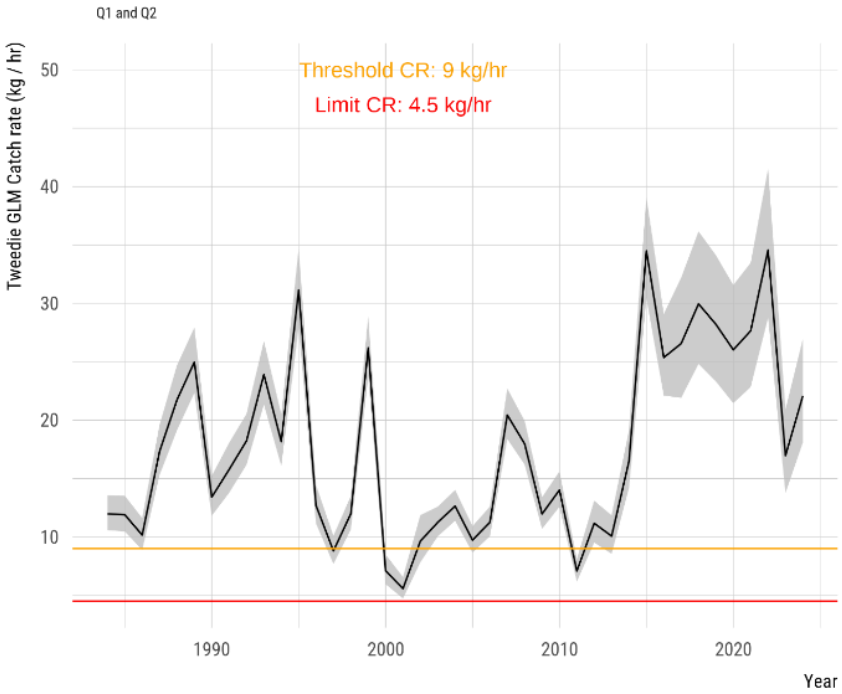
PILBARA PRAWN FIGURE 5.
Fishery-dependent mean western king prawn catch rates in the R1 and S2 regions of the EGPMF for August (blue dashed), September (red dashed), and the average of both months (black) for 1998 - 2024. The threshold (orange) and limit (red solid) reference levels are also displayed.



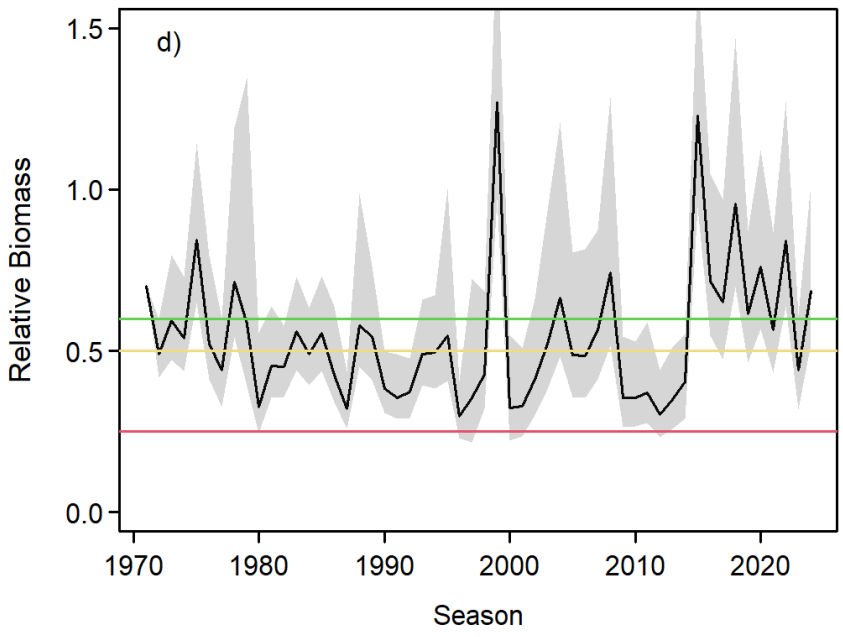
PILBARA PRAWN FIGURE 6.
Trends in relative biomass estimates for western king prawns produced by the state-space biomass dynamics model. Reference lines are: 0.25K (limit; red), 0.5K (threshold; yellow), and 0.6K (target; green), uncertainty (± 95 % CL) is shown by the shaded area around the relative biomass estimate.

Blue endeavour prawns (Sustainable-Adequate)

In 2018, the Harvest Strategy for the EGPMF was modified to include blue endeavour prawns (DPIRD 2018), with specific limit (4.5 kg/hr) and threshold (9 kg/hr) reference levels for the spawning stock. Overall, the stock assessment of this species is based on a weight of evidence approach. In 2024, the mean survey catch rate for the blue endeavour prawn spawning stock was 22.1 kg/hr, well above the threshold level and an improvement on the 2023 estimate (Pilbara Prawn Figure 7). Biomass dynamic modelling of the stock indicates an overall declining trend in relative biomass of blue endeavour prawns from 2013, though the relative biomass improved in 2024 to 0.61 which is above the target level (0.6K) (Pilbara Prawn Figure 8). The above evidence indicates that the biomass of the stock of blue endeavour prawns in the Pilbara is at **medium** risk.



PILBARA PRAWN FIGURE 7.
The endeavour prawn CPUE spawning index from fishery-independent surveys in spring (August, September, and October) relative to threshold (orange) and limit (red) reference lines. The shaded areas represent the 95% confidence interval.



PILBARA PRAWN FIGURE 8.
Trends in relative biomass estimates for blue endeavour prawns produced by the state-space biomass dynamics model. Reference lines are: 0.25K (limit; red), 0.5K (threshold; yellow), and 0.6K (target; green), uncertainty (± 95 % CL) is shown by the shaded area around the relative biomass estimate.

Banana prawn (Sustainable-Adequate)

In contrast to the other species accessed in the PPR, most of the catch of banana prawns, comes from the NBPMF, which contributes over 93% of the total catch to the PPR. A weight-of-evidence assessment of the banana prawn stock indicated an improvement in 2024 with catch and catch rates in the OPMF/NBPMF increasing in recent years while fishing effort directed to this species was low. Banana prawns are also a tropical species, and as such are unlikely to be negatively impacted by warming temperatures. The above evidence indicates that the biomass of the stock of banana prawns in the Pilbara is at **medium** risk.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Bycatch

Bycatch levels for Exmouth Gulf are relatively low by tropical trawl fisheries standards, with few species of significance to other fishing sectors being taken. Bycatch reduction devices (BRDs) are mandatory, with all boats required to fish with a 'grid' which allows larger marine animals to escape, and a secondary fish escape device (FED, square mesh panels) fitted in each net. All boats also use hoppers (in-water catch sorting systems), which add another level of improvement for bycatch survival and product quality.

An examination of bycatch composition in 2015, 2017, 2021 and 2024 was undertaken as part of MSC annual audits for the EGPMF. This examination compared a subset of the sites sampled in 2004 across both trawled and untrawled areas. Assessment of data from 2020-21 and 2024 found only seven of the ~170 species reported to comprise >2% of the total catch. Three species were target species (brown tiger, blue endeavour and western king prawns) with the remaining 4 being saury, goatfish, whiting or crab species. A recent ecological risk assessment (DPIRD 2020) identified that the risk to bycatch species incidentally caught by the EGPMF was **low**.

Protected species

Sea snakes, sawfish, syngnathids, and turtles are encountered in the EGPMF. Most are typically returned alive (Kangas et al. 2015). Grids keep captures of turtles and other large animals at low levels. In 2023, one EGPMF vessel trialled a BRD targeted at reducing sea snake captures. Preliminary results indicate this was highly effective, reducing sea snake landings by 81%. The effectiveness of this BRD will be further assessed through an FRDC project. The last 2 seasons has seen a marked improvement in species level reporting of endangered, threatened and protected (ETP) species, particularly sea snakes due to a strong education process. ETP interactions declined in 2024 compared to 2023 and further re-affirm the **medium** risk ascribed to the EGPMF at the most recent ecological risk assessment (DPIRD 2020) There were no reported ETP interactions in either OPMF or NBPMF.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

Owing to the predominantly mud and sand habitats of the trawl grounds, the trawl gear has relatively little physical impact on these benthic habitats. Overall, the nature of these fisheries and controls on effort indicate that environmental impacts to habitat are likely to be low (Kangas et al. 2015). Performance measures for habitat impacts relate to the spatial extent of trawling within the licensed boundary areas of the fisheries. In 2024, the total area trawled in the EGPMF was estimated at 1,154.4 km^2 (41.7% of the permitted trawl grounds in Exmouth Gulf), well below the <60% target level. A **medium** risk was assigned to habitat during a recent ecological risk assessment for the EGPMF (DPIRD 2020). OPMF and NBPMF areas trawled were both <0.1% of the permitted trawl grounds.

Ecosystem

The impact of catch on local food chains is unlikely to be significant given the high level of natural mortality, extent of the non-trawled areas, and variable biomass levels of prawns resulting from changing environmental conditions influenced by cyclone events. A **low** risk was assigned to the ecosystem.

SOCIAL AND ECONOMIC OUTCOMES

Ten individual vessels accessed the Resource in 2024. This included 6 dedicated active EGPMF vessels, three active NBPMF vessels, with one of these also operating in the OPMF, in conjunction with another dedicated OPMF vessel. With slight variation in crewing between vessels, it is estimated that the Resource supports 44 fishers, with additional staff in support / processing roles on shore. Owing to the size of the fleet, location of fishing and the lack of recreational catch, the Resource has a Level 1 social amenity. Ex-vessel (beach) prices for prawns vary, depending on the type and quality of product, and the market forces operating at any point in time. In this fishery, there is a high degree of vertical integration, with the licensee undertaking direct marketing of the product into domestic and overseas markets. For this reason, the prices quoted for prawns and byproduct are provided by the licensee as an overall average price considering each grade landed. Using the state-wide mean beach price for each species in the 2022-23 financial year, the

total estimated value of the fishery, including byproduct, is $11.5 million for 2024.

GOVERNANCE SYSTEM

Harvest Strategy

The fishery is managed in accordance with the EGP Harvest Strategy with a revised version published in July 2021, following its five-year review. The EGP Harvest Strategy now incorporates the Bycatch Action Plan, which was previously a standalone document.

The primary management objective for the Harvest Strategy is to maintain the spawning stock biomass of each target species at a level where the main factor affecting recruitment is the environment.

The key stock indicators for each primary species were above their respective threshold levels for 2024.

Annual Catch Tolerance Levels

Total landings of blue endeavour and brown tiger prawns were within their catch tolerance ranges. Western king prawns were within the revised catch tolerance range. The annual fishing level is considered **acceptable**.

Compliance

It is a requirement that all vessels in the fishery are fitted with an Automatic Location Communicator (ALC). The ALC enables the department to monitor the fleet using a Vessel Monitoring System (VMS) and manage compliance with temporal and spatial closures. DPIRD also undertakes regular vessel inspections to ensure fishing is being undertaken in accordance with the governing legislation (e.g. gear requirements, catch reporting).

Consultation

DPIRD, in conjunction with the Industry Consultation Unit of the Western Australian Fishing Industry Council (WAFIC), holds annual management meetings (MM) for the EGPMF and less frequent MMs for OPMF and NBPMF. The MM is an opportunity for DPIRD, WAFIC, and industry to discuss research outcomes, initiatives, management of the fishery, and industry issues. EGPMF season arrangements are developed each year in direct consultation with the licence holder. During the season, DPIRD and the licence holder undertake collaborative in-season management to ensure the protection of smaller prawns and to maintain the spawning stock biomass. OPMF and NBPMF season arrangements are set on a 3-5 yearly basis in consultation with licence holders.

Skipper's briefing meetings are held annually prior to the season commencing, which are attended by skippers, other industry members, and DPIRD.

DPIRD has an industry/department steering group for managing MSC recommendations and conditions.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

Management initiatives in 2024-25 included works to support MSC re-accreditation.

From 2024, the EGPMF has reported catch and effort electronically via 'CatchLog' as the sole reporting method, replacing paper-based logbooks. EGPMF's use of *CatchLog* was also a case study in the joint Fisheries Research Development Corporation (FRDC) and Australian Research Data Commons (ARDC) 'Food Security Data Challenges' project, which aimed to increase the digital maturity of the fishing (and aquaculture) sector by developing a data platform to improve DPIRD's ability to receive electronic data. This will improve capabilities derived from real-time catch and effort information including providing efficient and transparent fisheries reporting, management, decision making, and profitability. The project was finalised mid-2025 and delivered a product which has brought DPIRD one step closer to being able to expand the electronic catch reporting trial to other prawn fisheries.

EXTERNAL DRIVERS

Environment

Cyclones appear to have a significant effect on the productivity of Exmouth Gulf and can either have a positive or negative impact on prawns depending on the timing and severity of the cyclone, the species of prawn, and their location in the fishery. Heatwave events and warmer winter temperatures appear to contribute to a reduced abundance of brown tiger prawns in Exmouth Gulf. The causes of low recruitment periods appear to be related to impacts on nursery habitats (Loneragan et al. 2013), and environmental factors, such as winter temperatures (Caputi et al. 2021).

Higher than average water temperatures also appear to be having a negative effect on western king prawn catches (Caputi et al. 2015a, b, Caputi et al. 2021) and will continue to be investigated.

Climate Change

Pilbara Prawn Resource Table 1 provides a summary of the climate vulnerability risk assessment outcomes for the key prawn species in the Kimberley region prawn resource. A mixture of **low** to **high** risk were identified that were reflective of species thermal tolerance and rainfall reliance.

Tiger and endeavour prawns are tropical species that are likely to tolerate further increase in SSTs and MHWs however risk to recruitment largely

depends on the negative impacts of a warmer ocean on key seagrass habitats. King prawns that are less reliant on seagrass habitats and are at their northern distribution along the Pilbara coast are at high risk from a warmer ocean climate. In contrast, banana prawns are at their southern distributional edge along the Pilbara and Gascoyne coasts and are likely to increase in productivity as SSTs increase. For all prawn species, increased summer rainfall is likely to be positive if it increases flooding and turbidity.

Other

Globally, the prawn market suffered due to excess supply of cheap prawns flooding the market and driving prices down. Traditional export markets have largely resumed since the impacts of COVID 19.

PILBARA PRAWN RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for the key target species in the Exmouth Gulf, Onslow and Nickol Bay prawn fisheries.

Indicator species	Sensitivity	Exposure	Climate Change risk
EGPMF Tiger prawn	High	Negative effects are unlikely	High
EGPMF King prawn	Medium	Demonstrable negative effects are evident	High
EGPMF Endeavour prawn	Medium	Remote or potentially positive effect	Low
EGPMF Banana prawn	Medium	Remote or potentially positive effect	Low
NBPMF Banana prawn	Medium	Remote or potentially positive effect	Low
OPMF Tiger prawn	Medium	Negative effects are unlikely	Medium
OPMF Endeavour prawn	Medium	Remote or potentially positive effect	Low

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KIMBERLEY PRAWN RESOURCE STATUS REPORT 2025

I. Koefoed, S. Wilkin, J. How, C. Warr, S Brown.



OVERVIEW

The Kimberley Prawn Resource comprises two northern prawn managed fisheries (Kimberley and Broome) that use low-opening, otter prawn trawl systems to target western king prawns (*Penaeus latisulcatus*), brown tiger prawns (*Penaeus esculentus*), and blue endeavour prawns (*Metapenaeus endeavouri*). High-opening otter trawl systems are also used when targeting banana prawns (*Penaeus merguiensis*), which are the main target species for the Kimberley fishery.

Management of the Kimberley Prawn Resource is based on input controls, including limited entry, gear controls (maximum headrope units), and temporal and spatial openings and closures.

The fisheries have Australian Government export approval until 2028 (under Part 13 of the *Environment Protection and Biodiversity Conservation Act 1999*).

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery (2024)	Total Catch: <100 t	Acceptable
Recreational fishery (N/A)		
EBFM		
Indicator species		
Banana prawns (KPMF)	Moderate risk: Catch for KPMF below predicted range due to low effort. Increase in banana prawn catch rate	Adequate
Western king prawns (BPMF)	Low risk: No fishing in BPMF	Adequate
Brown tiger prawns (KPMF)	Low risk: Very low catch consistent with historical levels	Adequate
Ecological		
Bycatch	Low risk	Adequate
Listed Species	Low risk	Adequate
Habitat	Low risk	Adequate
Ecosystem	Low risk	Adequate
Economic (GVP $2.2m)	High risk	Acceptable
Social (low amenity)	Low risk	Acceptable
Governance	Medium risk	Acceptable
External Drivers – Climate change	KPMF: Medium risk (banana prawn) BPMF: High risk (King prawn)	

Key to table: KPMF = Kimberley Prawn Managed Fishery; BPMF = Broome Prawn Managed Fishery.

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Total Catch (t)	KPMF – 108 BPMF – Neg	KPMF – <100t BPMF – NA	KPMF & BPMF catch data not available due to confidentiality issues.
Commercial Effort (days)	KPMF – 148 BPMF – Neg	KPMF – <100 BPMF – NA	KPMF effort data not available due to confidentiality issues. No effort in BPMF in 2024.
Participation (vessels)	KPMF – 5 BPMF – 2	KPMF – 2 BPMF – 0	
Beach price ($/kg)	Ba – $10.38 Tg – $14.80 En – $9.00	Ba – $9.77 Tg – $16.14 En – $8.69	
By-catch	-	-	Limited data available.
Listed Species interactions	NIL	6SF, 8SS	

Key to table: Neg = negligible; Ba = Banana prawn; Tg = Brown Tiger prawn; En = Endeavour prawn; NA = Not reportable as there are fewer than 3 active authorisation holders.

CATCH AND LANDINGS

Kimberley Prawn Managed Fishery (KPMF)

Prawn landings for the KPMF (<100 t) were predominantly banana prawns (>95%), with minor catches of brown tiger and blue endeavour prawns (Kimberley Prawn Figure 1). There are two fishing periods within the season (April to mid-June, and August to November) with around 85% of the total landings taken during the first fishing period. Negligible quantities of byproduct were reported.

Broome Prawn Managed Fishery (BPMF)

There was no fishing activity in 2024 as dual licenced vessels were deployed to more profitable fishing grounds.

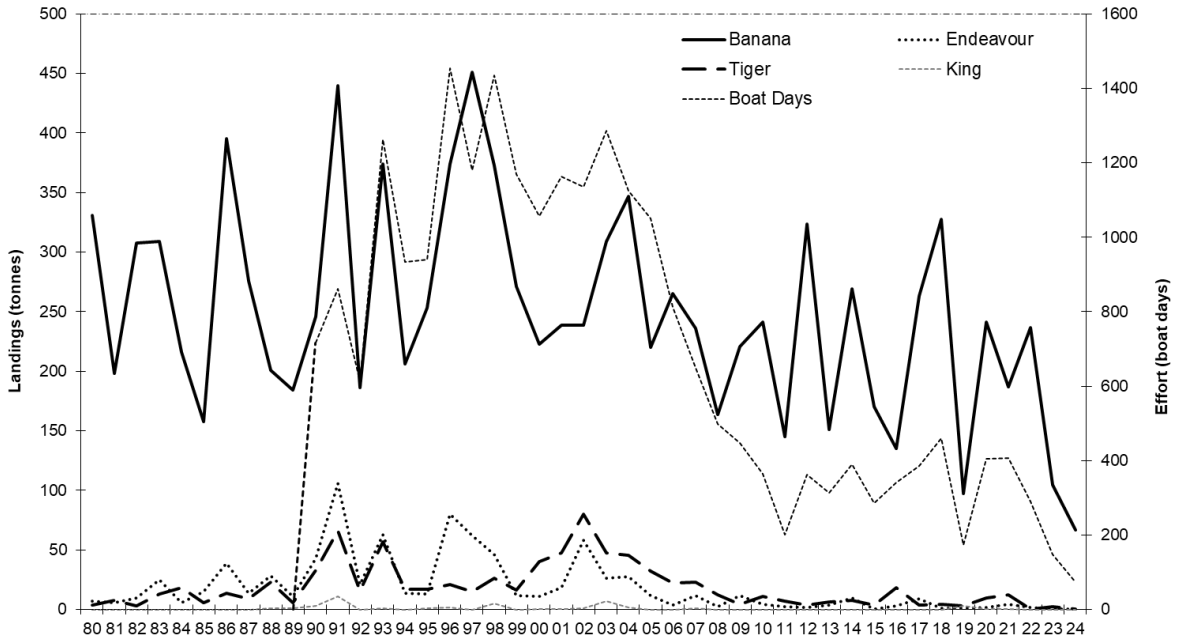
INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Kimberley Prawn Managed Fishery – Banana prawns (Sustainable-Adequate)

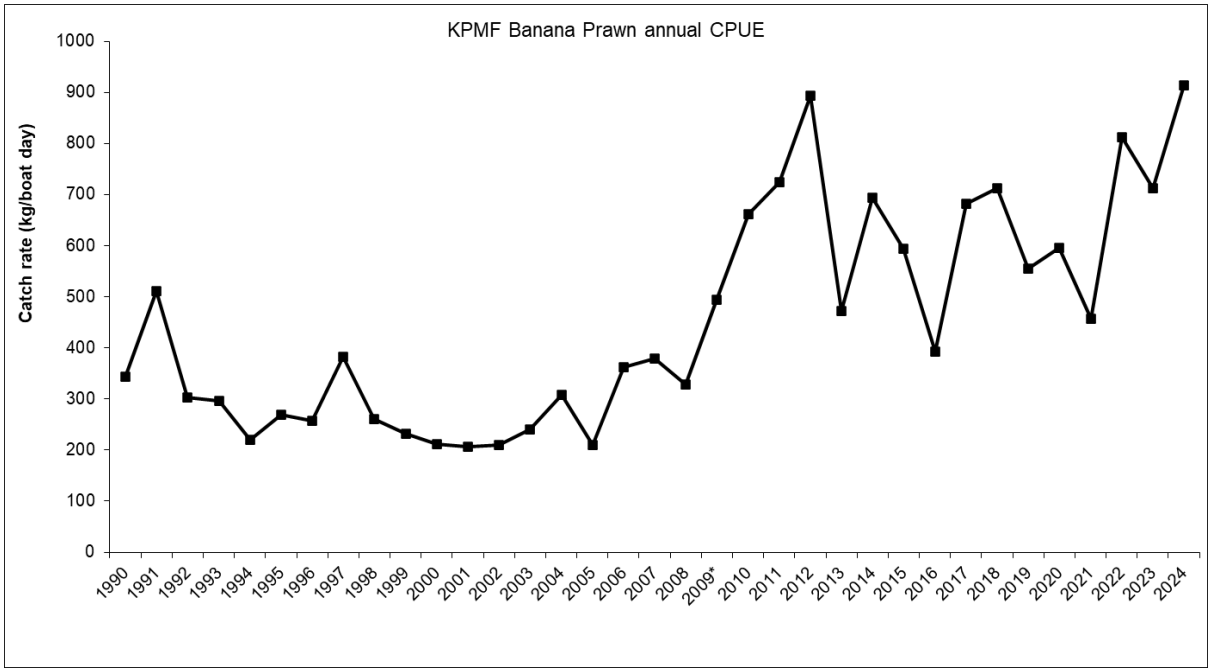
There has been a decline in landings in the KPMF for all species (Kimberley Prawn Figure 1), though this has been driven by a decline in effort. However, banana prawns, which is the dominant species retained by the fishery (Kimberley Prawn Figure 1), shows an increase in catch rates (Kimberley Prawn Figure 2). Therefore, based on annual trends in catch and catch rates the stock is considered to be fished at a sustainable level with the breeding stock considered **sustainable-adequate**

Broome Prawn Managed Fishery – Western king prawns (Sustainable-Adequate)

No fishing has taken place in the BPMF during the breeding season in recent years. The breeding season is protracted for this species on the north coast but has a peak over winter and spring. Higher average water temperatures appear to be having a negative effect on western king prawn catches in the northern prawn fisheries. There was no fishing activity in 2024, so no extraction impact on breeding stocks. The breeding stock is therefore considered to be **sustainable-adequate**.



KIMBERLEY PRAWN FIGURE 1.
Annual prawn landings (t), and fishing effort (total adjusted days) for the Kimberley Prawn Managed Fishery 1980-2024.



KIMBERLEY PRAWN FIGURE 2.
Catch rate (kg / boat day) of banana prawns in the Kimberley Prawn Managed Fishery 1980-2024.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Bycatch

Bycatch levels for all these fisheries are relatively low by tropical trawl fishery standards, with few species of significance to other fishing sectors being taken. Bycatch reduction devices (BRDs) have been fully implemented since 2003, with all boats required to fish with a 'grid' which allows large marine animals such as turtles to escape. In addition to grids, a secondary fish escape device (FED, square mesh panels) has been required to be fitted in each net since 2005. All vessels also use hoppers (in-water catch sorting systems), which adds another level of improvement for bycatch survival. **Low** risk.

Protected species

While protected species including dugongs, turtles, sawfish, and sea snakes occur in the general area of these northern prawn fisheries, only sea snakes and sawfish, and occasionally turtles are encountered in the trawl catches. Most are typically returned to the sea alive. Grids have largely eliminated turtle and other large animal captures. **Low** risk.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

The trawl gear has relatively little physical interaction with complex benthic environments. Given the predominantly mud and sand habitats of the trawl grounds, the seasonal nature of these fisheries, and controls on effort, benthic impacts from operations are likely to be low. The total percentage area fished within the approved boundary (extent) of the two northern prawn fisheries was <1 % in the KPMF and NIL in the BPMF. **Low** risk.

Ecosystem

Catch impact to local food chains is unlikely to be significant considering the high natural mortality of prawns, the extent of non-trawled nursery areas in each fishery, and the naturally variable biomass levels of prawns influenced by weather events such as cyclones and heavy rainfall. **Low** risk.

SOCIAL AND ECONOMIC OUTCOMES

Social

In 2024 the estimated employment for the Kimberley Prawn Resource operational period was 15 people, including skippers and crew.

GOVERNANCE SYSTEM

Harvest Strategy

Management arrangements for both fisheries are designed to keep fishing effort at levels that will maintain a sufficient spawning biomass of prawns. For the KPMF, an effort cap of 1,500 vessel days is set for the season, distributed in two parts. For the BPMF, trial fishing is undertaken to assess the stock level of western king prawns prior to commercial fishing commencing, thus retaining high levels of spawning biomass. Bycatch reduction devices, including grids, and FEDs are a mandatory requirement.

Annual Catch Tolerance Levels

KPMF: 240-450 t (**acceptable**). Banana prawns and all other prawn species landings were below their catch tolerance range. Effort was the lowest on record for this fishery in 2024, thus, the low level of catch was expected.

BPMF: 55-260 t (**acceptable**). No fishing occurred in 2024.

Compliance

It is a requirement that all vessels in these fisheries are fitted with an Automatic Location Communicator (ALC). The implementation of an ALC enables DPIRD to monitor the fleet using a Vessel Monitoring System (VMS) and manage compliance with temporal and spatial closures. DPIRD also undertakes regular vessel inspections to ensure fishing is being undertaken in accordance with the governing legislation (e.g. gear requirements, catch reporting).

Consultation

Meetings between DPIRD, WAFIC, and licence holders are held to consider the status of stocks and discuss previous and proposed fishing arrangements.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives/Outlook

A series of marine parks in the Kimberley have been implemented by the Department of Biodiversity, Conservation and Attractions. These limit available fishing areas in the KPMF, and fishers will be offered compensation as a result. Following this process, DPIRD and industry will consider a management review of the KPMF to address latent effort across these fisheries and contemporise and streamline management arrangements. The review proposes to unitise effort days and introduce an individual transferable effort system. This would provide industry an opportunity to consolidate entitlement, address latent effort, and allow for improvements in the fishery's seasonal management arrangements.

EXTERNAL DRIVERS

Environment

A positive relationship has been observed between summer rainfall and banana prawn landings.

High water temperatures have had a negative effect on western king prawn catches in recent years (Caputi et al. 2015a, 2016), which may be impacting those northern prawn fisheries that target western king prawns (e.g. BPMF).

Climate Change

Kimberely Prawn Resource Table 1 provides a summary of the climate vulnerability risk assessment outcomes for the key prawn species in the Kimberley prawn resource. Kimberely banana prawns were deemed at **medium** risk and Broome king prawns at **high** risk from climate change.

For Kimberley banana prawns, predicted increases in summer rainfall is likely to be positive, given this species has a known positive relationship with rainfall in other Australian fisheries. Evidence suggests this species is adaptable to a wide range of salinities. Sea level rises could be positive if they extend mangrove coverage, but negative if they are extreme enough to result in mangrove habitat loss.

King prawns are at their northern distributional limit in Broome, with a demonstrable decline in abundance in recent decades. Thus, there is high confidence that projected increase in SSTs, MHW days and ocean acidification will further adversely impact this stock by 2050.

KIMBERLEY PRAWN RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for the key prawn species in the KPMF and BPMF.

Indicator species	Sensitivity	Exposure	Climate Change risk
KPMF Banana prawn	Medium	Negative effects are unlikely	Medium
BPMF King prawn	Medium	Demonstrable negative effects are evident	High

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NORTH COAST NEARSHORE AND ESTUARINE RESOURCE STATUS REPORT 2025

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OVERVIEW

The Kimberley Gillnet and Barramundi Fishery (KGBF) operates in the nearshore and estuarine zones of the NCB and extends from the WA/NT border (129ºE) to the top end of Eighty Mile Beach, south of Broome (19ºS; North Coast Nearshore and Estuarine Figure 1). It encompasses the taking of any fish by gillnet in inshore waters and the taking of barramundi (*Lates calcarifer*) by any means. The principal species landed are barramundi and two species of threadfin (king threadfin *Polydactylus macrochir* and blue threadfin *Eleutheronema tetradactylum*). Small quantities of elasmobranchs (sharks and rays), black jewfish (*Protonibea diacanthus*), and tripletail (*Lobotes surinamensis*) are also landed.

The main areas of operation for the commercial fishery are the river systems and tidal creek systems of the Cambridge Gulf (including Ord River), the Ria coast of the northern Kimberley (six small river systems), and King Sound. Access to the KGBF is limited to four licences.

The KGBF is managed primarily through input controls in the form of limited entry, seasonal and spatial area closures, and gear restrictions.

Commercial fishing is prohibited between the southern boundary of the fishery (19º00′ S) to north of Willie Creek (17º44′ S) and the southern reaches of King Sound (North Coast Nearshore and Estuarine Figure 1). Fishing is also restricted to within three nautical miles of the high-water mark for the remainder of the fishery. There are commercial fishing area closures around major town sites and recreationally important fishing locations, southern King Sound, encompassing Derby and the Fitzroy River, and all its creeks and tributaries south of 17º27′ S, and the lower Ord River upstream of Adolphus Island.

Recreational fishers also target nearshore and estuarine species from the shore or a boat. The main recreational fishing methods are line fishing. Boat-based recreational catches are monitored every three years. Shore-based recreational catches are unquantified and may be substantial for some species.

Customary fishers also harvest nearshore and estuarine species. Customary catch has not been assessed but anecdotally is low.

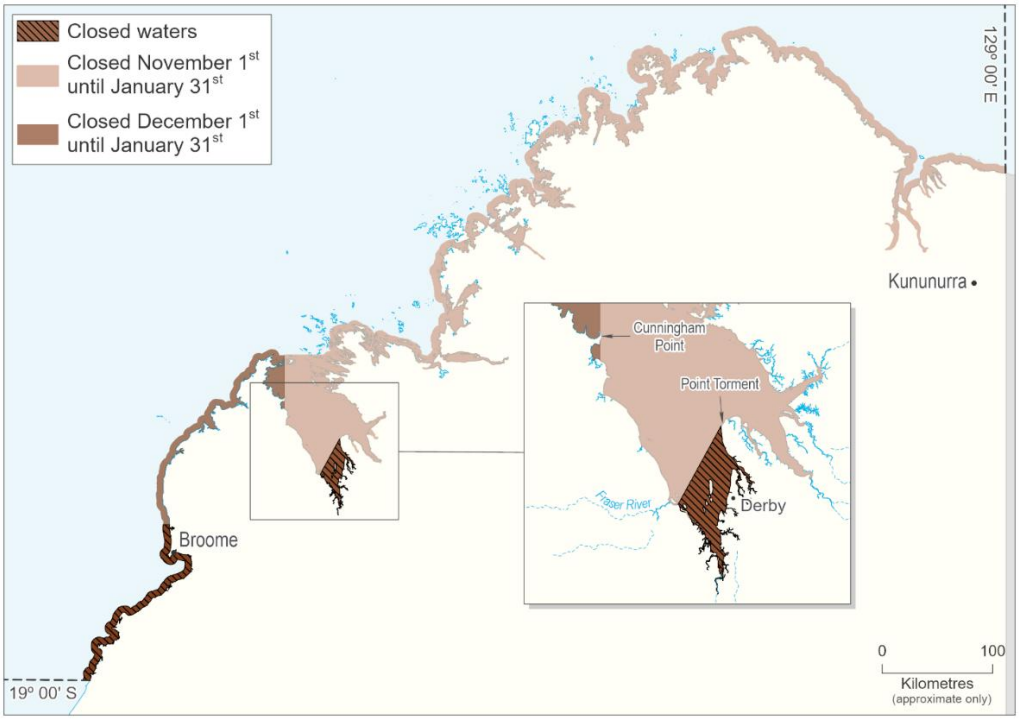
SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery (Barramundi 33–44 t):	KGBF 2024: 68.3 t (Barramundi 40.1 t)	Acceptable
Recreational sector	Recreational 2023-24 (boat only): 18 t (95% CI 11–26 t) Charter 2024: 7.4 t	Acceptable
EBFM		
Indicator species		
Barramundi	Medium Risk: Catches within reference range, catch rates remain high, as effort is low	Adequate
King threadfin	Medium Risk: Catches well below the average of 74.5 t for the 10-year period from 2004–2013	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Low risk	Adequate
Habitat	Negligible risk	Adequate
Ecosystem	Negligible risk	Adequate
Economic (GVP $ ($1–5 m)	Low risk	Acceptable
Social (low amenity)	Low risk	Acceptable
Governance	Medium risk	Acceptable
External Drivers – Other	Low risk	Acceptable
External Drivers – Climate change	High risk (Barramundi, King threadfin)	

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Commercial retained catch	2023 KGBF Total Catch: 86.8 t	2024 KGBF Total Catch: 68.3 t	
Commercial effort (block days)	KGBF: 401 days	KGBF: 354 days	
Recreational catch	2020-21 (boat only): 12–23 t (95% CI)	2023-24 (boat only): 11–26 t (95% CI)	Top 10 nearshore and estuarine species in NCB, boat-based fishing only (Ryan et al. 2025)
Recreational effort (boat days)	2020-21 (boat only): 27,334–43,010 boat days (95% CI)	2023-24 (boat only): 32,355–46,713 boat days (95% CI)	Days fished in NCB, boat-based fishing only (Ryan et al. 2025)
Charter catch	Kimberley 2023: 7.8 t Pilbara 2023: 0.3 t	Kimberley 2024: 7.0 t Pilbara 2024: 0.4 t	Nearshore/estuarine/freshwater finfish species only.
Charter effort (boat days)	Kimberley 2023: 2,495 days (55 vessels) Pilbara 2022: 1,119 days (32 vessels)	Kimberley 2024: 2,513 days (47 vessels) Pilbara 2024: 1,224 days (37 vessels)	Days fished across all vessels/trips in blocks adjacent nearshore/ estuarine/freshwater only. Excludes spearfishing while diving method.
Beach price	2022-23 Barramundi: $8.84 King Threadfin: $11.47 Blue Threadfin: $5.17 Black Jewfish: $6.14	2023-24 Barramundi: $12.24 King Threadfin: $15.26 Blue Threadfin: $5.33 Black Jewfish: $4.69	Principal landed species only
Bycatch	Sharks (Total): 451 (225 RA, 226 D)	Sharks (Total): 360 (180 RA, 180 D)	
Listed species interactions	Saltwater crocodiles: 133 (97 RA, 32 D, 4 U) Sawfish: 170 (111 RA, 58 D, 1 U) *Green sawfish: (45 RA, 2 D) *Narrow sawfish: (3 RA)	Saltwater crocodiles: 181 (132 RA, 26 D, 23 U) Sawfish: 135 (57 RA, 14 D, 64 U)	

Key to table: C and R represent commercial and recreational sectors. RA = Released Alive, D = Dead, U = Fate Unknown. GVP* is presented on a calendar year basis.



NORTH COAST NEARSHORE AND ESTUARINE FIGURE 1
Location and extent of the KGBF within the Kimberley region of WA.

CATCH AND LANDINGS

Commercial sector

The total reported catch of all species in the KGBF in 2024 was 68.3 tonnes (t). The majority of the catch comprised barramundi (40.1 t), followed by threadfin (26.2 t) which is predominantly king threadfin (North Coast Nearshore and Estuarine Table 1).

Recreational sector

The boat-based recreational harvest range for the top 10 nearshore and estuarine species in the NCB (representing 68% of the resource kept catch by numbers) was 18 t (95% CI 11–26 t) in 2023-24 (Ryan et al. 2025). Boat-based recreational catches of barramundi and threadfin in 2023-24 were 6.1 t and 5.7 t respectively (Ryan et al. 2025).

The charter catch for nearshore, estuarine, and freshwater species in the NCB was 7.4 t, with barramundi and threadfin representing 3.6 t and 0.2 t, respectively.

No current estimates of shore-based recreational catches are available.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Barramundi (Sustainable-Adequate)

Barramundi in WA are managed as a single stock; however, each catchment may have a discrete or semi-discrete biological stocks (Jerry et al. 2013). The catch rate declined to 113.4 kg/block day from 145.5 kg/block day in 2023 and 142.9 kg/block day in 2022 (North Coast Nearshore and Estuarine Figure 2).

Prohibitions to commercial fishing in nearshore areas within the NCB such as the Pilbara Coast, Eighty Mile Beach, the Broome Coast, and the southern area of King Sound provide a significant reduction in commercial fishing effort and large areas of protection for the targeted species. Recent catches and catch rates are considered to be largely reflective of the restrictions in available commercial grounds, the reduction of active commercial fishers, and environmental drivers of recruitment within each catchment.

The above evidence indicates the biomass of these stocks is unlikely to be depleted and recruitment is unlikely to be impaired and that current levels of fishing mortality (catch) are unlikely to cause the stock to become recruitment impaired. Thus, the breeding stock of barramundi is classified as **sustainable-adequate**.

King threadfin (Sustainable-Adequate)

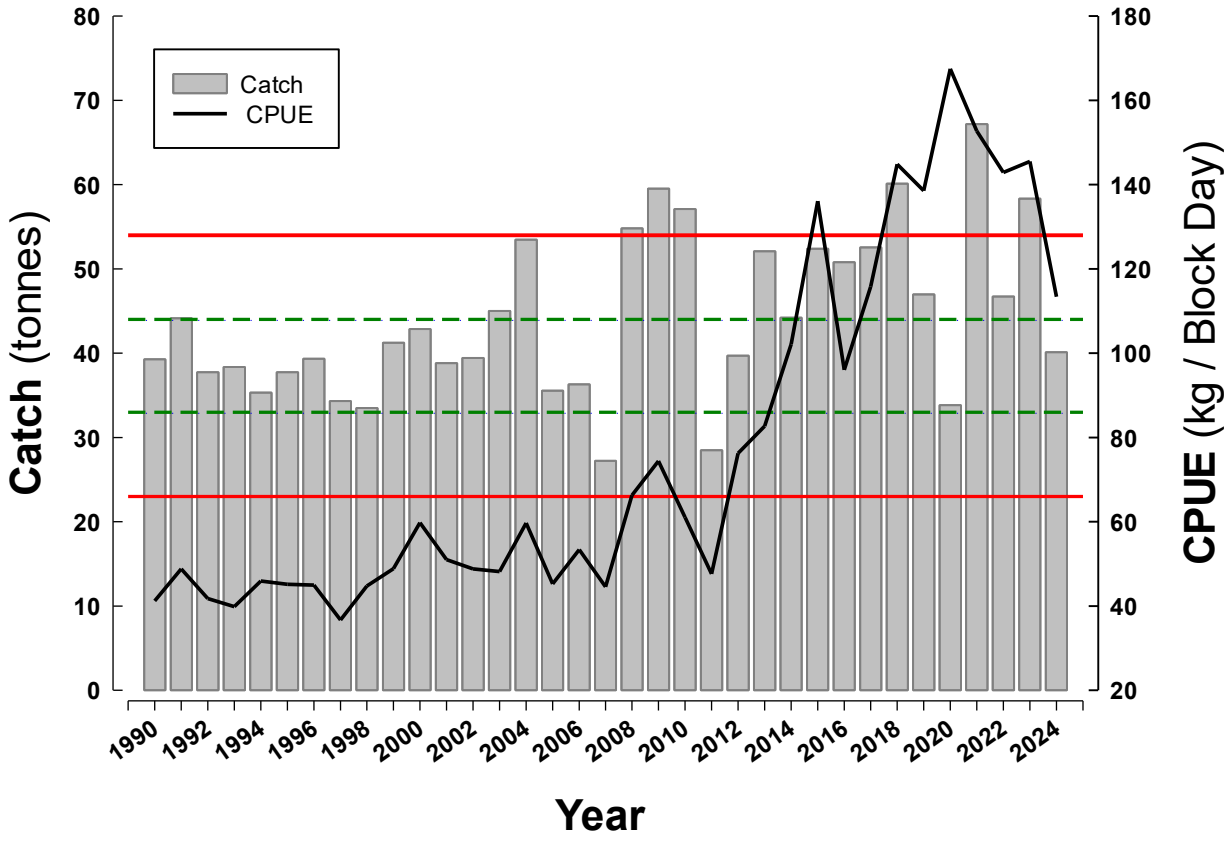
Threadfin catches are dominated by king threadfin. Recent catches are well below the average of 74.5 t for the 10-year period from 2004–13. This is due to the low effort levels now demonstrated in the fishery, following the removal of two fishing licences from the Broome coast area, with the area closed to commercial fishing in late-2013. The lower commercial catches in recent years (post-closures) are relatively stable. King threadfin are landed by recreational and charter fishers, but in smaller quantities (5.7 t). Recreational sector catches remain low. The above evidence indicates the biomass of these stocks is unlikely to be depleted and recruitment is unlikely to be impaired and that current levels of fishing mortality (catch) are unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, the breeding stock of king threadfin is classified as **sustainable-adequate.**

NORTH COAST NEARSHORE AND ESTUARINE TABLE 1
Summary of the reported catch (t) in the Kimberley Gillnet Barramundi Fishery in 2024 and the percentage composition of each of the major species retained.

Species	Catch (tonnes)	Composition %
Threadfin	26.2	38.3
Barramundi	40.1	58.7
Tripletail	0.4	0.5
Black jewfish	0.9	1.4
Other fish*	0.7	1
Total	68.3	100.0

*Other fish includes general catfish, Giant queenfish, sea mullet and unspecified species.



NORTH COAST NEARSHORE AND ESTUARINE FIGURE 2
The annual catch and catch per unit effort (CPUE, kg block day^{-1}) for barramundi from the KGBF over the period 1990 to 2024. The lower and upper bounds of the target commercial catch range for barramundi (33–44 t) are shown by the green lines, and lower and upper limit bounds (23–54 t) by the red lines.

BYCATCH AND LISTED SPECIES INTERACTIONS

Bycatch

The fishery operates at a relatively low intensity over a wide area of the Kimberley region, specifically targeting barramundi and threadfin. The fishing gear uses large mesh sizes, and hence does not generate significant bycatch, but does take some sharks and rays. Where practicable, sharks and rays are released alive. However, there is some mortality of sharks and rays associated with gillnet capture. Because of the low spatial density of fishing effort relative to the widespread distribution of these species and the size-selectivity of the permitted mesh sizes, these impacts pose a **negligible** risk to the stocks involved.

Listed species

The fishing gear used for this fishery (gillnets) is known to result in the occasional bycatch of protected crocodiles (*Crocodylus porosus*) and sawfish (Family Pristidae). These species are generally released alive or avoided as far as is practicable. Because of the low effort levels and the low spatial intensity of fishing effort, these impacts are unlikely to pose a significant threat to the sustainability of the stocks of these species (see Catch and Effort Summary Statistics Table).

Catches of the speartooth shark (*Glyphis glyphis*) and the northern river shark (*Glyphis garricki*), which are listed under the *Environment Protection and Biodiversity Conservation Act 1999* as critically endangered and endangered, respectively, are rare in the KGBF. However, as these species look similar to other whaler shark species, they may be captured but misidentified. No incidental captures of *Glyphis* sp. were reported in 2024.

Given the fishery's overall low effort levels, particularly inside the freshwater drainages in which these species are most likely to occur, the fishing operations of the KGBF are unlikely to pose a significant threat to the sustainability of the stocks of these species. Effort levels inside freshwater drainages will be monitored. The risk to listed species is assessed as **low**.

HABITAT AND ECOSYSTEM INTERACTIONS

There is low spatial density of fishing effort of the KGBF. The fishing gear has minimal impact on the habitat, which is subject to extreme tidal

currents and associated effects and typically comprises mud flats. The risk to habitats in the nearshore and estuarine ecosystem is assessed as **negligible**.

SOCIAL AND ECONOMIC OUTCOMES

Social

During the 2024 season (February to November), 3 vessels fished in the KGBF with an average crew of 2–3 people, and an estimate of at least seven people directly employed in the fishery. There was additional employment through local processors and distribution networks. The fishery provides fresh fish for local communities and the tourism industry throughout the Kimberley region.

An estimated 753,000 WA residents went recreational fishing in 2023-24 (DPIRD 2024). The recreational fishing participation rate in WA (26%) is higher than the Australian average (21%) (Moore et al. 2023). Recreational fishing attracts many visitors to the NCB, particularly in nearshore areas over the winter dry season (April–October). This provides employment through local charter fishing services and fishing tackle outlets around key population centres, as well as more remote charter operations offering wilderness fishing experiences in the north Kimberley region.

This resource provides a **high** social amenity value to the broader community (e.g. commercial fishing, recreational fishing, and consumers via commercial fish supply to markets and restaurants) and this fishery is an important asset locally and/or the use or existence of the asset is important to the broader community. There is currently a **low** level of risk to these values.

Economic

Estimated annual value (Gross Value of Production) to commercial fishers in 2023-24:

Level 2: GVP $1 – 5 million.

The establishment of marine parks may impact the future economic viability of the KGBF.

Recreational fishing in WA contributes over 9,000 jobs and over $1.1 billion per year to the economy and supports economic activity in many regional locations (Moore et al. 2023). This includes value derived from boat and shore-based fishing for nearshore and estuarine species in the NCB. The risk to this level of economic return is assessed as **low**.

GOVERNANCE SYSTEM

Harvest Strategy

The harvest strategy for barramundi in the KGBF is based on a constant exploitation approach where the annual commercial catches of barramundi may vary within the target catch range. The target catch range is based on an historical catch range (1989-1999) during which the fishery was stable, and levels of exploitation were considered to be sustainable. However, the target catch range for barramundi has recently been revised to be consistent with the reference points and control rules adopted for other fisheries. DPIRD undertakes annual and periodic review processes to provide recommendations to government on appropriate management responses.

Annual Catch Tolerance Levels (Acceptable)

The total catch of barramundi in 2024 exceeded the target commercial catch range of 33–44 t but was within the acceptable limit reference range of 23–54 t. DPIRD reviewed the current risk posed by this catch level and determined that it was **acceptable**.

Prohibitions to commercial fishing in certain nearshore areas provide large areas of protection for the targeted species. Moreover, catches and catch rates have increased overall in the remaining KGBF fishing areas. In addition, a barramundi stocking program is ongoing in the Kununurra region, which may contribute in some degree to the available fishable stock. All these factors indicate that there is a need to further review the harvest strategy and commercial catch ranges.

Management Initiatives

The establishment and development of the range of State marine parks in the Kimberley region is likely to impact the future economic viability of the KGBF. This represents a **medium** risk to governance.

EXTERNAL DRIVERS

Environment

The small, isolated stocks of barramundi found along the arid Pilbara coastline are likely to experience highly variable recruitment due to environmental fluctuations (e.g. the amount of rainfall).

Climate Change

North Coast Nearshore and Estuarine Resource Table 2 provides a summary of the climate vulnerability risk assessment outcomes for the key indicator species KGBF. Both barramundi and king threadfin were deemed at **high** risk from climate change.

For tropical estuarine species such as barramundi and king threadfin, there is limited understanding around responses to extreme ocean warming and their ability to escape into deeper depths or further southwards. Habitat suitability may be a barrier for stock expansion along this coastline. There is also

potential for shifts in spawning success above certain seasonal temperature thresholds.

Increasing wet season rainfall and the projected more intense tropical cyclones may have a positive influence through increased runoff and productivity which in turn increases prey availability for larvae and juveniles.

NORTH COAST NEARSHORE AND ESTUARINE RESOURCE TABLE 2.
Summary of the climate vulnerability risk assessment output for the key indicator species in the KGBF.

Indicator species	Sensitivity	Exposure	Climate Change risk
Barramundi	Medium	Negative effects are possible	High
King threadfin	Medium	Negative effects are possible	High

Other

The barramundi stocks utilising the Kimberley River systems as nursery areas are expected to be reasonably resilient to fishing pressure.

The introduction of marine parks across the Kimberley region has the potential to concentrate fishing effort from multiple sectors into those areas that remain open to fishing and are easily accessible, increasing the risks of local depletion of barramundi and threadfin stocks.

In addition, inter-sectoral conflict between the commercial and recreational fishing sectors in the Derby area surrounding access to the barramundi resource have resulted in the introduction of a commercial closure in the south of King Sound between Point Torment and Fraser River. This reallocation of the resource to the recreational fishing sector is reflective of the social value placed on barramundi and is not due to any stock sustainability concerns. The risk of these other external drivers to the Kimberley nearshore and estuarine resource are assessed as **low**.

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NORTH COAST DEMERSAL RESOURCE STATUS REPORT 2025

F. Trinnie, C. Skepper, D. Boddington, M. Watt



OVERVIEW

Over 60 demersal species occur in inshore (20-250 m deep) and offshore (>250 m) demersal habitats of the North Coast Bioregion (NCB) and are divided into the Kimberley Demersal Scalefish Resource (KDSR) and Pilbara Demersal Scalefish Resource (PDSR). These resources are exploited primarily by boat-based commercial, charter and recreational line fishers, with the majority of catch taken by commercial fisheries. The indicator species for inshore waters include red emperor (*Lutjanus sebae*), goldband snapper (*Pristipomoides multidens*), bluespotted emperor (*Lethrinus punctulatus*), and Rankin cod (*Epinephelus rankini*), while offshore waters include ruby snapper (*Etelis boweni*).

The fisheries that access the KDSR and PDSR do so in accordance with the *North Coast Demersal Scalefish Resource Harvest Strategy 2017-2021* (North Coast Demersal Scalefish Resource Figure 1; DPIRD 2017).

The KDSR is accessed by the commercial Northern Demersal Scalefish Managed Fishery (NDSMF), using handline, dropline, and fish traps, but since 2002 it has essentially been a trap-based fishery in waters >30 m. Management measures include gear time access and spatial zones. The main species landed are goldband snapper and red emperor.

The PDSR is accessed by the commercial Pilbara Fish Trawl (Interim) Managed Fishery (PFTIMF), Pilbara Trap Managed Fishery (PTMF) and Pilbara Line Fishery (PLF). These fisheries collectively use a combination of limited entry, effort allocations (time), gear limits, plus spatial zones (including extensive trawl closures) as management measures. The main species landed are bluespotted emperor, red emperor, and Rankin cod.

Recreational fishing activities in the NCB are mostly line-based fishing from private boats and charter vessels with effort concentrated around key population centres. The recreational fishery for demersal fish is managed using input controls (e.g. recreational licences) and output controls (e.g. bag and/or boat limits, size limits).

The PDSR is currently managed under a Phase 1 Recovery Plan implemented in 2024, following a stock assessment that showed stocks of red emperor was below the limit reference level (Wakefield et al. 2024). Management measures introduced in 2024 aimed to reduce retained catch of recovery species by 25% to initiate recovery, ahead of further changes in Phase 2 (mid-2026) to achieve a total of a 38% reduction in effort.

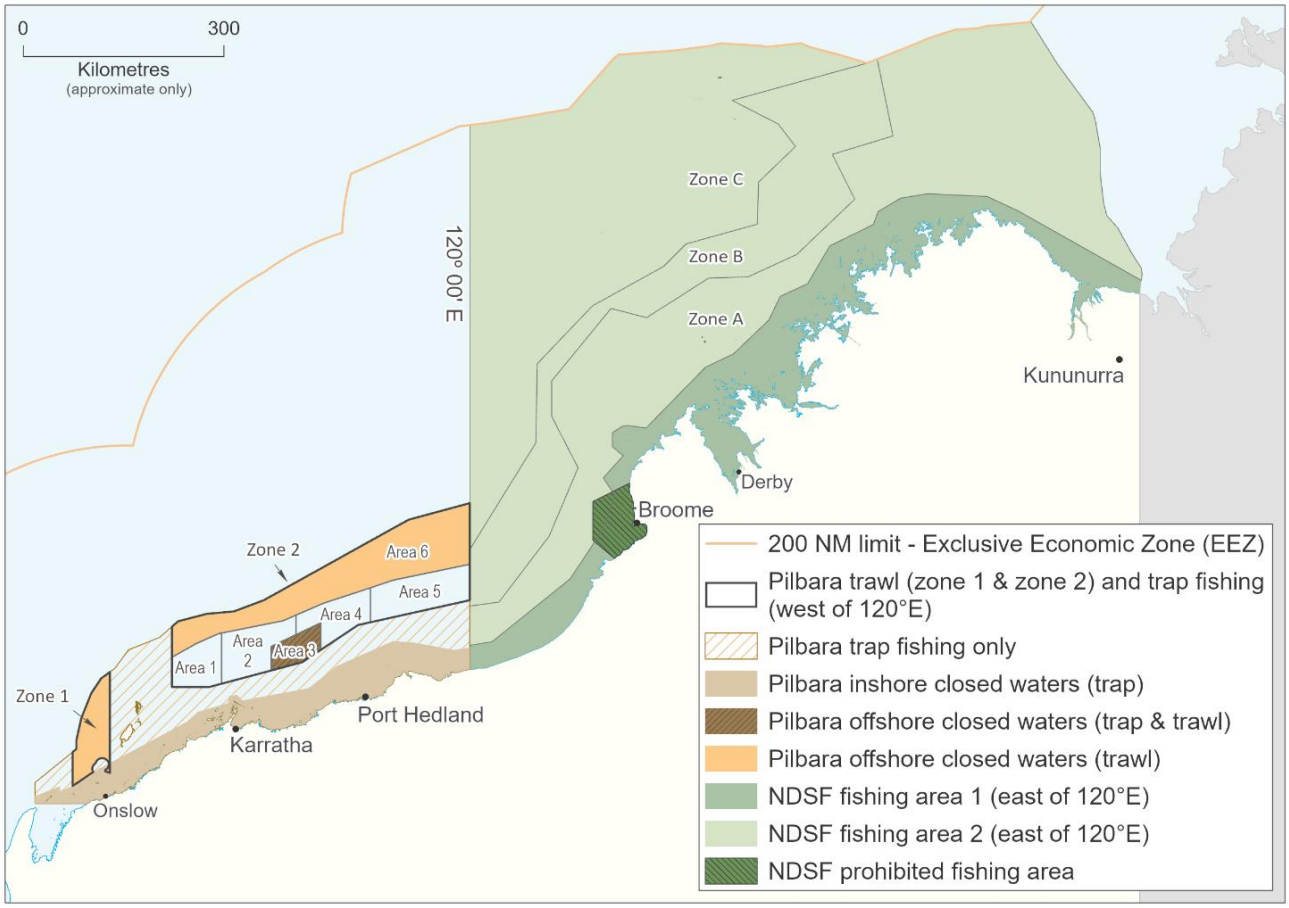
SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery: (903–1,332 t) Kimberley (1,217–2,080 t) Pilbara	 2024 NDSMF: 1,378 t 2024 PFTIMF, PTMF and PLF: 2,427 t	 Not acceptable Not acceptable
Recreational fisheries: 134 t NCB	2023-24 Recreational (boat only): 65 t (95% CI 48–82 t) 2024 Charter: 69 t	Acceptable
EBFM	**Outcome**	**Status**
Indicator species		
Kimberley Goldband snapper Red emperor	 Medium risk: $B_{threshold} < B_{rel} < B_{target}$ (2025) High risk: $B_{limit} < B_{rel} < B_{threshold}$ (2025)	 Sustainable-adequate Inadequate
Pilbara Red emperor Rankin cod Bluespotted emperor	 Severe risk: $B_{rel} < B_{limit}$ (2023) Low risk: $B_{rel} \approx B_{target}$ (2016) Medium risk: $B_{threshold} < B_{rel} < B_{target}$ (2023)	 Inadequate Sustainable-adequate Sustainable-adequate
Ecological		
Bycatch KDSR PDSR	 Low risk Low risk	 Acceptable Acceptable
Protected Species KDSR PDSR	 Low risk High risk	 Acceptable Not acceptable; management action
Habitat KDSR PDSR	 Low risk Low risk	 Acceptable Acceptable
Ecosystem KDSR PDSR	 Low risk Low risk	 Acceptable Acceptable
Economic KDSR (GVP $10-20 m) PDSR (GVP $10-20 m)	 Medium risk Medium risk	 Acceptable Acceptable
Social (low amenity) KDSR PDSR	 Medium risk Medium risk	 Acceptable Acceptable
Governance KDSR PDSR	 High risk High risk	 Not acceptable; management action Not acceptable; management action
External Drivers – Other	Low risk	Acceptable
External Drivers – Climate change	Low risk (Kimberley Goldband snapper, Pilbara Red emperor); Medium risk (Kimberley Red emperor, Pilbara Rankin cod, Pilbara Bluespotted emperor)	

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Commercial catch (demersals)	2023 NDSMF: 1,450 t PFTIMF: 1,907 t PTMF: 573 t PLF: 114 t	2024 NDSMF: 1,378 t PFTIMF: 1,876 t PTMF: 458 t PLF: 93 t	Catches reported for calendar year.
Commercial effort (demersals)	2023 NDSMF: 1,144 days (8 vessels) PFTIMF: 708 days (4 vessels) PTMF: 448 days (3 vessels) PLF: 319 days (6 vessels)	2024 NDSMF: 1,077 days (8 vessels) PFTIMF: 660 days (4 vessels) PTMF: 351 days (2 vessels) PLF: 207 days (5 vessels)	NDSMF VMS Standard boat days in 2024. Zone A 269 days Zone B 815 days Zone C 3 days
Charter catch (demersals)	2023 Kimberley: 19.4 t Pilbara: 46.8 t	2024 Kimberley: 14.3 t Pilbara: 55.0 t	Inshore and offshore demersal species.
Charter effort (regional)	2023 Kimberley: 2,331 days (50 vessels) Pilbara: 1,238 days (35 vessels)	2024 Kimberley: 1,840 days (48 vessels) Pilbara: 1,343 days (42 vessels)	Days fished across all vessels/trips in marine waters. Excludes spearfishing while diving/snorkelling and river fishing.
Recreational catch (demersals)	2020-21: 41–63 t (95% CI)	2023-24: 48–82 t (95% CI)	Top 15 demersal species in NCB, boat-based fishing only (Ryan et al. 2025)
Recreational effort (regional)	2020-21: 27,334 - 43,010 boat days (95% CI)	2023-24: 32,355 - 46,713 boat days (95% CI)	Days fished in NCB, boat-based fishing only (Ryan et al. 2025)
Beach price	2023-24 Red emperor: $12.75/kg Goldband snapper: $10.72/kg Bluespotted emperor: $5.79/kg Rankin Cod: $9.44/kg	2023-24 Red emperor: $13.44/kg Goldband snapper: $11.43/kg Bluespotted emperor: $5.99/kg Rankin Cod: $9.90/kg	Domestic market supply and demand. Indicator species only.
Listed species interactions	NDSMF: 115 sea snakes (56 RA, 59 U) PFTIMF: 275 interactions PTMF: 151 sea snakes (RA) PLF: No reported interactions	NDSMF: 115 sea snakes (12 RA, 103 U), 4 potato cod (4 U) PFTIMF: 198 interactions see Table 2 (below) PTMF: 102 sea snakes (102 U) PLF. No reported interactions	Note: Seasnake interactions are reported from processor unload returns as these are greater than those reported in daily logbooks.

Key to table: C and R represent commercial and recreational sectors. RA = Released Alive, U = unknown (condition not reported). GVP* is presented on a calendar year basis.



NORTH COAST DEMERSAL FIGURE 1.
Areas and zones of the demersal scalefish fisheries of the North Coast bioregion of WA. In the Pilbara: Zone 1 has been closed to trawling since 1998; Areas 1 to 6 comprise Zone 2 of the PFTIMF. In the Kimberley: Zones A, B and C comprise Area 2 of the NDSMF.

CATCH AND LANDINGS

In line with the NCDSR Harvest Strategy, catch reviews for the demersal suite are undertaken annually based on retained catch.

Commercial sector

Kimberley

Within Area 2, total catches have been increasing since 2002, when the fishery essentially became trap only. Since 2008, annual catches have exceeded 1,000 t. Within Area 1, less than 2 t has historically been caught, and no fishing occurred between 2014–2023.

The retained catch of demersal scalefish by the NDSMF in 2024 (1,378 t) was above the Harvest Strategy range of 903–1,332 t (FMP No. 278). The majority (81%) of the catch in 2024 was caught in Area 2, Zone B (North Coast Demersal Table 1).

Pilbara

The annual catches from the PFTIMF, PTMF and PLF peaked at 3,600 t in 1996. In 2008, following declining catch rates and relatively high levels of fishing mortality for red emperor in the western areas of the PFTIMF, effort was reduced for the PFTIMF in these areas in 2010. In 2016, the commercial catches exceeded 2,000 t for the first time since effort reductions in 2010 and has remained above 2,000 t since.

The retained catch of demersal scalefish by all commercial fisheries in the Pilbara in 2024 (2,427 t) was above the Harvest Strategy range of 1,217–2,080 t (FMP No. 278). Most of the catch (77%) was landed by the PFTIMF.

The 2024 commercial catch against the Phase 1 commercial recovery benchmarks were (North Coast Demersal Table 1):

- Red emperor: 100 t retained (118.2 t recovery benchmark).
- Jobfishes (inc. Goldband snapper): 174.2 t retained (144.2 t recovery benchmark).
- Crimson snapper: 187 t retained (157.5 t recovery benchmark).
- Saddletail snapper: 92 t retained (82.9 t recovery benchmark).

Recreational sector

The boat-based recreational harvest range for the top 15 demersal species in the NCB (representing

87% of the resource kept catch by numbers) was steady at 65 t (95% CI 48–82 t) in 2023-24 compared with 52 t (95% CI 34–70) in 2020-21, 69 t (95% CI 46–93) in 2017-18, 36 t (95% CI 24–49) in 2015-16, 50 t (95% CI 31–69) in 2013-14 and 77 t (95% CI 54–100) in 2011-12 (Ryan et al. 2025).

The combined recreational and charter catch for 2024 against the Phase 1 recreational recovery benchmarks was 28 t retained demersal fish in NCB (35.5 t recovery benchmark).

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

The demersal indicator species for the KDSR are red emperor and goldband snapper and in the PDSR are red emperor, Rankin cod, and bluespotted emperor. The stock status of the indicator species is assessed periodically (~every 4–5 years) using a weight-of-evidence approach that considers all available information to evaluate key performance indicators for stock status, including estimates of fishing mortality (F) and relative spawning biomass (B_{rel}).

Periodic assessments of selected non-indicator species are also undertaken.

The most recent assessments of key indicator species were conducted in 2025 for the Kimberley based on data collected up to 2024 (Trinnie et al. 2025), and in 2023 for the Pilbara based on data collected up to 2022 (Wakefield et al. 2024).

Kimberley (Inadequate)

A 2025 integrated model (Level 5) assessment of the red emperor Kimberley stock estimated B_{rel} to be between the threshold and limit reference levels (i.e. 30% > B_{rel} > 20%). Model projections, based on average recruitment and 2024 catch, indicated the B_{rel} is unlikely to rebuild to above the target reference level by 2035, and thus classified as **inadequate** and assessed as **high** risk.

The 2025 integrated model (Level 5) assessment of the goldband snapper Kimberley stock estimated B_{rel} to be between the target and threshold reference levels (i.e. 40% > B_{rel} > 30%). Model projections, based on average recruitment and 2024 catch, indicated the B_{rel} would likely decline to around the threshold reference level by 2035. Goldband snapper is currently classified as **sustainable-adequate** and assessed as **medium** risk.

Pilbara (Inadequate)

A 2023 integrated model (Level 5) assessment of the red emperor Pilbara stock estimated B_{rel} to be below the limit reference level (i.e. B_{rel} < 20%). These results indicate that overfishing of this species is likely to be occurring, and a major level of stock depletion is considered likely. Red emperor was classified as **inadequate** and assessed as **severe** risk.

A 2023 integrated model (Level 5) assessment of the bluespotted emperor Pilbara stock estimated B_{rel} to be between the target and threshold reference levels (i.e. 40% > B_{rel} > 30%), and thus classified as a **sustainable-adequate** and assessed as **medium** risk.

The status of goldband snapper in the western Pilbara (i.e. west of 116°E) was also assessed. The 2023 catch curve and equilibrium biomass analysis (Level 3) assessment of goldband snapper from the western Pilbara estimated B_{rel} to be between the threshold and limit reference levels (i.e. 30% > B_{rel} > 20%), and thus heavily exploited with a high risk of stock depletion considered likely. Goldband snapper was classified as **inadequate** and assessed as **high** risk.

NORTH COAST DEMERSAL TABLE 1.
Summary of the commercial catches and the relative contribution (% composition of the total NCB demersal catches) of each of the major species taken within the Pilbara and Kimberley (Area 2) subregions of the NCB in 2024. *Goldband snapper catch represents 91% of the combined jobfish (all *Pristimpomoides* spp.) catches based on the average proportions recorded from independent surveys.

Species	Pilbara catch		Kimberley catch		Total catch
	tonnes	% total	tonnes	% total	tonnes
Goldband snapper*	158	27%	436	73%	594
Red emperor	100	40%	151	60%	251
Bluespotted emperor	303	88%	43	12%	346
Saddletail snapper	92	28%	233	72%	325
Rankin cod	143	64%	79	36%	222
Crimson snapper	187	78%	52	22%	239
Rosy threadfin bream	212	100%	<0.1	0%	212
Brownstripe snapper	171	91%	17	9%	188
Frypan snapper	50	100%	<0.1	0%	50
Spangled emperor	63	64%	35	36%	98
Moses snapper	48	73%	18	27%	66
Longnose emperor	19	48%	21	53%	40
Barcheek coral trout	14	67%	7	33%	21
Ruby snapper	14	82%	3	18%	17
Other demersal scalefish	855	73%	324	27%	1,179
Total all demersal scalefish	2,427	64%	1,378	36%	3,805

BYCATCH AND LISTED SPECIES INTERACTIONS

Kimberley Trap / Pilbara Trap

Bycatch

There is a limited quantity of non-retained bycatch (including inedible species and undersized marketable species) in the NDSMF and PTMF. The most common bycatch species is the starry triggerfish (*Abalistes stellatus*), but the numbers taken are considered to pose a **low** risk to populations.

Listed species

Traps used in continental shelf regions are highly unlikely to interact with listed species. Previous video observations indicate that the potato cod (*Epinephelus tukula*) can be present in high numbers at discrete locations within the fishery. However, potato cod rarely enter traps because most individuals encountered are large in size and girth, which limits their capacity to pass through the entrance funnel into the traps. In 2024, four interactions with potato cod were reported in the NDSMF (release condition not reported).

The NDSMF and PTMF regularly capture sea snakes. In 2024, the NDSMF reported interactions with 115 sea snakes (12 returned alive, 103 release condition not reported) and the PTMF reported 102 interactions (all with condition not reported). Overall, the level of interactions with listed species is considered a **low** risk to listed species populations.

Pilbara Fish Trawl

Bycatch

Species of teleosts caught as bycatch by the PFTIMF are typically small bodied and/or short-lived species, which are more productive than long-lived teleosts. Thus, the indicator species used in the weight-of-evidence stock assessments for the PDSR are considered to provide an adequate indication of the stock status for similar or less vulnerable retained and bycatch species.

While a number of bycatch species may be discarded (including inedible species and undersized marketable species) and may not all survive, this still represents a minor impact to their populations and therefore represents a **low** risk.

Listed species

The use of Bycatch Reduction Devices (BRDs) has been mandatory in the PFTIMF since 2006. BRDs are highly effective in reducing (turtles and) bycatch. Bottlenose dolphin interactions with BRDs are rare (5.2 per 1,000 trawls) despite high levels of attendance and depredation during

trawling. Loss of targeted teleosts through the BRD hatch is also rare (1.3% of fish during day trawls).

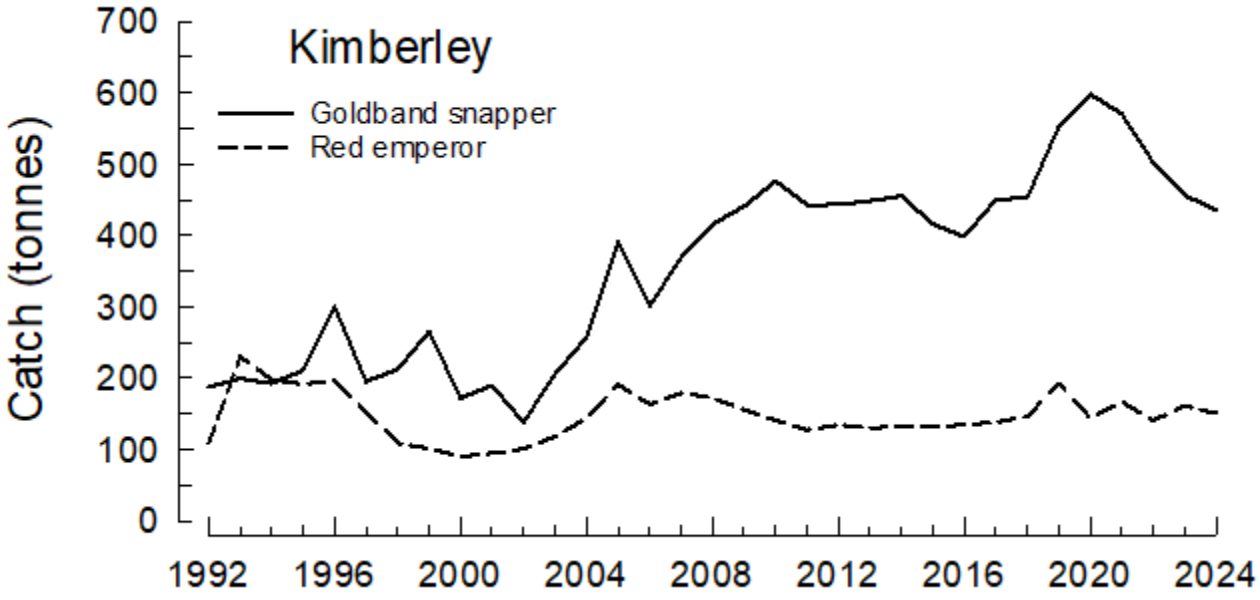
Based on high levels of subsurface observer coverage in 2012 (60% of day trawls or 56% of day trawl hours), the subsurface expulsion of megafauna in poor condition was negligible (see Wakefield et al. 2014; Wakefield et al. 2017). Electronic monitoring of catches was also found to accurately reflect records of megafauna bycatch levels.

PFTIMF interactions with dolphins was scored as a **high** risk during an Ecological Risk Assessment (ERA) in 2025. The risk score was based on a high level of uncertainty about the size and distribution of populations. Management changes are underway in the PFTIMF, including effort reductions, implementation of an updated independent fishery monitoring and Bycatch Action Plan.

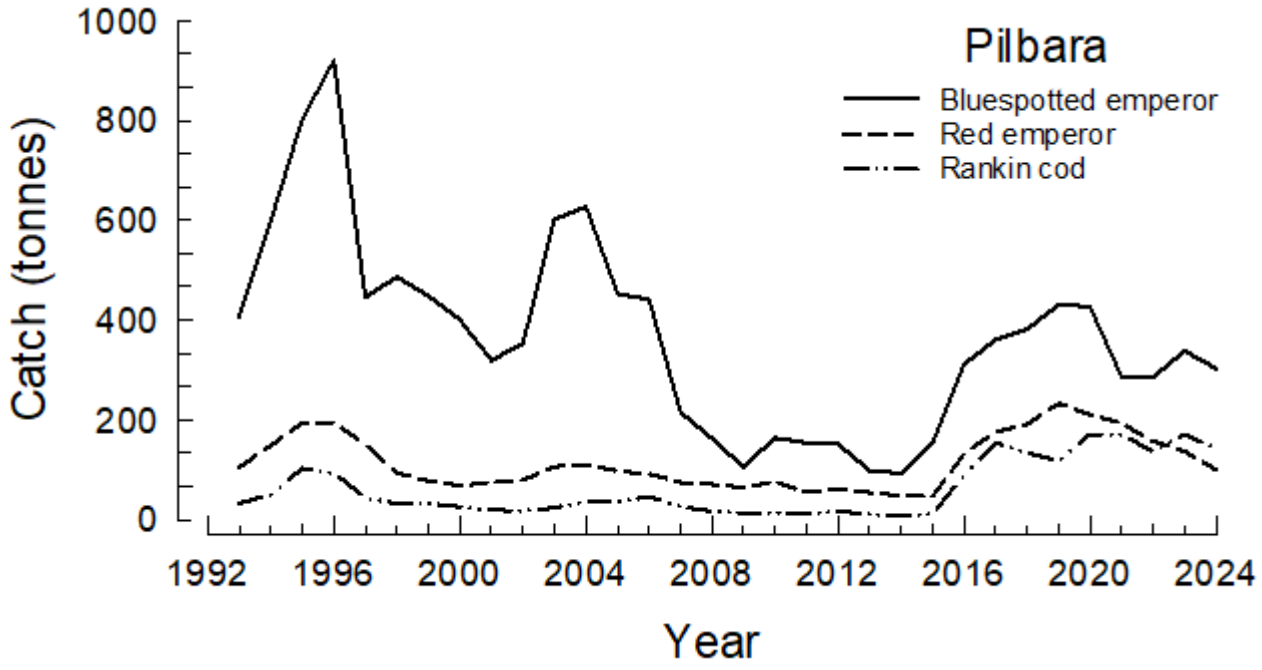
The level of interactions with all other protected species is considered **low** risk to their populations.

NORTH COAST DEMERSAL TABLE 2.
Reported bycatch of listed species in logbooks in the PFTIMF in 2024. [a]where the condition was not reported the status of the animal was considered to be unknown; [b]where the species of sawfish was not reported the animal was considered to be unknown sawfish,* CITES listed species.

Species	Number released Alive	Number deceased	Number unknown[a]	Total Reported
Bottlenose dolphins*	0	5	0	5
Pipefish	1	18	0	19
Green sawfish*	8	15	0	23
Narrow sawfish*	2	2	0	4
Unknown sawfish[b*]	0	0	0	0
Seahorses*	1	0	0	1
Sea snakes	89	56	0	145
Turtles	0	0	0	0



NORTH COAST DEMERSAL FIGURE 2.
Annual commercial catches of indicator species from the Kimberley (NDSMF) from 1992 to 2024.



NORTH COAST DEMERSAL FIGURE 3.
Annual commercial catches of indicator species from the Pilbara (PFTIMF, PLF and PTMF) from 1993 to 2024.

HABITAT AND ECOSYSTEM INTERACTIONS

Kimberley Trap / Pilbara Trap and Line

Habitat

As a result of the gear design, these fisheries have little impact on the habitat overall, although there may be some rare interactions with coral habitats, which are not common in areas where these fisheries operate. Trap and line fishing has little physical impact on the benthic environment and hence is a **low** risk.

Ecosystem

Hall and Wise (2011) demonstrated that there has been no reduction in either mean trophic level or mean maximum length in the finfish catches recorded within the Kimberley (i.e. no fishing down of the food web) over the past 30 years. The risk to the overall ecosystem is considered **low**.

Pilbara Fish Trawl

Habitat

The PFTIMF is restricted to less than 11%, with a trawl footprint of ~2%, of the North West Shelf (NWS; Amoroso et al. 2018, Harry et al. 2024). Area 3 and the waters inside the 50 m isobath are permanently closed to fish trawling, Zone 1 is closed to fish trawling, and Area 6 has had no fish trawling effort allocated since 1998.

Within the areas trawled, monitoring has indicated that approximately 10% of the sessile benthic fauna (e.g. sponges) are detached per year.

Effort for the PFTIMF is at historically low levels and the effective area trawled within the managed areas has been greatly reduced. While the trawl fishery has localised impacts on habitats in the Areas open to trawling, overall, there is considered to be a **low** risk to the total benthic habitat in the North West Shelf (~2% trawl footprint on the NWS, Amoroso et al. 2018).

Ecosystem

The PFTIMF operates with standard stern trawling gear (single net with extension sweeps) within an area previously trawled by foreign vessels. Previous research by CSIRO has suggested that the extensive Taiwanese Pair Trawl Fishery caused a significant decrease in the biomass of finfish on the North West Shelf, and a change in species composition towards smaller (shorter lived) species. The PFTIMF, which developed when the fish stocks had begun to recover, uses a much larger mesh size and much lighter ground gear, and operates at lower exploitation rates and only in restricted parts of the continental shelf.

Hall and Wise (2011) demonstrated that there has been no reduction in either mean trophic level or mean maximum length in the finfish catches recorded within the Pilbara (i.e. no fishing down of the food web) over the past 30 years and thus represents a **low** risk to the ecosystem.

SOCIAL AND ECONOMIC OUTCOMES

Social

Kimberley: Seven vessels fished in the 2024 fishing season, and at least 25 people (3–4 crew per vessel) were directly employed in the NDSMF

(Area 2). One vessel fished in the NDSMF (Area 1) with 1–2 crew. Approximately half the fish from this fishery are supplied to Perth metropolitan markets, while the other half is supplied to east coast metropolitan markets. There is a **medium** risk to these values.

Pilbara: It is estimated that ~16 fishers on 4 vessels were directly employed during 2023 in the PFTIMF, and 6 fishers on 2 vessels in the PTMF, and at least 6 fishers on 3 vessels in the PLF. Overall, at least ~28 people (e.g. 2–4 crew per vessel) were directly employed in the PDSR. There is a **medium** risk to these values.

An estimated 753,000 WA residents went recreational fishing in 2023-24 (DPIRD 2024). The recreational fishing participation rate in WA (26%) is higher than the Australian average (21%) (Moore et al. 2023). Recreational fishing attracts many visitors to the NCB, particularly in inshore areas over the winter dry season (April–October). This provides employment through local charter fishing services and fishing tackle outlets around key population centres, as well as more remote charter operations offering wilderness fishing experiences in the northern Kimberley region, including offshore locations such as the Rowley Shoals.

The boat-based recreational fishing effort in the NCB was steady in 2023-24 (39,534 boat days, SE=3,663) compared with 2020-21 (35,172 boat days, SE=3,999), 2017-18 (31,402 boat days, SE=3,532), 2015-16 (28,840 boat days, SE=3,312), 2013-14 (40,764, SE=4,684) and 2011-12 (45,163, SE=5,517) (Ryan et al. 2025).

The NCDSR provides a high social amenity to recreational fishing and diving and to consumers via commercial fish supply to markets and restaurants. There is a **low** risk to these values.

Economic

Kimberley: The NDSMF principally targets higher-value species such as goldband snapper and red emperor, resulting in an economic value of $10–20 million (Level 4). This indicates that this fishery is an important asset locally. There is a **medium** risk to this level of return.

Pilbara: Overall, the estimated economic value of the PFTIMF, PTMF and PLF is $10–20 million (Level 4). The PFTIMF demersal scalefish catch is dominated by lower-valued species such as bluespotted emperor and threadfin bream. However, its value is estimated to be $5–10 million (Level 3). The PLF and PTMF catches are dominated by more valuable species such as red emperor and goldband snapper. The total demersal scalefish catch was estimated to have an economic value of $1–5 million (Level 2). There is a **medium** risk to this level of return.

Recreational fishing in WA contributes over 9,000 jobs and over $1.1 billion per year to the economy and supports economic activity in many regional locations (Moore et al. 2023). A significant amount of this value is derived from boat-based fishing for demersal species in the NCB.

GOVERNANCE SYSTEM

Harvest Strategy

The NCDSR Harvest Strategy (DPIRD 2017) focuses on the exploitation and stock status of the indicator species in the Kimberley and Pilbara demersal scalefish fisheries. The assessment and harvest strategies of these species are primarily based on estimates of spawning stock biomass (or an appropriate proxy for biomass), relative to internationally accepted target, threshold, and limit reference levels.

The commercial sectors are managed primarily through input controls in the form of a total allowable effort (TAE) allocation system via individually transferable effort (ITE) allocations. The recreational (including charter) sector are primarily managed using size limits for some species, and daily bag and possession limits. Recreational fishers operating from a boat are required to have a current Recreational Fishing from Boat Licence. Charter operators are required to have a Fishing Tour Operators Licence or a Restricted Tour Operators Licence.

Management Initiatives

An ERA of the fisheries that access the NCDSR was undertaken in 2025. The ERA assessed the impact of current fishing activities on retained, bycatch, and protected species, and on the wider habitat and ecosystem (Smith et al. 2025).

Kimberley

The NDSMF was re-accredited a Wildlife Trade Operation (WTO) under the Australian Government's *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) for 3 years from mid-2024. The accreditation includes conditions relating to publication of an ERA and stock assessment of the KDSR.

Given the catches had breached the acceptable catch ranges for several consecutive years, the 2025 ITE allocation was reduced by 10% to 887 standard boat days in Zone B and 554 in Zone A. Information from the 2025 stock assessments will be used to develop a formal recovery plan, including recovery benchmarks and milestones.

Pilbara

Following a 2023 assessment of indicator species, a recovery plan was implemented in 2024 to recover the spawning stocks of red emperor (recovery species) and the suite of species represented by red emperor to above the threshold reference level with 20 years (FMP No. 310). Phase 1 consisted of a 15% reduction in effort to PFTIMF and PTMF, and 40% in potential effort in the PLF. An MOU was also adopted to manage the recovery species to achieve a 25%

catch reduction. Phase 2 will be developed in 2025-26.

The PTMF and PFTIMF were re-accredited as WTOs under EPBC Act in 2023-24. The accreditation includes conditions around the independent monitoring.

EXTERNAL DRIVERS

Environment

Climate change and climate variability has the potential to impact fish stocks in a range of ways including influencing their geographic distribution (e.g. latitudinal shifts in distribution). However, it is unclear how climate change may affect the sustainability risks to North Coast demersal fisheries.

Climate Change

North Coast Demersal Table 3 provides a summary of the climate vulnerability risk assessment outcomes for the key indicator target species of the KDSR and PDSR. Goldband snapper, Pilbara red emperor and bluespotted emperor were deemed at **low** risk from climate change. Kimberley red emperor and Pilbara Rankin cod were deemed **medium** risk from climate change.

Goldband snapper, red emperor, and Rankin cod stocks all have a broad distribution across the north-west shelf and can inhabit relatively deeper waters and so are likely to be less vulnerable to rising SSTs and MHW events. Reliance on associated habitats may be a limiting factor in their ability to move and extend their distribution further south.

Bluespotted emperor has a critical dependence on nearshore macroalgae (*Sargassum* spp.) habitat for juveniles, which will be deleteriously affected by an increase in SST and MWH events. Limited evidence suggests juvenile bluespotted emperor to be negatively influenced by warmer water events resulting in observed mortality of macroalgae.

NORTH COAST DEMERSAL TABLE 3.
Summary of the climate vulnerability risk assessment output for the key indicator species in the NDSMF.

Indicator species	Sensitivity	Exposure	Climate Change risk
KDSR Goldband snapper	Low	Negative effects are unlikely	Low
KDSR Red emperor	Medium	Negative effects are unlikely	Medium
PDSR Red emperor	Low	Negative effects are unlikely	Low
PDSR Rankin cod	Medium	Negative effects are unlikely	Medium
PDSR Bluespotted emperor	Low	Negative effects are possible	Medium

Other

Under the Offshore Constitutional Settlement, commercial trawl vessels licensed by the Australian Government may operate in waters outside of a line that represents the 200 m isobath as part of the North West Slope Trawl Fishery (NWSTF). The risk of these fisheries to the KDSR and PDSR are considered **low** risk.

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PEARL OYSTER MANAGED FISHERY RESOURCE STATUS REPORT 2025

L. Strain, D. Murphy, A. Steele



OVERVIEW

The WA Pearl Oyster Fishery (Fishery) is the only remaining significant wild-stock fishery for pearl oysters in the world. It is a quota-based dive fishery, operating in shallow coastal waters along the NCB and targets the Silverlip Pearl Oyster (*Pinctada maxima)*. The Fishery is currently managed under the *Pearling Act 1990* and uses output controls in the form of a Total Allowable Commercial Catch (TACC) divided into individually transferable quotas (ITQs). Fishing for *P. maxima* is one component of the pearling industry's activities, along with the seeding and grow-out of pearl oysters to produce pearls.

This Fishery has been accredited for export under the EPBC Act (re-assessed in 2024) and was certified under the Marine Stewardship Council (MSC) certification process in 2017. The Fishery was MSC recertified in 2022 with the inclusion of a new unit of assessment, hatchery-reared pearl oysters. Further information can be sourced from Hart et al. (2016).

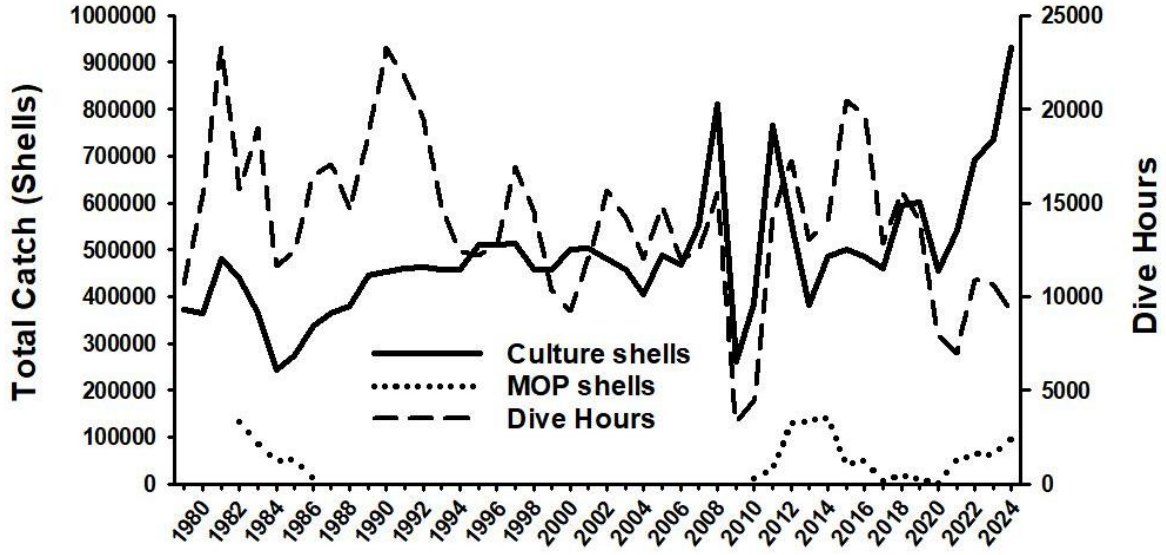
SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery	Total catch 2024: 1,052,201 shells	Acceptable
Recreational fishery	NA	NA
EBFM		
Assessment Indicator		
Silver lipped pearl oyster (*Pinctada maxima*)	Zone 1 – Low risk Zone 2 – Low risk Zone 3 – Low risk	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Negligible risk	Adequate
Habitat	Negligible risk	Adequate
Ecosystem	Low risk	Adequate
Economic (GVP $60 million)	Medium risk	Acceptable
Social	Low risk	Acceptable
Governance	Low risk	Acceptable
External Drivers – Other	Medium risk	Acceptable
External Drivers –Climate change	Low risk	

SUMMARY STATISTICS

Recent Trends	Previous season	Current season	Cause/Comment
Total Catch	798,217 oysters	1,052,201 oysters	TACC increased, abundance at historical highs.
Commercial Effort	10,641 dive hrs	8,987 dive hrs	Effort decreased by 15.5%.
Participation	5	6	Number of vessels increased but 80% of TACC taken from 3 vessels.
Beach price	NA	NA	Beach price not a trend metric for this resource. Harvested oysters moved to farms to grow pearls.
Main (>20%) by-catch species	NA	NA	Hand collection fishery, negligible bycatch.

CATCH AND LANDINGS



PEARL FIGURE 1:
Total Pearl Oyster shell catch (all areas) and effort (Zone 2/3). 'Culture shells' are pearl oysters between ≥100 and <175 mm shell length, 'MOP shells' are pearl oysters ≥175 mm shell length.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Zone 1 *Pinctada maxima* (Sustainable - Adequate)

Based on the information and analyses available, there is currently a **low** risk to pearl oysters in Zone 1. The low risk reflects the minimal levels of fishing mortality. All the lines of evidence are consistent with a low level of risk. Hence, the overall weight of evidence assessment indicates the status of the Zone 1 pearl oyster stock is adequate and that current management settings are maintaining risk at acceptable (low) levels.

Zone 2 *Pinctada maxima* (Sustainable - Adequate)

Based on the information and analyses available, there is currently a **low** risk to pearl oysters in Zone 2. The low risk reflects the controlled levels of fishing mortality. Current lines of evidence show an increasing abundance due to higher than average recruitment, catch rates above the target level, and size-structure of harvested pearl oysters having returned to the long-term average. Overall, the weight of evidence assessment indicates the status of the Zone 2 pearl oyster stock is adequate and that current management settings are maintaining risk at acceptable (low) levels.

Zone 3 *Pinctada maxima* (Sustainable - Adequate)

Based on the information and analyses available, there is currently a **low** risk to pearl oysters in Zone 3. The low risk reflects the minimal levels of fishing mortality. All the lines of evidence are consistent with a low level of risk. Hence, the overall weight of evidence assessment indicates the status of the Zone 3 pearl oyster stock is adequate and that current management settings are maintaining risk at acceptable (low) levels.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Divers can specifically target pearl oysters. Pearl oysters brought to the vessel after hand collection are young and have relatively little epiphytic growth (fouling organisms). A small number of over-sized or under-sized pearl oysters are returned to the substrate. Therefore, bycatch impact imposes a **negligible** risk (Smith et al. 2023).

There were no reported protected species interactions or entanglements between pearl farming operation infrastructure in 2024 (DPIRD 2024). However, there were 3 reported interactions/sightings between humpback whales and pearl oyster wild caught fishing operations (drifting diving hoses). The 2023 Ecological Risk Assessment (ERA) for the fishery assessed the risk to threatened, endangered, and protected species as **negligible** (Smith et al. 2023).

HABITAT AND ECOSYSTEM INTERACTIONS

The fishery removes only a small proportion of the biomass of pearl oysters on the fishing grounds and is considered to have negligible impact on the food chain in the fishing area. Pearl divers have minimal contact with the habitat during fishing operations. The main habitat contact is by pearl oysters held in mesh panels on holding sites following capture. However, these sites cover a very small proportion of the habitat, and the activity concerned is unlikely to cause any lasting effect.

Similarly, the pearl farming operation, which uses longline systems in areas of high tidal flow to culture pearls, has limited impact on the environment. Physical effects are limited to static anchoring systems in typically sand/mud habitats. Environmental management research has demonstrated that pearl farming has negligible impacts on habitat and environment.

Based on the information available, the 2023 ERA for the fishery assessed the risk to habitats as **negligible** and ecosystems as **low** (Smith et al., 2023)

SOCIAL AND ECONOMIC OUTCOMES

Social effects (Low Risk)

Pearl oyster fishing vessels operate from the Lacepede Islands north of Broome to Exmouth Gulf in the south. The number of vessels in the fishing fleet has been slowly reducing from the peak of 16 in 1997 (overall), due to increased fleet efficiency and consolidation of commercial operators. Six vessels fished in 2024. Most vessels presently operate 10 – 14 crew for the fishing of pearl oysters between March and August each year. These vessels also support pearl oyster operations and several pearl oyster farm functions throughout the year.

Personnel employed in the pearling industry (current full-time FTEs) is estimated to be around 300.

Economic (Medium Risk)

A precise estimate of the total industry value is difficult to achieve, owing to the variable time lags that occur between harvesting and sale to offshore buyers, and the costs incurred in marketing before sales take place. Based on information provided by the industry, the value of cultured pearls and by-products in 2024 was approximately $60 million, which follows a similar trend to the value reported over the past five years.

GOVERNANCE SYSTEM

Annual Catch Tolerance Levels (Acceptable)

The overall TACC for the fishery in 2024 was 1,090,895 pearl oysters. This was comprised of a Zone 1 TACC of 54,970 pearl oysters, a Zone 2/3 TACC of 1,035,925 pearl oysters, which included a TACC of 37,600 pearl oysters which could only be taken from Zone 3.

Catch tolerance levels used in 2024 are for the Zone 2/3 ‘culture’ fishery only.

TACC (1,035,925 ‘culture pearl oysters’ in the combined Zone 2/3 and Zone 3 in 2024) to be caught in 14,071-20,551 dive hours.

Commercial catch (pearl oysters) for season 2024: 1,052,201 oysters at 8,987 dive hours.

Both the catch and effort levels were acceptable.

Harvest Strategy (Formal)

The Harvest Strategy for *P. maxima* is a constant exploitation approach, operationalised through an annual TACC, divided into ITQs. The TACC is set in proportion to the overall stock abundance. Harvest control rules determine the TACC according to the relationship of predicted catch rates in comparison to target, threshold, and limit reference levels (DPIRD, 2022).

The control rules in place ensure that the catch is reduced when the predicted recruitment is low. This increases protection to the stock and also allows the catch to be raised in years when predicted abundance is high.

Management Initiatives

The management of the Fishery was intended to transition to new legislative arrangements under the *Aquatic Resources Management Act 2016* (ARMA); however, a decision has now been made to not proceed with ARMA’s implementation. DPIRD is now considering future management, including potential legislative reform.

In 2024, changes were made to the minimum and maximum sizes for pearl oysters. The minimum size was reduced to 100 mm to formalise arrangements in place on a trial basis since 2011. The maximum size for pearl oysters in Exmouth Gulf was removed.

EXTERNAL DRIVERS

Environment

Environmental factors such as cyclones and climate variation may impact on the recruitment (affecting the abundance of piggyback spat settlement) and productivity of Silverlip pearl oysters. In late 2024 all zones of the fishery were subject to a marine heatwave with a sea surface temperature anomaly +3-4°C in the period of recruitment to the fishery. The annual survey program in 2025 will monitor any potential impact of the marine heatwave.

Climate change

There is evidence of increasing catch landings of pearl oyster since the 1980s alongside rising SSTs. MHW events have also led to record level spat settlement in recent years that suggests this species is less vulnerable to some key climate changes in the future. However, TCs can significantly impact pearling habitats by disrupting key settlement areas, where pearl spat attach and develop. Rising ocean acidification is also likely to impact shell formation and integrity in the future. Overall, this species is deemed at low risk from climate change.

PEARL OYSTER RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for Silverlip pearl oyster fishery managed resource across the NCB.

Indicator species	Sensitivity	Exposure	Climate Change risk
Pearl oyster	Medium	Demonstrable positive effects are evident	Low

Other

External influences also include other activities and factors that occur within the fishery that may or may not impact on the productivity and sustainability of fisheries resources and their ecosystems. The main external influences included here are catch from other fisheries, market influences, tourism, liquid natural gas (LNG) exploration, disease, and introduced species. **Medium** risk.

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SEA CUCUMBER RESOURCE STATUS REPORT 2025

L Strain, D. Murphy, A. Steele



OVERVIEW

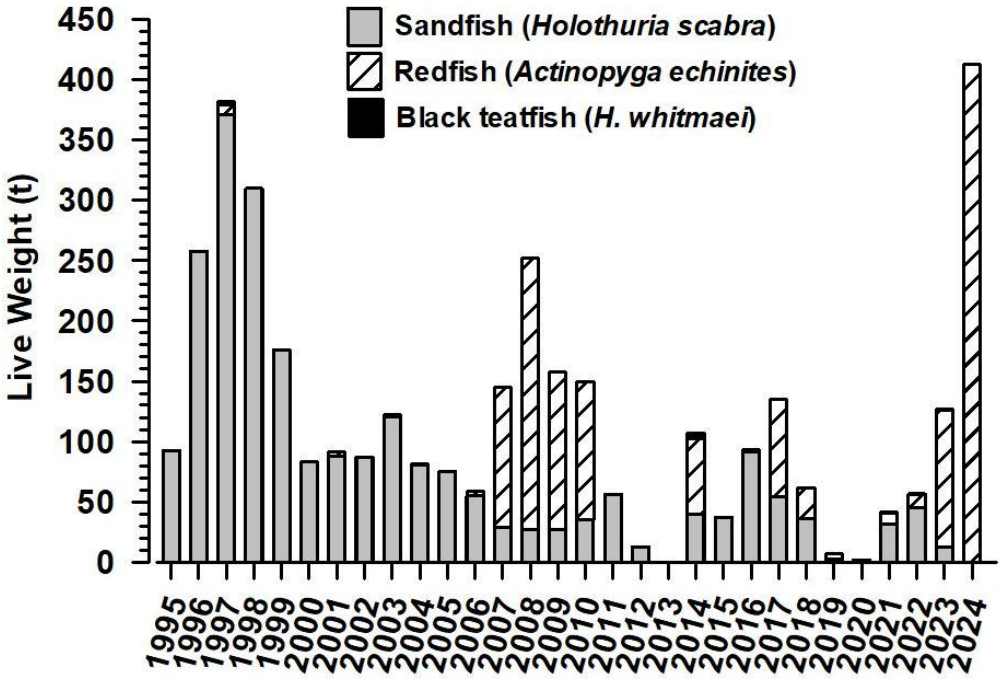
The WA Sea Cucumber Fishery is a commercial-only fishery, with animals caught principally by diving, and a smaller amount by wading. It targets 2 main species: Sandfish (*Holothuria scabra)* and Redfish (*Actinopyga echinites)*. Fishing occurs mostly in the northern half of WA from Exmouth Gulf to the Northern Territory border. In 2024, Shark Bay was fished for the fifth consecutive year. Access is managed under Ministerial Exemptions. The WA Sea Cucumber Fishery (WASCF) is subject to input controls including limited entry, maximum number of divers, spatial closures, and gear restrictions. The Pilbara Redfish and Kimberley Sandfish stocks have achieved Marine Stewardship Council (MSC) certification. More details are available in the WA Sea Cucumber Resource Assessment Report (Hart et al. 2022) available at https://library.dpird.wa.gov.au/fr_rr/144/

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery	Total Catch 2024: 412.4 t	Acceptable
EBFM		
Indicator species		
Sandfish Kimberley	Low risk: Biomass > Target	Adequate
Sandfish Pilbara	High risk: Biomass < Limit	Inadequate
Redfish Pilbara	Low risk: Biomass > Target	Adequate
Redfish Shark Bay	Low risk: Biomass > Target	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Negligible risk	Adequate
Habitat	Negligible risk	Adequate
Ecosystem	Negligible risk	Adequate
Economic (GVP $1-2 million)	Low risk	Acceptable
Social (low amenity)	Low risk	Acceptable
Governance	Medium risk	Acceptable
External Drivers – Other	Medium risk	Acceptable
External Drivers – Climate	Medium sensitivity	

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Total Catch	126.1 t	412.4 t	Increase in catch due to increased effort in the Pilbara Redfish fishery (Montebello Islands).
Effort (days fished)	86 days	193 days	Increase due to more fishing effort in Pilbara.
Participation	3 vessels	3 vessels	3 commercial vessels fished in 2024.
Beach price	Sandfish: $18.00/kg Redfish: $15.50/kg	Sandfish: $22.00/kg Redfish: $16.50/kg	Sea cucumber beach price has increased.
Bycatch and protected spcies interactions	NA	NA	Hand selective method of fishing, thus no bycatch and no known protected species interactions.
Habitat and Ecosystems interactions	NA	NA	Drift diving with hand selection has negligible habitat impacts, and low catches spread over a wide region, results in negligible ecosystem interactions.



SEA CUCUMBER FIGURE 1.
Annual total retained catches (tonnes) in the WA Sea Cucumber Fishery (WASCF) between 1995 and 2024.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Kimberley Sandfish (Sustainable – Adequate)

Based on the information and analyses available, the current risk level for Kimberley Sandfish was estimated to be **low**, and the overall weight of evidence assessment indicates the status of the Kimberley Sandfish stock is adequate. Management settings are maintaining risk at acceptable levels.

Pilbara Sandfish (Not Sustainable - Inadequate)

Based on the information and analyses available, the current risk level for Pilbara Sandfish was estimated to be **high** and the overall weight of evidence assessment indicates the status of the Pilbara Sandfish stock is inadequate. Management settings have changed to promote stock recovery and return the risk to an acceptable level, with a closure of the Pilbara Sandfish fishery being implemented from 2023 to 2026.

Pilbara and Gascoyne Redfish (Sustainable - Adequate)

Based on the information and analyses available, the current risk level for Pilbara Redfish was estimated to be **low**, and the overall weight of evidence assessment indicates the status of the Pilbara Redfish stock is adequate. Management settings are maintaining risk at acceptable levels.

Shark Bay (Gascoyne) was fished for the fifth consecutive year in 2024. Independent stock surveys were undertaken in 2021 with preliminary results indicating a 50 t biomass of Deepwater Redfish over 11 km^2. Based on the information and analyses available, the current risk level for Shark Bay Redfish was estimated to be **low**.

GOVERNANCE SYSTEM

Annual Catch Tolerance Range (Acceptable)

Commercial: Sandfish (Kimberly): 0-100 t; Sandfish (Pilbara): 0-80 t; Redfish (Pilbara): 0-150 t.

Breeding stocks acceptable for Pilbara Redfish and Kimberley Sandfish with management settings maintaining risk at acceptable levels. Pilbara Sandfish status was deemed Inadequate, with a 3-year closure implemented for 2023-2026 to promote recovery. Independent surveys are planned in 2025. Pilbara Redfish catch in 2024 above catch range with performance indicator above target level. Catch range under review.

Harvest Strategy

The WA Sea Cucumber Fishery is managed under a formal Harvest Strategy, with specified performance indicators, threshold levels, and control rules (DPIRD 2018). Currently all stocks except Pilbara Sandfish are above the target reference points. Pilbara Sandfish was below the limit reference level in 2022 and was closed to fishing in 2023.

Compliance

Illegal, unreported and unregulated (IUU) catches of sea cucumbers include those taken by foreign fishing vessels (FFV) in Australian waters outside the MOU area, as well as those taken by non-traditional methods within the MOU area. IUU fishing activity is typically seasonal and increases in the drier, non-monsoonal months from May to November (Smith et al. 2024). The total number of contacts with FFVs by Marine Border Command in the north-west region was 125 in the 2022-23 financial year, with most contacted in the 2nd half of the year. The number of contacts reported for the first half of 2023-24 (July to December) was 199, which has already exceeded the 2022-23 value by more than 50% (Smith et al. 2024). Additional resources will be required for governing bodies to increase surveillance and patrols to determine more accurate reporting of IUU and deter the activity of FFVs.

Consultation

Industry management meetings are convened by the Industry Consultation Unit of the Western Australian Fishing Industry Council (WAFIC), under a Service Level Agreement with DPIRD.

Management Initiatives (MSC Assessment)

The WA Sea Cucumber Fishery successfully attained Marine Stewardship Council (MSC) certification in 2019, and completed the 4th surveillance audit in 2024. The WA Sea Cucumber Fishery undertook its first MSC reassessment in 2024-25 with the Kimberley Sandfish and Pilbara Redfish Units of Certifications being assessed.

EXTERNAL DRIVERS

Climate

Climate change could have positive or negative impacts on sea cucumber populations. It has been reported that higher sea temperatures will have a positive effect (i.e. higher production and yields) given the expected faster growth rates leading to larger sizes and increased fecundity. In late 2024 the fishery has been subject to a marine heatwave with a sea surface temperature anomaly +3-4°C.

Overall, all sandfish stocks are deemed at medium risk from climate change (Sea Cucumber Resource Table 1).

SEA CUCUMBER RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for the sea cucumber resource across the NCB.

Indicator species	Sensitivity	Exposure	Climate Change risk
Sandfish – Pilbara	Medium	Negative effects are unlikely	Medium
Sandfish – Kimberley	Medium	Negative effects are unlikely	Medium

Other

The remoteness of the currently fished stock and the large tidal ranges where it occurs are natural barriers to the uncontrolled expansion of fishing. Marine Park planning has to date restricted this fishery from general use zones of some Marine Protected Areas. Currently, lack of experienced fishers and suitable vessels is restricting catch to low levels. **Medium** risk.

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DPIRD. 2018.Western Australian Sea Cucumber Resource Harvest Strategy 2018 – 2023 Version 1.0. Fisheries Management Paper No. 287. Department of Primary Industries and Regional Development, Western Australia. 30p. https://www.fish.wa.gov.au/Documents/management_papers/fmp287.pdf

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Smith KA, Desfosses C, Murphy D, Steele A, and Strain L. 2024. Ecological Risk Assessment for the Western Australian Sea Cucumber Resource. Fisheries Research Report No. 343. Department of Primary Industries and Regional Development, Western Australia. 71p. https://library.dpird.wa.gov.au/fr_rr/252/

NORTH COAST CRAB RESOURCE STATUS REPORT 2025

D. Harris, C. Maus, L. Strain, J. Brown, B. Brooks



OVERVIEW

Blue swimmer crabs in the NCB are targeted by the Pilbara Crab Managed Fishery (PCMF) using hourglass pots, primarily in and around Nickol Bay (North Coast Crab Figure 1). Blue swimmer crabs are also retained by the Onslow and Nickol Bay Prawn Managed Fisheries. Recreational fishers in the NCB target this species using drop nets or scoop nets.

There are two species of mud crab found in WA, the green mud crab, *Scylla serrata*, and the brown mud crab, *Scylla olivacea*. Mud crabs are harvested by the Kimberley Crab Managed Fishery (KCMF) between Broome and Cambridge Gulf using purpose-designed crab pots (North Coast Crab Figure 2). There is an allocation of 600 pots for the commercial sector, and a further 600 pot allocation to promote Aboriginal economic development through commercial mud crab operations via non-transferable Instruments of Exemption under the *Fish Resources Management Act 1994*.

There is a small but socially important recreational fishery for mud crabs in the NCB, with fishers using drop nets, wire hooks, or scoop nets.

Both commercial and recreational sectors in the NCB crab fisheries are managed through a suite of input/output controls, including minimum size limits, protection of berried females, gear restrictions and seasonal closures. The commercial fisheries are also subject to limited entry.

Further information regarding blue swimmer crab and mud crab biology, and the North Coast crab fisheries, can be found in Johnston et al. (2020).

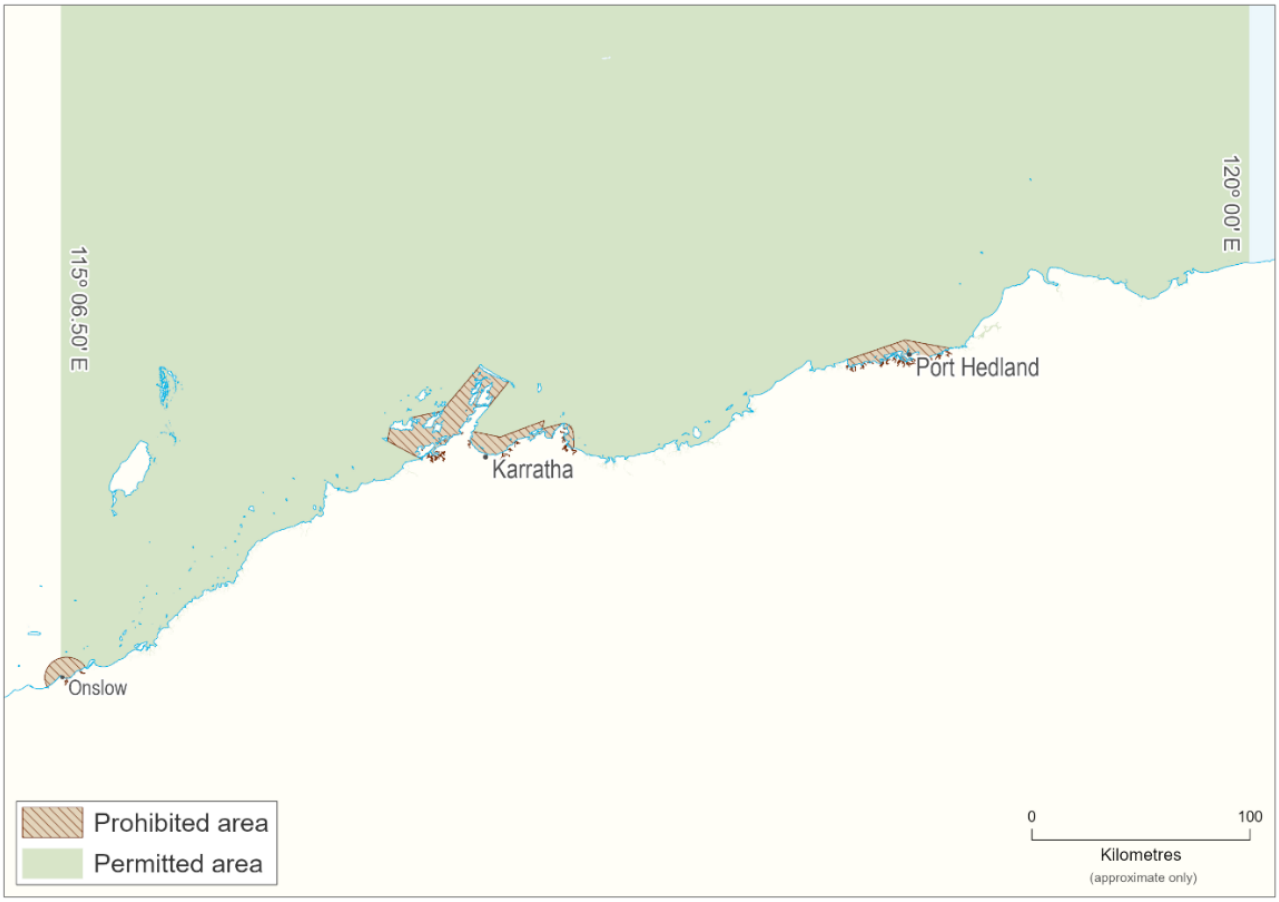
SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery	Total Catch 2024 Blue swimmer crab: 14.1 t Mud crab: 2.45 t	 Acceptable Acceptable
Recreational fishery	Total Catch 2023-24 (boat only) Blue swimmer crab: 2.7 t (95% CI 1–5) Mud crab: 3.0 t (95% CI 2–4)	 Acceptable Acceptable
EBFM		
Indicator species		
Pilbara Blue Swimmer Crab	Low risk: Above catch rate threshold	Adequate
Kimberley Mud Crab	Medium risk: At catch rate threshold	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Negligible risk	Adequate
Habitat	Low risk	Adequate
Ecosystem	Low risk	Adequate
Economic (GVP <$1 m)	Low risk	Acceptable
Social (amenity)	Low risk	Acceptable
Governance	Low risk	Acceptable
External Drivers – Climate change	PCMF: Medium risk (blue swimmer crab) KCMF: High risk (brown mud crab, green mud crab)	

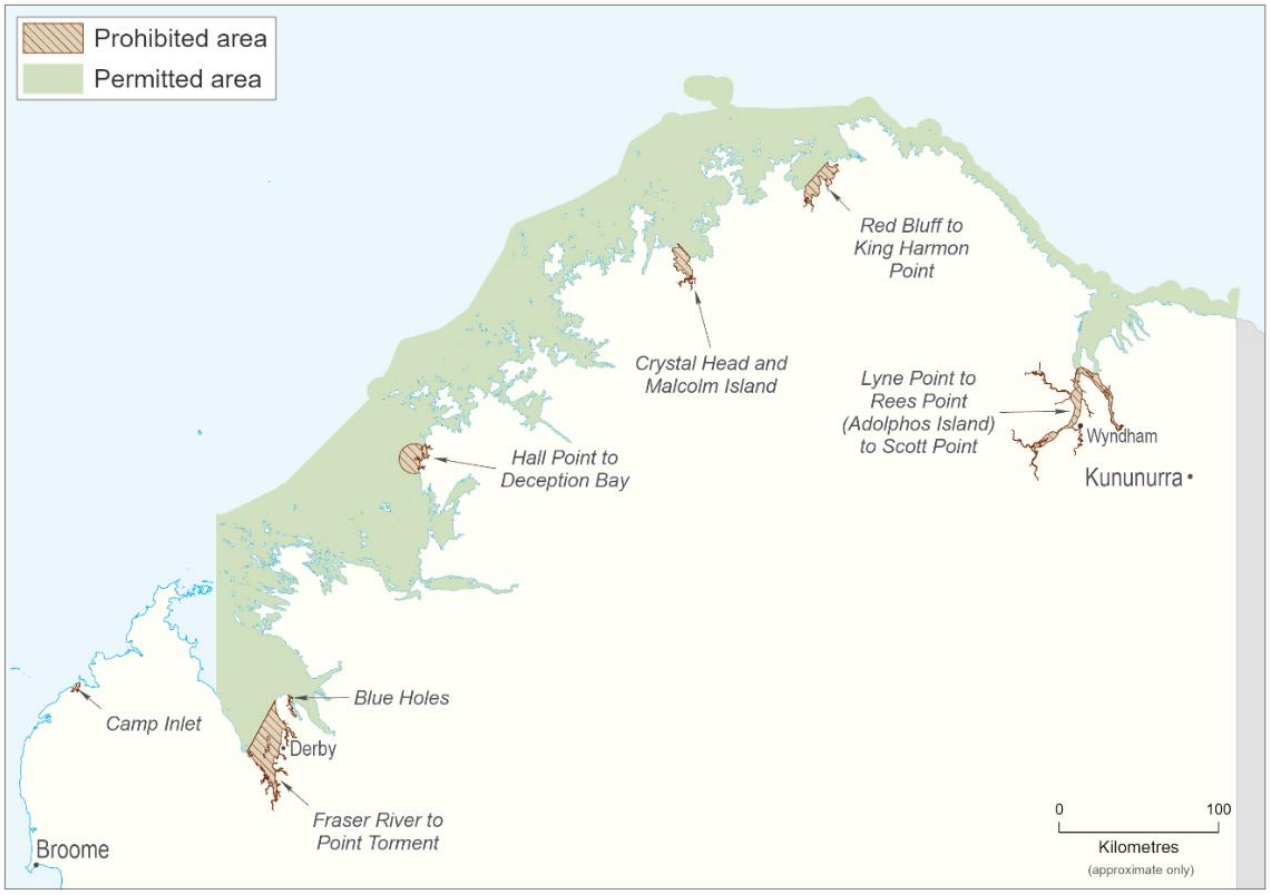
SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Commercial Catch - Blue swimmer crab (t)	471[S], 23.8[NCB]	547[S], 14.1[NCB]	Catches within historical ranges.
Commercial Catch - Mud crab (t)	0.45[S], 0.45[NCB]	2.45[S], 2.45[NCB]	Catches within historical ranges.
Commercial Effort (pot lifts)	14,260[BSC], 950[MC]	13,960[BSC], 4,375[MC]	
Recreational catch – blue swimmer crab (t)	2020-21: 0.8 t (95% CI 0.1–1.5)	2023-24: 2.7 t (95% CI 1–5)	Boat-based fishing only (Ryan et al. 2025)
Recreational catch – mud crab (t)	2020-21: 3.0 t (95% CI 1.0–4.9)	2023-24: 3.0 t (95% CI 2-4)	Boat-based fishing only (Ryan et al. 2025)
Commercial participation	2[PCMF], 2[KCMF]	2[PCMF], 5[KCMF]	
Beach price	$10.90[BSC], $30[BMC], $30[GMC]	$10.84[BSC], $30[BMC], $30[GMC]	Domestic market supply and demand.
Bycatch	-	-	Limited data available.
Listed species interactions	-	-	Interactions with listed species are relatively rare. None have been reported in 2024.

Key to table: S – State, NCB – North Coast Bioregion, PCMF – Pilbara Crab Managed Fishery, KCMF – Kimberley Crab Managed Fishery. BSC – blue swimmer crab, MC – mud crab, BMC – brown mud crab (*Scylla olivacea*), GMC – green mud crab (*Scylla serrata*).



NORTH COAST CRAB FIGURE 1.
Map showing the boundaries of the Pilbara Crab Managed Fishery.



NORTH COAST CRAB FIGURE 2.
Map showing the boundaries of the Kimberley Crab Managed Fishery.

CATCH AND LANDINGS

Commercial Sector

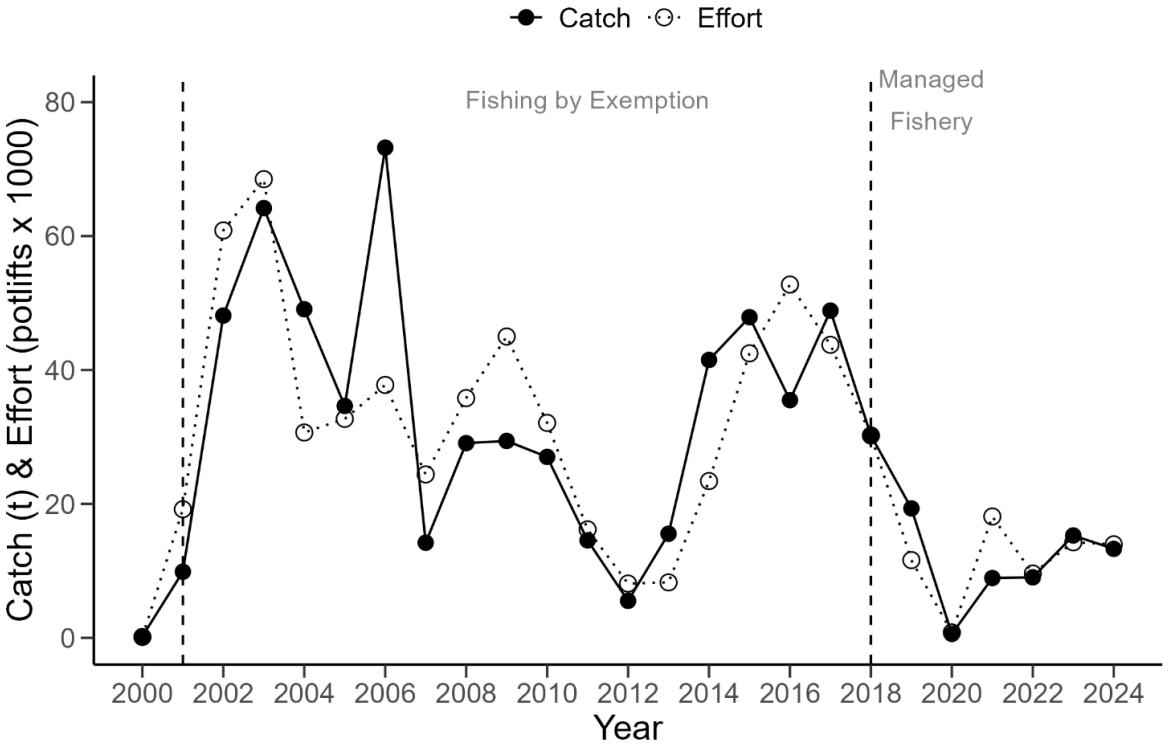
The 2024 NCB blue swimmer crab catch of 14.1 t (North Coast Crab Figure 3) accounted for ~2.6% of the statewide catch (547 t). The majority of this catch was taken by the PCMF.

The 2024 KCMF mud crab catch of 2.45 t (North Coast Crab Figure 4) represented the entire WA commercial catch.

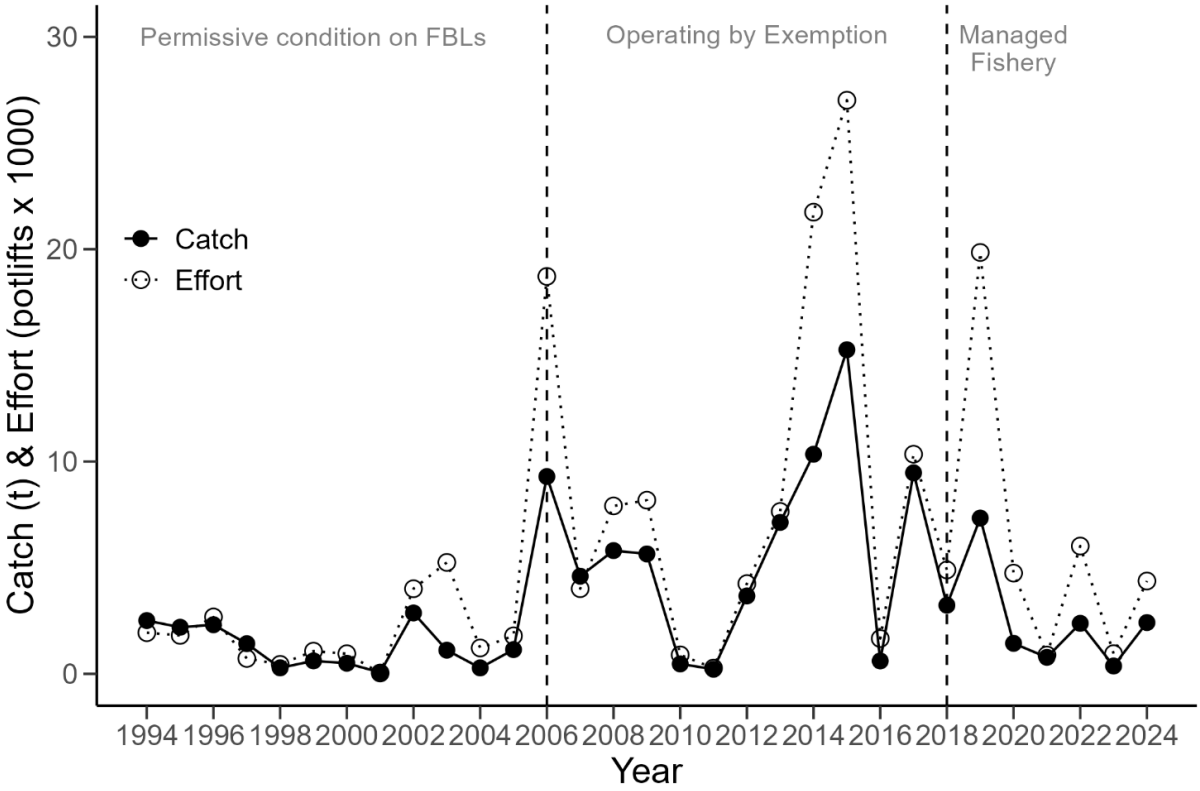
Recreational Sector

The harvest range for blue swimmer crab in the NCB (representing 9% of the statewide catch) was 2.7 t (95% CI 1–5) in 2023-24 and similar to previous surveys (Ryan et al., 2025).

The harvest range for mud crab in the NCB (representing 98% of the statewide catch) was at 3.0 t (95% CI 2–4) in 2023-24 and steady similar to previous surveys (Ryan et al., 2025).



NORTH COAST CRAB FIGURE 3.
Annual commercial blue swimmer crab catch (tonnes) and fishing effort (potlifts × 1000) for the Pilbara Crab Managed Fishery between 2000 and 2024, including the developing (2001-18) and managed (since 2018) phases of the fishery.



NORTH COAST CRAB FIGURE 4.
Annual commercial catch (tonnes) and fishing effort (potlifts × 1000) for pot fishers capturing mud crab in the Kimberley Crab Managed Fishery between 1994 and 2024, including the developing (2006–18) and managed (since 2018) phases of the fishery. Prior to 2006, fishing occurred via a permissive condition on Fishing Boat Licences.

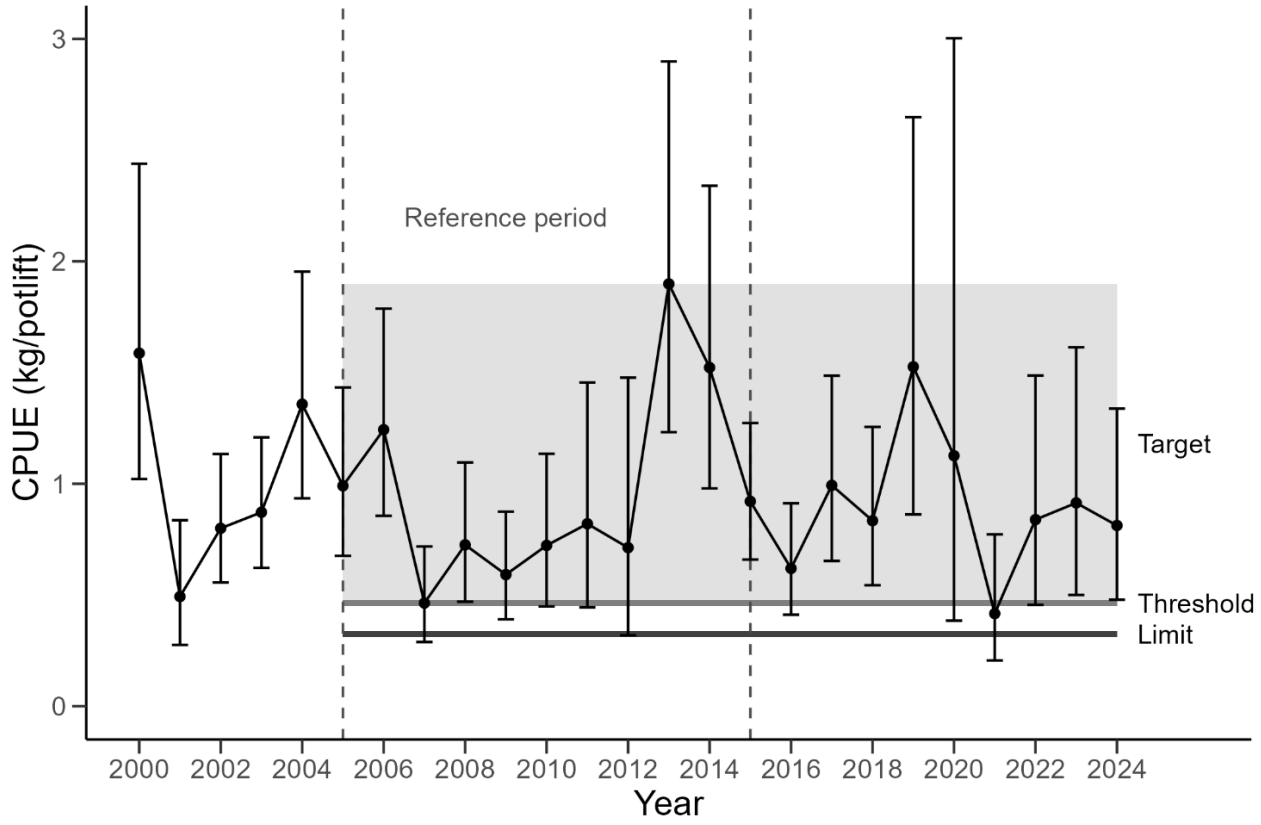
INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Blue Swimmer Crabs (Sustainable-Adequate)

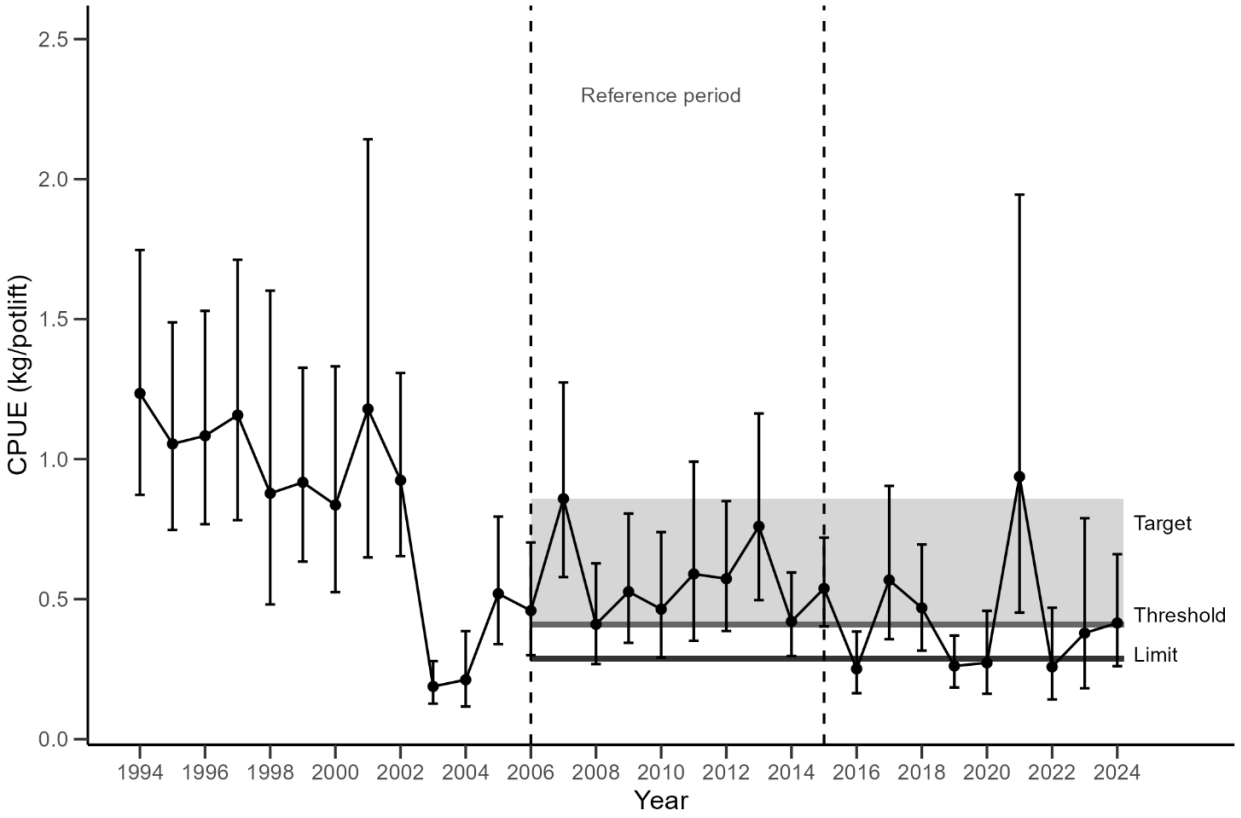
The primary performance indicator for the PCMF is the annual standardised commercial blue swimmer crab catch rate. As the 2024 catch rate of 0.81 kg/potlift was above the proposed Harvest Strategy threshold (North Coast Crab Figure 5), the NCB blue swimmer crab stock, under current management arrangements, is considered **sustainable-adequate**.

Mud Crab (Sustainable-Adequate)

The primary performance indicator for the KCMF is the annual standardised commercial mud crab catch rate. The 2024 catch rate of 0.42 kg/potlift is marginally above the threshold reference point (0.4 kg/potlift) of the proposed harvest strategy with the associated lower bound of the 95% CI below the limit reference point. In 2024, commercial mud crab fishing was conducted from April to September within Cambridge Gulf, King Sound and York Sound. Given the low annual catch and effort (2.45 t from 4,375 potlifts), wide distribution of mud crabs over the vast spatial area of the fishery, and the minimum legal size set well above the size at first maturity, the NCB mud crab stock under current management arrangements is considered to be **sustainable-adequate**.



NORTH COAST CRAB FIGURE 5.
The primary performance indicator, annual standardised commercial catch rate (kg/potlift, ±95% CL), for the Pilbara Crab Managed Fishery between 2000 and 2024, relative to the associated proposed reference points (target, threshold, and limit) for a harvest strategy. The reference period (2005-15) covers the years when the fishery was considered to be operating under relative stability.



NORTH COAST CRAB FIGURE 6.
The primary performance indicator, annual standardised commercial catch rate (kg/potlift +95% CL), for the Kimberley Crab Managed Fishery since 1994 (when permissive conditions of fishing boat licenses were issued), relative to the associated proposed reference points (target, threshold and limit) for a harvest strategy. The reference period spans 2006–15, when the fishery was considered to have operated under relative stability.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Blue swimmer crab

Bycatch

Commercial blue swimmer crab pots are designed to minimise the capture of non-target species, with the majority of undersized crabs and other bycatch species able to escape through the pot's mesh or entrance gaps. Furthermore, captured undersized and berried crabs must be returned to the water immediately. Therefore, the level of risk to bycatch species from blue swimmer crab pot fishing is considered **negligible**.

Status reports specific to each trawl fishery deal with bycatch from trawl fisheries taking crabs as a byproduct in the NCB.

Protected Species

The crab pot longline system used in the targeted crab fisheries mitigates mortality of, or injuries to, endangered, threatened, or protected species, and avoids or minimises impacts on threatened ecological communities. Therefore, the level of risk to protected species is considered **negligible**.

Mud Crab

Bycatch

Commercial mud crab pots are designed to minimise the capture of non-target species, with the majority of sub-legal crabs and bycatch species able to exit through the pot's mesh and entrance gaps. Furthermore, captured undersized and berried crabs must be returned to the water immediately. Therefore, the level of risk to bycatch from mud crab pot fishing is considered **negligible**.

Protected Species

As commercial mud crab pots are purpose-built to target mud crab species and are set for relatively short periods of time, reported interactions with listed species are minimal. Therefore, the level of risk to protected species is considered **negligible**.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

Blue Swimmer Crab

Commercial blue swimmer crab pot fishing results in limited habitat disturbance, with minor dragging of pots on the bottom occurring during pot retrieval. Sand and associated biota are not brought to the surface in commercial blue swimmer crab pots, as the mesh used on pots is sufficiently large to allow the escape of any sand-dwelling macro-benthos. Although seagrasses are occasionally brought to the surface with the pot, the infrequent nature of this occurrence results in minimal habitat damage. Therefore, the level of risk to benthic habitats from blue swimmer crab pot fishing is considered **low**.

Mud Crab

The operation of commercial mud crab pots in the shallow waters of mangrove tidal creeks and near shore embayment's results in limited habitat disturbance. The large mesh size precludes the capture of benthic organisms and only minor dragging of pots on the sea floor occurs during pot retrieval. Therefore, the level of risk to benthic habitats from mud crab pot fishing is considered **low**.

Ecosystem

The commercial take of blue swimmer and mud crabs represents a relatively small portion of the overall biomass in the NCB, which is effectively renewed annually. Consequently, secondary food chain effects are likely to be minimal. Therefore, the level of risk to the ecosystem from either blue swimmer or mud crab pot fishing is considered **low**.

SOCIAL AND ECONOMIC OUTCOMES

Social

Blue swimmer crab and mud crab stocks in the NCB represent high social amenity to recreational fishers, and to the local community via commercial crab supply to markets and restaurants. Mud crab is also important culturally to many Aboriginal communities throughout the Kimberley.

During 2024, 2 people were employed as skippers and crew on vessels targeting blue swimmer crabs using crab pots along the Pilbara coast. Five people were employed as a skipper and crew on vessels fishing for mud crab in the KCMF. Post-harvest processing of crab catches provides additional employment.

The level of risk regarding social outcomes for blue swimmer and mud crab fishing in the NCB is considered **low**.

The NCB mud crab fishery represents high social amenity to recreational fishers and consumers via commercial mud crab supply to markets and restaurants. Therefore, it is classified as a **low** risk, with effort occurring from April until September.

Economic

The combined estimated gross value of product (GVP) for the crab fisheries within the NCB for 2024 was ~$226 k (Level 1 <$1million).

Blue Swimmer Crabs

Beach price data for pot-caught blue swimmer crabs in WA is compiled from monthly fish processor returns. The weighted average beach price for the 2023-24 financial year was $10.84 per kg. Blue swimmer crabs caught from the Pilbara region were sold through local and interstate markets.

Mud Crabs

Commercial fishers travel significant distances due to the remoteness of their operations and stay at sea for several weeks before returning to unload the catch. Mud crabs are frozen and sold to local and interstate markets, however live product may also be sold at premium prices. The average beach price for green and brown mud crabs (uncooked) in the Kimberley during the 2023-24 financial year was $30/kg. While Aboriginal groups may also add value to the local communities by trade and barter of mud crab products, this cannot currently be estimated.

GOVERNANCE SYSTEM

Harvest Strategy

The breeding stock of crab fisheries are protected by effort controls, legal minimum sizes well above the size at maturity, and spatial and temporal closures.

Blue Swimmer Crab

A preliminary harvest strategy has been determined for the PCMF, where the primary performance indicator is the standardised annual commercial catch rate. The reference period spans 2005 to 2015, defined by the timeframe when the developing fishery status commenced following an earlier period (2001–2004) of exploratory fishing.

As the primary performance indicator was above the threshold level in 2024, no changes to the management of the fishery were introduced for the 2025 season.

Mud Crab

A preliminary harvest strategy has been determined for the KCMF, where the primary performance indicator is the standardised annual commercial catch rate. The reference period spans 2006-2015, when the fishery was considered to have operated under relative stability following initial exploratory fishing (2000-2005).

The 2024 commercial catch rate was above the proposed harvest strategy threshold level. Given the low annual catch and effort, wide distribution of the species over the vast spatial area of the fishery, and the minimum legal size set well above the size at first maturity, no changes to the management of the fishery were introduced for the 2025 season.

Annual Catch Tolerance Levels

Pilbara BSC:	20–73 t
Kimberley Mud Crab:	5–30 t

Blue Swimmer Crab

Annual catch tolerance levels have been developed for the PCMF (see Johnson et al, 2020) based on historical catch information relative to estimates of MSY derived from a reference period in which the fishery was considered to have been operating sustainably (2005–2015).

Although the 2024 catch for the PCMF of 14.1 t was below the Catch Tolerance level, this can be attributed to reduced fishing effort. As such, no further management action was considered necessary for the 2025 season.

Mud Crab

The current catch tolerance ranges used to assess annual fishery performance in the KCMF have been determined from a reference period in which the fishery was considered to have been operating sustainably (2006–2015).

Although the 2024 mud crab catch for the KCMF (2.45 t) was below the Catch Tolerance level, this can be attributed to minimal fishing effort. As such, no further management action was considered necessary for the 2025 season.

Compliance

Current risks to enforcement are low for NCB crab fisheries.

DPIRD undertakes regular compliance inspections at-sea and on land.

Consultation

DPIRD undertakes consultation directly with licensees on operational issues. In addition, Industry Management Meetings are held between DPIRD and licensees, in conjunction with the Western Australian Fishing Industry Council.

Consultation processes relating to recreational fishing are facilitated by Recfishwest under a Service Level Agreement, although DPIRD undertakes direct consultation with the community on specific issues.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

While a formal harvest strategy for the Portunidae crab resource (blue swimmer crab and mud crab) in the NCB is yet to be developed, a DPIRD and Fisheries Research and Development Corporation funded project (2022-138) is underway, to build our understanding of mud crab biology, abundance and distribution. The outcomes of this project will inform future pot allocation to Aboriginal communities and sustainable management of mud crab fisheries in the Kimberley. This project will also provide valuable knowledge for harvest strategy development. This research is a collaboration between DPIRD research scientists, managers and the DPIRD Aboriginal Economic Development unit, with extensive engagement and collaboration with relevant Aboriginal groups in the Kimberley.

EXTERNAL DRIVERS

Environment

Levels of recruitment to many crab fisheries fluctuate considerably between years, primarily attributed to environmental influences (e.g. water temperature) on spawning success and larval survival through to recruitment. The relationship between environmental factors, recruitment, and catch for crab stocks in the NCB is being evaluated as further data becomes available.

Climate Change

North Coast Crab Resource Table 1 provides a summary of the climate vulnerability risk assessment outcomes for the key invertebrate target species of the NCB crab resource. Blue swimmer crab was deemed at **medium** risk, while both green and brown mud crabs were deemed **high** risk from climate change.

The Pilbara blue swimmer crab stock appears to have a thermal tolerance range that could be adversely impacted if SSTs exceed this range or negatively impact their associated habitats (seagrass, mangroves). Although the potential risk from increased ocean acidification and MHWs remains, overall climate change is anticipated to have a positive effect.

Targeted mud crab species along the Kimberley coast are likely to tolerate moderate increases in SSTs, but severe MHW events may be detrimental. Indirect climate impact on these stocks relate largely to their key mangrove habitats. While further sea level rise could be

positive if it extends mangrove coverage, increased severe tropical cyclone activity could lead to mangrove loss.

NORTH COAST CRAB RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for the key target species KCMF and PCMF.

Indicator species	Sensitivity	Exposure	Climate Change risk
Blue swimmer crab	Low	Negative effects are possible	Medium
Green mud crab	Medium	Negative effects are possible	High
Brown mud crab	Medium	Negative effects are possible	High

REFERENCES

Johnston D, Yeoh D, Harris D, Fisher E. 2020. Blue Swimmer Crab (*Portunus armatus*) and Mud Crab (*Scylla serrata and Scylla olivacea*) Resources in the North Coast and Gascoyne Coast Bioregions, Western Australia. Fisheries Research Report No. 306. Department of Primary Industries and Regional Development, Western Australia. 156p.

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SOUTH COAST BIOREGION



SOUTH COAST BIOREGION

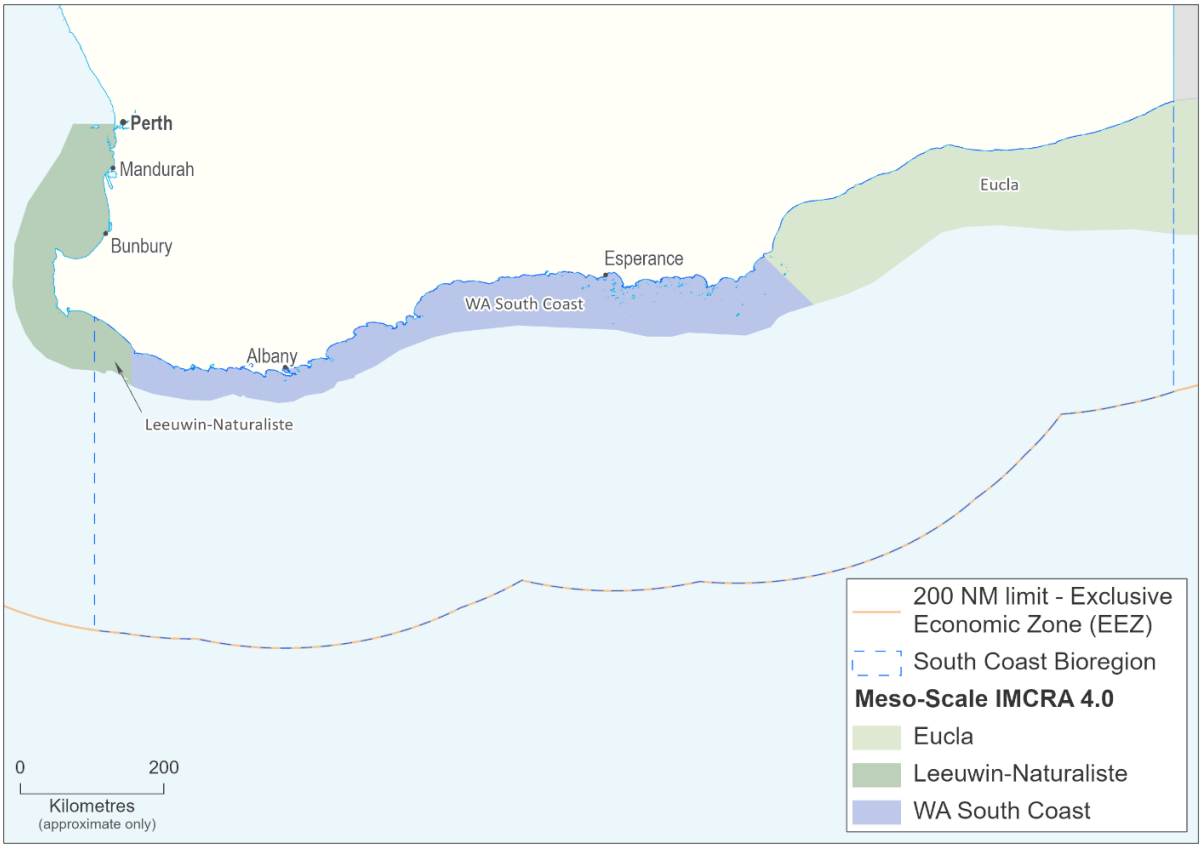
ABOUT THE BIOREGION

The continental shelf waters of the South Coast bioregion (South Coast Bioregion Overview Figure 1) are generally temperate but low in nutrients, due to the seasonal winter presence of the tail of the tropical Leeuwin Current, and limited terrestrial run-off. Sea surface temperatures typically range from approximately 15°C to 21°C, which is warmer than would normally be expected in these latitudes due to the influence of the Leeuwin Current. In a typical autumn, the Leeuwin Current spreads to cover most of the continental shelf waters in the vicinity of Albany. Winter minimum water temperatures in this area (away from terrestrial effects along the beaches) are limited to approximately 16°C to 17°C.

Fish stocks in the South Coast bioregion (SCB) are predominantly temperate, with many species' distributions extending right across southern Australia. Tropical species are occasionally found, which are thought to be brought into the area as larvae, and they are unlikely to form local breeding populations.

The south coast of WA is a high-energy environment, heavily influenced by large swells generated in the Southern Ocean. The coastline from Cape Leeuwin to Israelite Bay is characterised by white sand beaches separated by high granite headlands. East of Israelite Bay there are long sandy beaches backed by large sand dunes, an extensive length (160 km) of high limestone cliffs and a mixed arid coastline to the South Australian border. There are few large areas of protected water along the south coast, the exceptions being around Albany, and in the Recherche Archipelago off Esperance.

Along the western section of the SCB coastline (that receives significant winter rainfall) there are numerous estuaries fed by winter flowing rivers. Several of these, such as Walpole/Nornalup Inlet and Oyster Harbour, are permanently open, but other estuaries are closed by sandbars and open seasonally after heavy winter rains. The number of rivers and estuaries decreases to the east as the coastline becomes more arid. While these estuaries, influenced by terrestrial run-off, have higher nutrient levels (and some, such as Oyster Harbour and Wilson Inlet, are experiencing eutrophication), their outflow to the ocean does not significantly influence the low nutrient status of coastal waters.



SOUTH COAST BIOREGION OVERVIEW FIGURE 1
Map showing the South Coast bioregion and IMCRA (V 4.0) meso-scale regions: Leeuwin-Naturaliste, South Coast, and Eucla.

The marine habitats of the SCB are similar to the coastline, having fine, clear sand sea floors interspersed with occasional granite outcrops, limestone shoreline platforms, and sub-surface reefs. Offshore a series of steeply sloping canyons intersect the continental shelf edge resulting in sporadic local nutrient upwelling and intermittent zones of high benthic productivity.

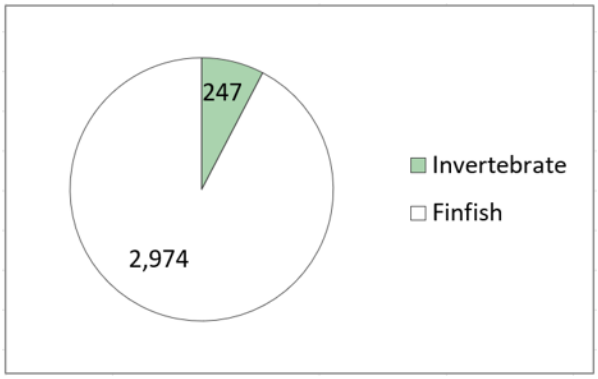
A mixture of seagrass and kelp habitats occurs along the south coast, with seagrass more abundant in protected waters and some of the more marine estuaries. The kelp habitats are diverse but dominated by the relatively small *Ecklonia radiata*, rather than the larger kelps expected in these latitudes where waters are typically colder, and have higher nutrient levels.

The bioregion's ecosystem boundaries as defined by IMCRA (V 4.0) are depicted in South Coast Bioregion Overview Figure 1. The potential threats and risks to these ecosystems are often similar. For simplicity, risk ratings were allocated by grouping the ecosystems into two broad groups, estuarine or marine. However, if a particular ecosystem is unique and/or is exposed to different or significant threats, risk was allocated to those ecosystems separately.

SUMMARY OF ACTIVITIES POTENTIALLY IMPACTING THE BIOREGION

Commercial Fishing

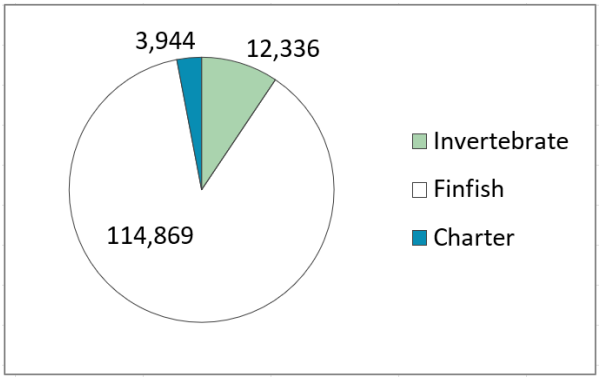
The major commercial fisheries of the SCB are the abalone fishery (which achieved Marine Stewardship Council (MSC) certification in 2017), a trap fishery targeting southern rock lobsters and deep-water crabs, the purse seine fishery targeting pilchards and other small pelagics, and the demersal gillnet fishery for sharks and scalefishes. Other smaller commercial fisheries include the long-standing beach seine fishery for WA salmon, and the intermittent scallop trawl fishery. There are commercial net fisheries for finfish operating in a number of SCB estuaries and beaches. Commercial fishers also target demersal scalefish offshore with droplines and handlines. SCB commercial fishing vessel operators often hold a number of licences to create a viable year-round fishing operation.



SOUTH COAST BIOREGION OVERVIEW FIGURE 2
Contribution of finfish and invertebrates to the total commercial wild fishery catch originating from the South Coast bioregion. Numbers represent total catch in tonnes.

Recreational Fishing

As much of the SCB is remote or difficult to access, recreational beach and boat fishing tends to be concentrated around major population and holiday centres. The major target species for beach and rock anglers are WA salmon, Australian herring, whiting, and trevally, while boat anglers target snapper, queen snapper, Bight redfish, and King George whiting. The third major component of the recreational fishery is dinghy and shoreline fishing in estuaries and rivers, focused in the western half of the bioregion where the main angling targets are black bream and whiting (including King George whiting). Recreational netting, primarily targeting mullet, also occurs in these estuaries.



SOUTH COAST BIOREGION OVERVIEW FIGURE 3
Recreational catches (by number) in the South Coast bioregion. Finfish and invertebrate catches were assessed in the statewide survey of boat-based recreational fishing in 2023-24[1]. Charter boat catch is for the same period. Estimates of shore based recreational catch are unavailable.

1 Ryan KL, Lai EKM, Smallwood CB, Tate AC. 2025. Boat-based recreational fishing in Western Australia 2023-24. Fisheries Research Report No. 352. Department of Primary Industries and Regional Development, Western Australia.

Aquaculture

The predominant aquaculture activity undertaken on the south coast is the production of edible oysters and mussels from Oyster Harbour and Mistaken Island in King George Sound (both at Albany) as part of the Albany Aquaculture Development Zone (AADZ). The Minister for Fisheries declared the Albany Aquaculture Development Zone in 2024, which encompasses Oyster Harbour, Princess Royal Harbour and King George Sound.

Other forms of aquaculture (e.g. sea cage farming) are restricted on the south coast by the high-energy environment and the very limited availability of protected deep waters typically required by this sector. Most recent development activity in the invertebrate sector has focused on land-based 'raceway' culture of abalone, using pumped sea water, and offshore production in sheltered areas. The offshore abalone farms located near Augusta (Flinders Bay) and Esperance (Wylie Bay) are in less exposed areas and are growing out abalone using purpose-built concrete structures located on the sea bed. The WA enhanced greenlip abalone fishery, in the SCB, acheived MSC certification in 2022. There is also growing interest in seaweed aquaculture in areas of the south coast.

Tourism

Tourism is a regionally important industry across the SCB, with much of the industry spread across rural areas and away from the major population centres of Albany and Esperance. Tourist infrastructure and development are generally small-scale, and focussed on natural and wilderness experiences, thus tourism activities have a relatively low environmental impact, particularly in relation to the extensive length of coastline, which is only accessible via a limited number of four-wheel drive tracks. A significant portion of the bioregion's coastline is encompassed in national parks and nature reserves, particularly to the east of Bremer Bay. Whale watching, including expeditions to the largest known group of killer whales in the southern hemisphere at the head of the Bremer Canyon, and other marine wildlife experiences are also popular tourist activities.

Shipping and Maritime Activity

Significant volumes of bulk commodities such as iron ore, grain, other agricultural products and wood chips are exported from commercial port facilities in Albany and Esperance. Cruise vessels also visit the Ports of Albany and Esperance, providing significant economic input into the local community and surrounding regions during their visits. In addition, many international shipping routes to and from eastern Australia, traverse the SCB, often without docking in WA. Seismic surveys have been undertaken in the east of the bioregion to inform prospective oil and gas exploration in the western Great Australian Bight.

Given that the impacts from vessels and ships tend to be concentrated around ports and anchorage areas, DPIRD has surveillance in place for marine pests in key port areas to aid in the early detection of any unwanted aquatic species from other locations.

BIOREGIONAL SPECIFIC ECOSYSTEM MANAGEMENT

Within each bioregion there are a range of management measures that have been implemented to manage the potential impact of activities (See Chapter 3 for an overview). Management measures specific to the SCB follow.

Spatial Closures

Extensive fisheries closures in coastal and offshore waters have been introduced to manage trawling by Australian vessels (South Coast Bioregion Overview Figure 4). Trawling is currently only permitted in 1% of shelf waters (South Coast Ecosystem Management Table 1).

The inshore marine habitats of the SCB are relatively unaffected by human activities due to their remoteness, low population density across the bioregion and the extent of coastal management (national parks, nature reserves, etc.).

The Walpole and Nornalup Inlets Marine Park was declared on the 8th May 2009, and was the first marine protected area on the south coast. In 2019, the WA Government announced the 'Plan for Our Parks' initiative to create additional marine parks and terrestrial conservation reserves by February 2024. This initiative included the establishment of a new marine park off the south coast of WA, that extends from east of Bremer Bay to the SA border. The South Coast Marine Park has been formally created, with the final zoning scheme released in late 2024. The park will legally take effect in late 2026.

Additional access restrictions in the bioregion include closures under s.43 of the *Fish Resources Management Act 1994* at Greens Pool in William Bay, and in waters surrounding the wreck of the 'Perth' (Albany), the wreck of the 'Sanko Harvest' (east of Esperance) and Esperance Jetty.

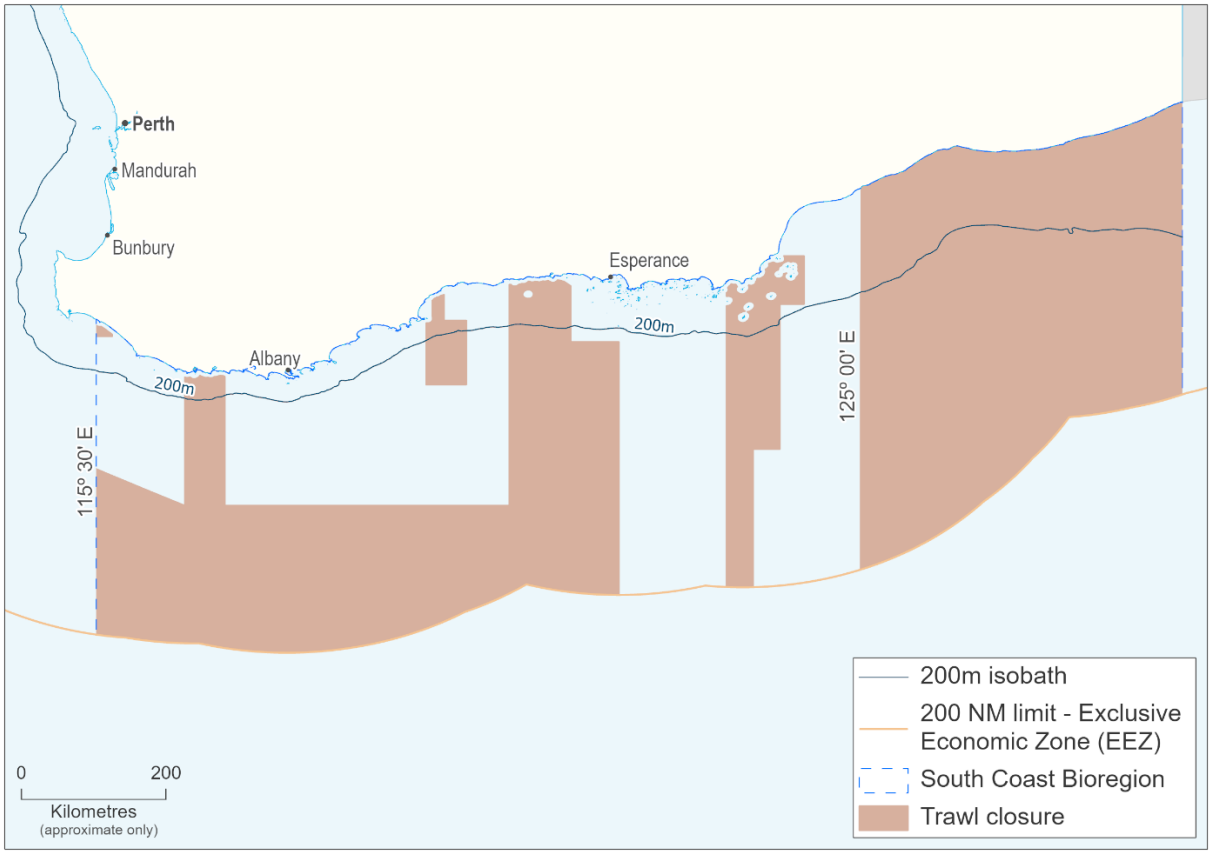
The Australian Government implemented an Australian Marine Park for the south-west marine region (between Kangaroo Island in South Australia and Shark Bay in WA) in July 2018. This resulted in a network of marine parks off the south

coast of WA (South Coast Bioregion Overview Figure 5). In 2025, WA's Commonwealth marine parks are being reviewed, with a major focus on expanding the network and increasing protection through new marine parks and sanctuaries.

SOUTH COAST ECOSYSTEM MANAGEMENT TABLE 1

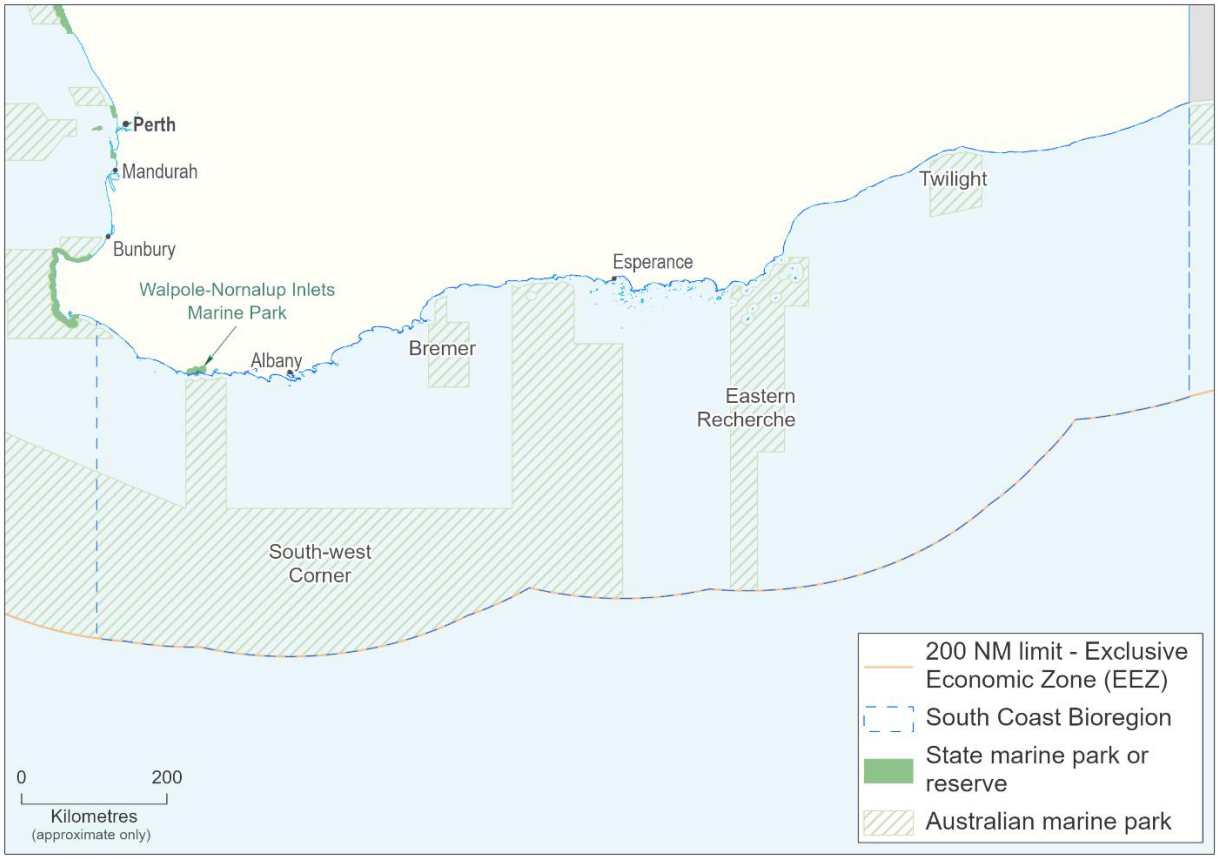
The areas and proportions of the South Coast bioregion making up State Waters and all continental shelf waters, out to 200 m depth, which meet the IUCN criteria for classification as marine protected areas. This table does not include State or Commonwealth closures that are currently in the process of implementation. These areas will be included in future volumes, when their respective implementation processes are concluded.

IUCN category or equivalent	State Waters only (17,116 km^2)				All Waters (534,016 km^2 (including State Waters))			
	Fisheries		Existing MPA		Fisheries		Existing MPA	
	km^2	%	km^2	%	km^2	%	km^2	%
I	0	0	0	0	0	0	0	0
II	1	< 1	0	0	1	< 1	6,700	1
III	0	0	0	0	0	0	0	0
IV	2,400	14	15	< 1	2,400	< 1	15	< 1
V	0	0	0	0	0	0	0	0
VI	14,700	86	0	0	531,600	96	11,200	2



SOUTH COAST BIOREGION OVERVIEW FIGURE 4

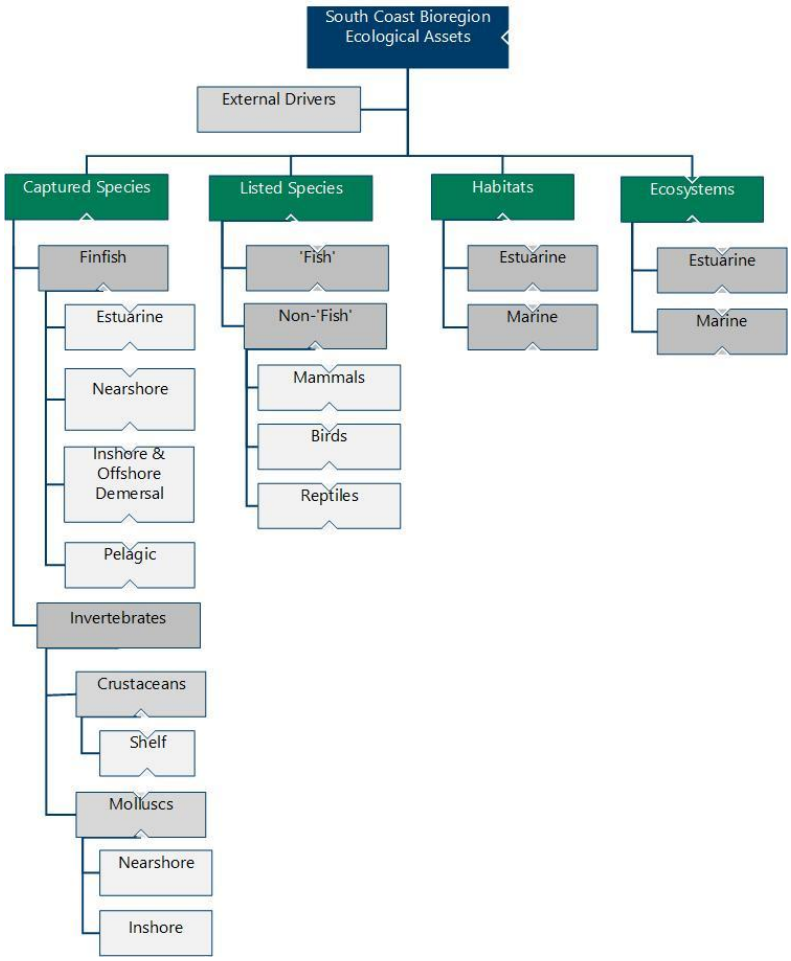
Map showing the South Coast bioregion and areas closed to trawling. The areas permanently closed to trawling are consistent with IUCN marine protected area category IV.



SOUTH COAST BIOREGION OVERVIEW FIGURE 5
Map showing the South Coast bioregion, and the current State and Commonwealth marine parks and reserves along the southern WA coast.

ECOSYSTEM MONITORING AND STATUS

In order to assess the adequacy of management arrangements aimed at ensuring sustainability of the ecological assets within the South Coast bioregion, DPIRD must identify and monitor trends in the condition of these resources. This is achieved through the application of an Ecosystem Based Fisheries Management (EBFM) framework (Fletcher et al., 2010) to identify, in a hierarchical manner, the key ecological resources that require ongoing monitoring and assessment (See How to Use section for more details). These key ecological assets identified for the SCB are identified in South Coast Bioregion Overview Figure 6 and their current risk status reported on in the following sections.



SOUTH COAST ECOSYSTEM MANAGEMENT FIGURE 6
Component tree showing the ecological assets identified and separately assessed for the South Coast bioregion.

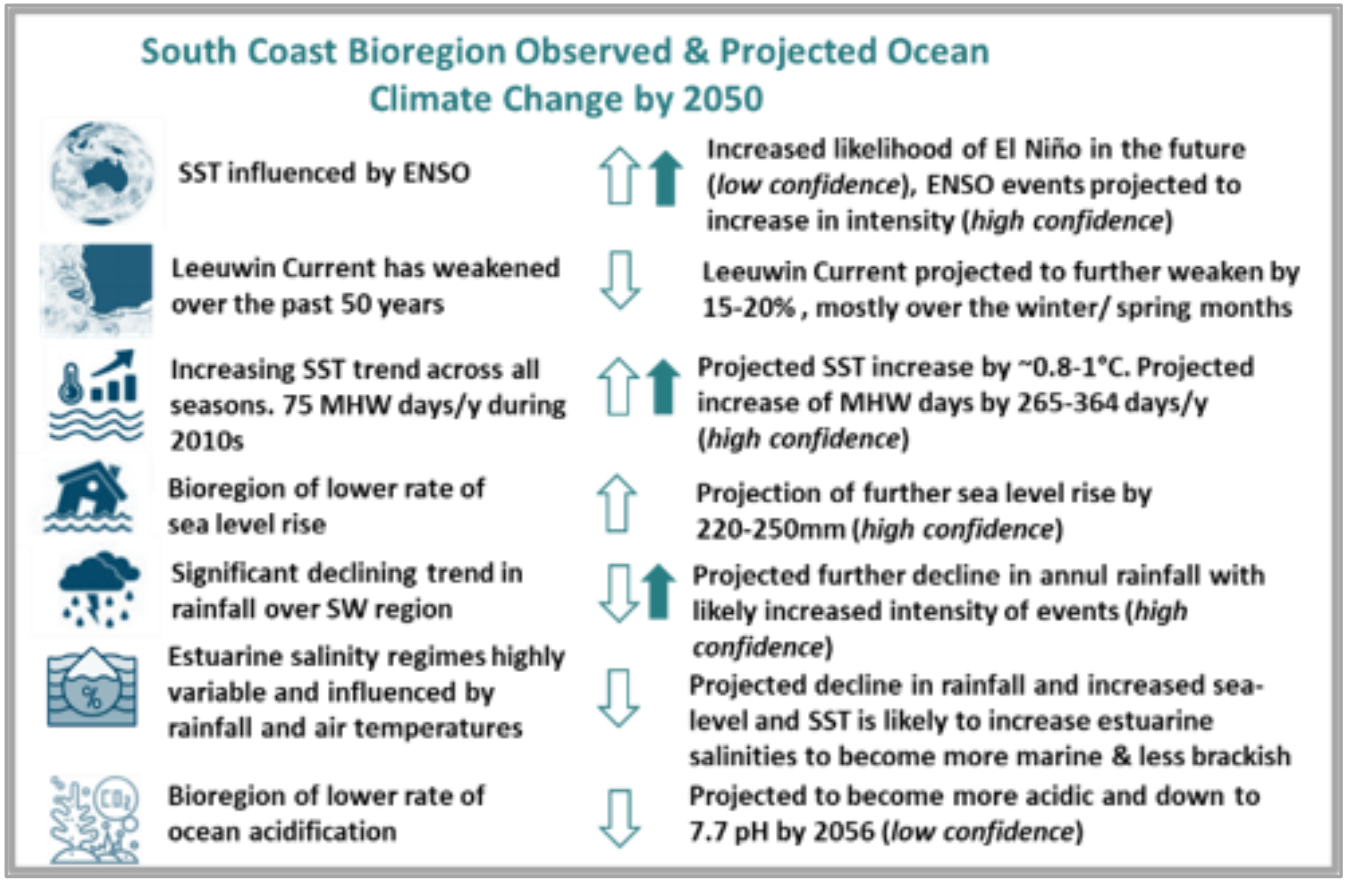
External Drivers

External factors that potentially impact marine and estuarine ecosystems at the bioregional level may not fall within the direct control of Fisheries legislation (e.g. climate change). An understanding of these factors, which are typically environmental (storms, ocean currents, rainfall, etc.) is necessary to properly assess the risks to ecological resources. The main external drivers identified with potential to affect the SCB include climate change and introduced pests and diseases.

Climate change

The south west of WA is predicted to be heavily influenced by the impacts of climate change. A summary of the observed and projected bioregional predictions in key ocean climate variables is listed in South Coast Bioregion Overview Figure 7. This information supported the climate change risk assessment for the key indicator species in the managed resources from this bioregion.

South Coast Bioregion Overview



SOUTH COAST BIOREGION OVERVIEW FIGURE 7
Observed and projected changes (by 2050) in the key ocean climate drivers and variables of sea surface temperature (SST), marine heatwave (MHW) duration, mean annual sea level, annual rainfall, estuarine salinity, and ocean acidification for the west coast bioregion (SCB). The open arrow indicates directional change or frequency while the solid arrow indicates projected change in intensity.

Captured Species

FINFISH

Estuarine

Captured Species	Aquatic zone	Ecological Risk
Finfish	Estuarine	MEDIUM

Stocks of estuarine cobbler and black bream are considered to be sustainable-adequate (refer to the South Coast Nearshore and Estuarine Chapter).

Nearshore (0-20 m depth)

Captured Species	Aquatic zone	Ecological Risk
Finfish	Nearshore	LOW

The most recent stock assessment on Australian salmon indicated that there is currently a low risk to sustainability. The stock of Australian herring is considered to have recovered to a level where there is a low risk to sustainabilty.

Inshore and Offshore Demersal

Captured Species	Aquatic zone	Ecological Risk
Finfish	Demersal	HIGH

The risks to inshore demersal indicator species are considered to be medium (blue morwong, hapuku) to high (bight redfish, snapper and western blue groper) (refer to the South Coast Demersal Scalefish Chapter). Demersal species on the south coast are typically long lived (≥24 years), making them inherently vulnerable to overfishing

Pelagic

Captured Species	Aquatic zone	Ecological Risk
Finfish	Pelagic	LOW

While the spawning biomass of sardines has returned to acceptable pre-herpesvirus levels, catches of sardine indicator species have not returned to levels observed before the herpesvirus outbreak due to reduced fishing effort.

INVERTEBRATES

Crustaceans

Captured species	Aquatic zone	Ecological Risk
Crustaceans	Shelf	MEDIUM

The stock biomass of southern rock lobster in zones 3 and 4 of the fishery is currently around the target level (refer to the South Coast Crustacean Chapter). Crystal crab was assessed as medium risk in Zone 1 and low in Zones 3. Likewise giant crab was assessed as medium risk in Zone 1. Therefore the overall risk is assessed as medium.

Molluscs

Captured species	Aquatic zone	Ecological Risk
Abalone	Nearshore	HIGH
Scallops	Inshore	NEGLIGIBLE

Stocks of greenlip abalone in Areas 2 and 3 are considered inadequate. Management action has been taken to address concerns for stocks of abalone in some areas. The abundance of scallops varies inter-annually due to recruitment fluctuations and fishing only occurs when stocks are sufficiently robust.

Listed species

A variety of endangered, threatened and protected[1] (ETP) species can be found within the SCB, including cetaceans, pinnipeds, elasmobranchs, seahorses and pipefish, and sea/shore birds. These species are protected by various international agreements and national and state legislation. Primary pieces of legislation include the *Environment Protection and Biodiversity Conservation Act 1999* (Cth), the *Biodiversity Conservation Act 2016* (WA), and the *Fish Resources Management Act 1994* (WA).

Fish

Listed species	Risk
White shark, grey nurse shark	MEDIUM
School shark	SEVERE

In the most recent ERA for Temperate Demersal Elasmobranch Resource[2], the impacts of fishing on the grey nurse shark (*Carcharias taurus*) and the white shark (*Carcharodon carcharias*) were both considered to be Medium. Effort in the Temperate Demersal Gillnet and Demersal Longline Fisheries has decreased since the 1980s and 1990s, which has likely reduced the level of bycatch. In the same ERA, the impacts of fishing on the school shark was considered to be a Severe risk. This was in recognition of their current stock status across southern Australia. While catches of school shark in the Temperate Demersal Gillnet and Demersal Longline Fisheries are unlikely to have significantly contributed to stock depletion, the assessment recognised that any catch may potentially impact the conservation dependent species.

1 Note that being on the listed species list does not automatically indicate that a species is either threatened or endangered.

2 Watt M. et al. 2021. Ecological Risk Assessment for the Temperate Demersal Elasmobranch Resource. Fisheries Research Report No. 318. Department of Primary Industries and Regional Development, Western Australia.

Non-Fish

Listed species	Risk
Mammals	HIGH
Birds and Reptiles	HIGH

Reported captures of Australian sea lions are rare and gillnet exclusion zones are in place around known colonies in WA. However, the ERA for the Western Australian Temperate Demersal Elasmobranch Resource identified Australian sea lions as being high risk[3]. This was attributed to the potential for interaction with commercial gillnets and a lack of population modelling and fishery-independent data validation.

Concerns about potential captures of juvenile Australian sea lions in South Coast Crustacean Managed Fishery pots have led to the requirements for Sea Lion Exclusion Devices to be fitted to pots when they are fished in proximity to breeding colonies.

Reported captures of shearwaters in purse seine operations have declined in recent years following mitigation measures implemented through a code of conduct. These measures, which apply during a "special mitigation period" (March and April) when entanglement rates historically peaked, include a dawn closure, measures to prevent slack and folds occurring in nets, communication and avoidance protocols, and gear modification trials.

In the most recent ERA for the WA Statewide Small Pelagic Resource, a high risk was attributed to the Flesh Footed Shearwater (*Ardenna carneipes*)[1]. This score, rather than a medium score, was based on the level of uncertainty associated with population modelling and fisheries dependent data.

Habitats and Ecosystems

The SCB extends from Black Point (east of Augusta) to Israelite Bay (east of Esperance) (South Coast Bioregion Overview Figure 1).

SCB ecosystems are generally temperate, although the tropical Leeuwin Current maintains temperatures above those normally expected at such latitudes, especially under *La Niña* conditions. Tropical species can therefore occur across much of the bioregion, although they are unlikely to form breeding populations. Due to the influence of the Leeuwin Current and limited freshwater discharge, SCB ecosystems are relatively oligotrophic, although localised upwelling along the outer edge of the continental shelf may be locally important sources of productivity. For example, the head of the Bremer Canyon is a recognised biodiversity hotspot in the region.

The key habitats occurring in depths of less than 40 m (where the vast majority of relevant fisheries resources are located and fishing activities are undertaken in this bioregion) include:

Rocky shores: The most conspicuous of the marine habitats in the SCB are the rocky shores. The south coast is exposed to the most extreme wave energy of the entire Australian coastline, due to the narrow continental shelf and lack of protection from offshore reefs and islands. Along this coast, granitic and gneissic slopes exposed to heavy wave action are usually smooth and populated with moderate to large numbers of gastropod molluscs, barnacles, and macrophytes showing distinct vertical zonation.

Algae: Macroalgae along the southwestern and southern coasts of Australia are highly diverse, with an estimated 62% of macroalgal species endemic to the south coast. Algal assemblages are important as a food source, nursery grounds, and shelter for a variety of organisms. Macroalgae also contribute to marine nutrient and carbon cycling in the bioregion.

Sand: The SCB seabed is largely composed of soft, unconsolidated sediments. These sediments provide an important habitat for benthic infauna, with sediment structure an important influence on the distribution, abundance and community composition of these species.

Seagrasses: The diversity of seagrasses in temperate south-western Australia is the highest for any temperate region in the world and reflects the broad distribution of seagrasses in estuaries, coastal embayments and nearshore sheltered environments through to exposed coastal nearshore and offshore areas that are exposed to ocean swells. Seagrasses perform the following important ecosystem functions; primary production, nutrient cycling, stabilising sediments, and provision of habitat.

Sponges: In south-western Australia, sponges are found in areas where algae are less dominant, which includes areas deeper than 30 m and in caves.

The IMCRA ecosystem boundaries are illustrated in South Coast Bioregion Overview Figure 1. The risk status for ecosystems and habitat is simplified into two broad categories: estuarine and marine.

[1] Blazeski S. et. al. 2021. Ecological Risk Assessment for the State-Wide Small Pelagic Scalefish Resource. Fisheries Research Report No. 320. Department of Primary Industries and Regional Development, Western Australia. 115p.

Habitats

Habitats	Aquatic zone / category	Current Risk Status
South Coast	Estuarine	NEGLIGIBLE
South Coast	Marine	LOW

The footprint and intensity of demersal fishing methods (i.e. trawling, gillnetting, potting, droplining, and longlining) on benthic habitats is low (<1%) relative to the geographic scale of the bioregion. Trawling and demersal gillnetting also take place away from potentially sensitive hard-substrate habitats due to target species' distributions and to avoid damage to fishing gear. Some estuaries (e.g. Wilson and Hardy Inlets) are in poor condition due to reduced rainfall, eutrophication and other environmental factors.

Ecosystems

Ecosystems	Aquatic zone / category	Current Risk Status
South Coast	Estuarine	LOW
South Coast	Marine	LOW

An assessment by Hall and Wise (2011)[1] of finfish community structure using commercial fishery data for the past 30 years, concluded that trends in mean trophic level, mean length and a Fishery-In-Balance indicator had all stabilised in the SCB; and that there were no concerning trends in available ecosystem based indices.

The most likely cause of any changes to community structure in estuarine regions is changing rainfall levels (potentially due to climate change) and changes in tidal exchange due to the opening and closing of sand-bars at river mouths.

1 Hall NG, Wise BS. 2011. Development of an ecosystem approach to the monitoring and management of Western Australian fisheries. FRDC Report – Project 2005/063. Fisheries Research Report No. 215. Department of Fisheries, Western Australia. 112p.

FISHERIES

SOUTH COAST CRUSTACEAN RESOURCE STATUS REPORT 2025

E. Tuffley and S. Monaghan



OVERVIEW

The South Coast Crustacean Managed Fishery (SCCMF) is a multi-species, quota managed pot-based fishery, which includes catches of southern rock lobster (*Jasus edwardsii*) and western rock lobster (*Panulirus cygnus*), as well as deep-sea crab species including giant crab (*Pseudocarcinus gigas*), crystal crab (*Chaceon albus*), and champagne crab (*Hypothalassia acerba*).

The SCCMF was transitioned to an Individual Transferable Quota (ITQ) system at the start of the 2022-23 season (financial year). Under the ITQ system, Total Allowable Commercial Catch (TACC) limits were implemented for each of the 5 species in the 4 coastal areas of the fishery (Zone 1 to 4). The offshore bight zone remains a development area without TACCs.

Under the harvest strategy (DPIRD 2023), each species in each zone is considered either a target or retained species, based on the level of targeted fishing effort that occurs and by extension the level of available data for assessing the stock. The harvest strategy proposes to assess target species via biomass modelling with target, threshold, and limit values, while retained species are assessed via risk assessment only.

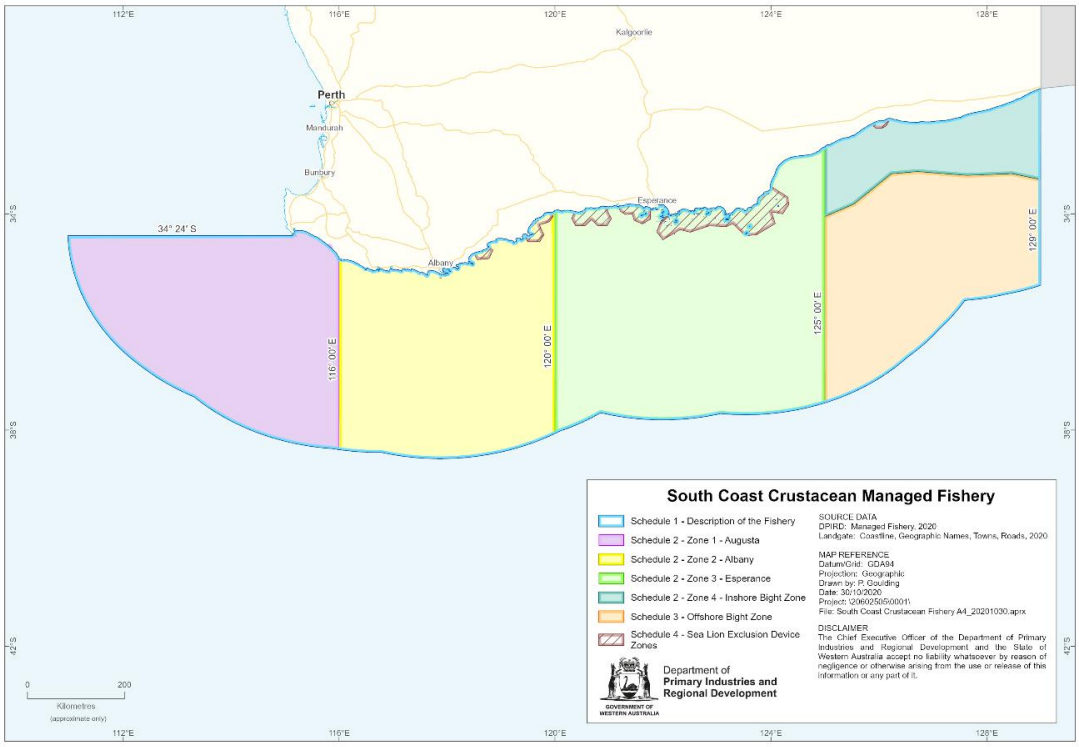
In the 2023-24 season, all 5 target species were considered sustainable. Of the 15 retained species, 8 were deemed low risk, and the remaining 7 were medium risk.

SUMMARY FEATURES

Asset (Allowable catch)	Outcome	Status
Western rock lobster (t) 35, 6.53, 1.05, 0.43	Western rock lobster (t) 6.5, 0.003, 0, 0	Western rock lobster Acceptable
Southern rock lobster (t) 0.7, 1, 16, 14	Southern rock lobster (t) 0.38, 0.2, 13.8, 5.4	Southern rock lobster Acceptable
Crystal crab (t) 0.91, 6, 4, 0.43	Crystal crab (t) 0.88, 5.85, 0.46, 0	Crystal crab Acceptable
Champagne crab (t) 2.1, 5, 4, 0.43	Champagne crab (t) 0, 0.75, 0.09, 0	Champagne crab Acceptable
Giant crab (t) 1.505, 2, 2.5, 0.43	Giant crab (t) 1.5, 1.9, 1.7, 0	Giant crab Acceptable
Recreational fishery Total Catch 2023-24	Western rock lobster 7 t (95% CI 0–15 t) Southern rock lobster 2 t (95% CI 1–3 t)	South Coast Bioregion catches reported in Smallwood et al. 2024
EBFM		
Indicator species	Zone 1, 2, 3, 4	
Western rock lobster	Low (above threshold), low (Risk Based Assessment - RBA), low (RBA), and low risk (RBA).	Adequate
Southern rock lobster	Low (RBA), low (RBA), low (above target), and low risk (above target).	Adequate
Crystal Crab	Medium (RBA), medium (above target), low (RBA), and low risk (RBA).	Adequate
Champagne crab	Low (RBA), low (RBA), low (RBA), and low risk (RBA).	Adequate
Giant crab	Medium (RBA), medium (RBA), medium (RBA), and low risk (RBA).	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Medium risk	Adequate
Habitat	Low risk	Adequate
Ecosystem	Medium risk	Adequate
Economic (GVP $1.4 m; 2022-23)	Medium risk	Acceptable
Social (Moderate amenity)	Medium risk	Acceptable
Governance	Medium risk	Acceptable
External Drivers – Other	High risk	Acceptable
External Drivers – Climate change	High risk (Southern rock lobster)	

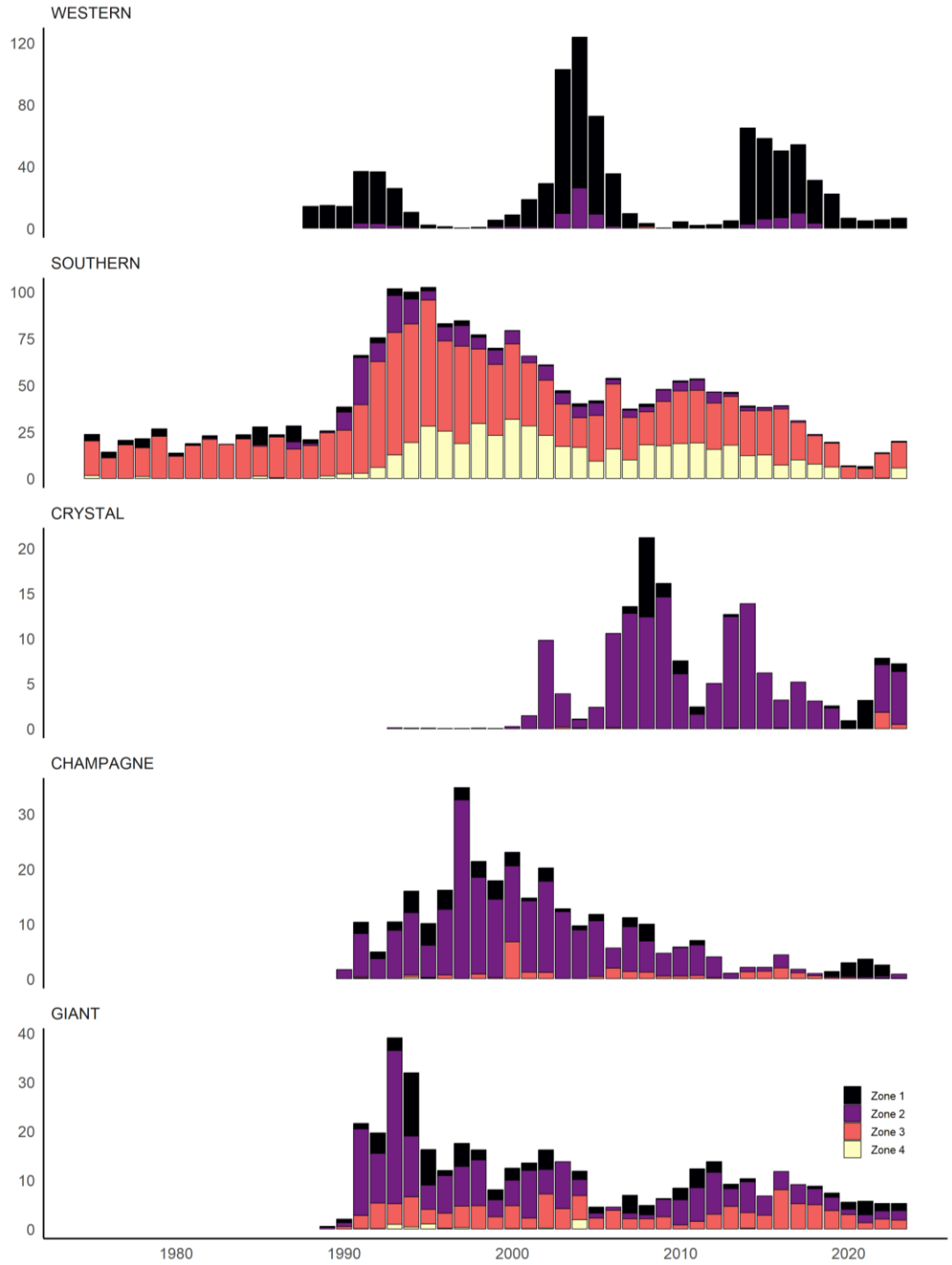
SUMMARY STATISTICS

Statistics	Previous season (2022-23)	Current season (2023-24)	Further description
Western rock lobster (Zone 1, 2, 3, 4)	5.5 t, 0 t, 0 t, 0 t	6.5 t, 0.003 t, 0 t, 0 t	
Southern rock lobster	0.32 t, 0.29 t, 13.2 t, 0.06 t	0.38 t, 0.2 t, 13.8 t, 5.4 t	
Crystal crab	0.74 t, 5.29 t, 1.79 t, 0 t	0.88 t, 5.85 t, 0.46 t, 0 t	
Champagne crab	2.06 t, 0.32 t, 0.15 t, 0 t	0 t, 0.75 t, 0.09 t, 0 t	
Giant crab	1.5 t, 1.7 t, 2 t, 0 t	1.5 t, 1.9 t, 1.7 t, 0 t	
Commercial effort (potlifts)	10,277, 9,792, 16,939, 1,119	10,770, 10,858, 17,041, 7,479	
Participation (vessels)	9	7	
Recreational fishery	Total Catch 2022-23 Western rock lobster 7 t (95% CI 2–11 t) Southern rock lobster 1 t (95% CI 0–3 t)	Total Catch 2023-24 Western rock lobster 7 t (95% CI 0–15 t) Southern rock lobster 2 t (95% CI 1–3 t)	South Coast Bioregion catches reported in Smallwood et al. 2024
Listed species interactions	Nil	Nil	No interactions reported.



SOUTH COAST CRUSTACEAN FIGURE 1.
Boundaries of the South Coast Crustacean Managed Fishery.

CATCH AND LANDINGS



SOUTH COAST CRUSTACEAN FIGURE 2.
Total landings (tonnes) in the South Coast Crustacean Fishery by species and zone.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Western Rock Lobster - (Adequate - Sustainable)

Western rock lobster (WRL) is the dominant species retained from Zone 1, with some catch also retained in Zone 2 (South Coast Crustacean Figure 2). There has been no historical catch of WRL in Zone 4 and very little from Zone 3. Catches of WRL in Zones 1 and 2 are highly cyclical and correspond well to puerulus settlement at Cape Mentelle (lagged by 4-5 years). This provides evidence that the source of recruitment for western rock lobsters in the SCCMF (SCB) is from the fishery in the West Coast bioregion. WRL in the SCCMF represent the southern extent of the species distribution, with Zones 3 and 4 the south-eastern geographical border. The WRL stock in the West Coast bioregion was accessed as **adequate** in the

2024 stock assessment for the West Coast Rock Lobster Managed Fishery (WCRLMF).

Current TACCs for western rock lobster in all zones are **sustainable**.

Southern rock lobster – (Adequate – Sustainable)

The majority of southern rock lobster (SRL) stock resides in the eastern parts of the fishery, with stocks in South Australia (and further eastwards) the likely source of recruitment. The majority of SRL catch in the SCCMF comes from Zones 3 and 4, with less catch landed in Zones 1 and 2 (South Coast Crustacean Figure 2). In Zones 1 and 2 SRL are considered a retained species and were assessed as low risk, and therefore **adequate**, in the 2023-24 stock assessment.

SRL are target species in Zones 3 and 4. In these zones extended depletion models (EDM) have been developed to assess the stocks (de Lestang & How 2023). The 2023-24 assessment indicated that both stocks were **adequate**, with current estimated biomass above the target in both zones (South Coast Crustacean Figures 3 and 4).

Current TACCs for SRL are **sustainable.**

Crystal Crab – (Sustainable-Adequate)

Crystal crab is found on the west and south coasts of WA. The SCCMF appears to be the southern extent of the fishery, with abundance decreasing west to east. Crystal crab is predominately caught in Zone 2, with some catch in Zone 1 and recently (2022-23 and 2023-24) in Zone 3 (South Coast Crustacean Figure 2). Crystal crab has never been landed from Zone 4. Crystal crab is a retained species in Zones 1, 3, and 4, and a target species in Zone 2. In the 2023-24 assessment, crystal crab was assessed as medium risk in Zone 1 and low in Zones 3 and 4, and therefore **adequate**.

In Zone 2 a biomass dynamics model (BDM) has been developed for crystal crab. The 2023-24 assessment indicated that the current biomass was above the target (South Coast Crustacean Figure 5). Therefore, the overall level of stock depletion is **adequate**.

Current TACCs for crystal crabs in all zones are currently **sustainable**.

Champagne crab – (Adequate – Sustainable)

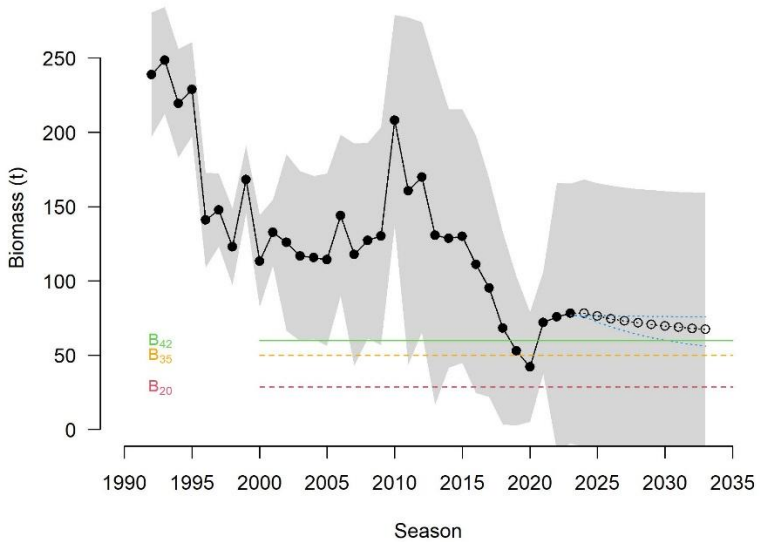
Champagne crab is predominately caught in Zone 2, with some catch from Zones 1 and 3, and some sporadic historical catches in Zone 4 (South Coast Crustacean Figure 2). Champagne crab is considered a retained species and was assessed in the 2023-24 stock assessment as low risk in all four zones.

Therefore, stocks of champagne crab are considered **adequate** and current TACCs **sustainable**.

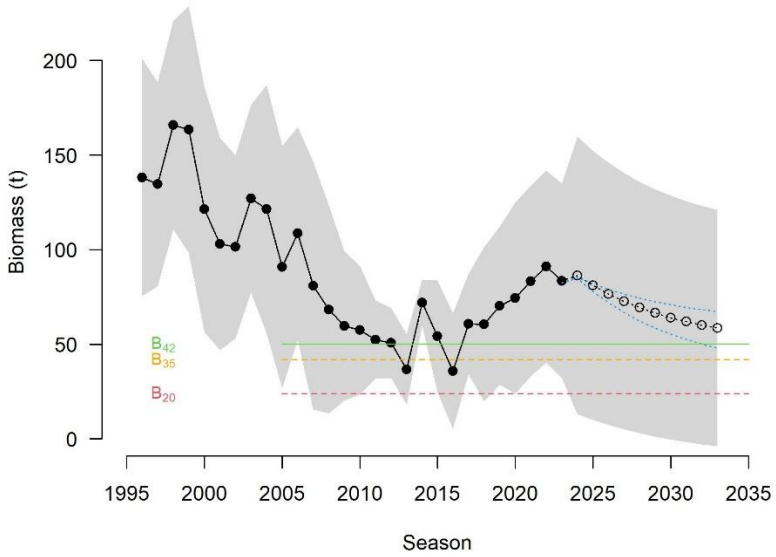
Giant crab – (Adequate – Sustainable)

Giant crab is caught in Zones 1, 2, and 3, with some sporadic historical catches in Zone 4 (South Coast Crustacean Figure 2). Giant crab is considered a retained species in all four zones and was assessed in the 2023-24 stock assessment as medium risk in Zone 1 and low risk in Zones 2, 3, and 4.

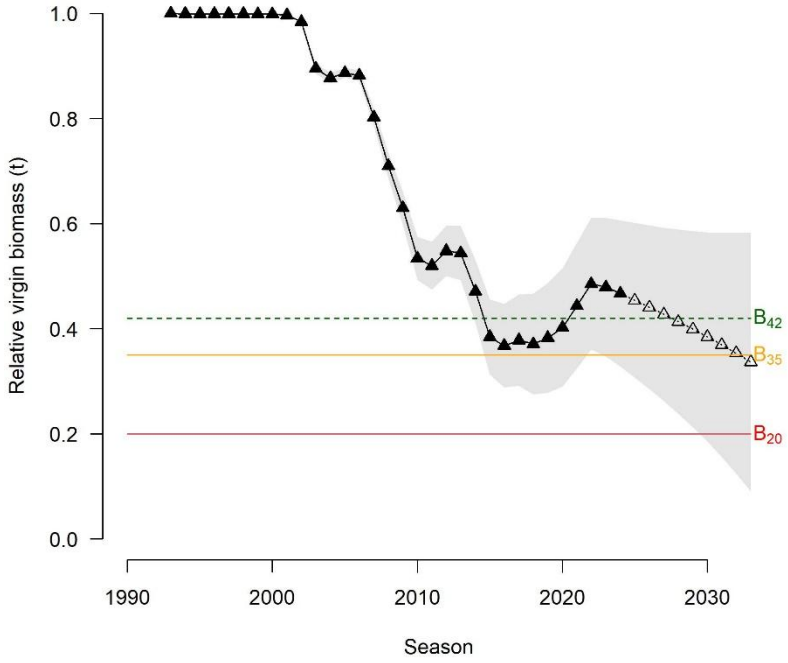
Therefore, giant crab stocks are considered **adequate** and current TACCs **sustainable**.



SOUTH COAST CRUSTACEAN FIGURE 3.
Extended depletion model biomass estimates for southern rock lobster in Zone 3. Model estimated (black line) legal stock biomass levels with projections out ten years based on a 16 t catch (open dotted line) (scenarios of 14 and 18 t shown in blue dotted lines) and 95% confidence intervals (grey shading) relative to B42, B35, and B20 (target, threshold, and limit) reference levels.



SOUTH COAST CRUSTACEAN FIGURE 4.
Extended depletion model, southern rock lobster, Zone 4. Model estimated (black line) legal stock biomass levels with projections out ten years based on a 14 t catch (open dotted line) (scenarios of 12 and 16 t shown in blue dotted lines) and 95% confidence intervals (grey shading) relative to B_{42}, B_{35}, and B_{20} (target, threshold, and limit) reference levels.



SOUTH COAST CRUSTACEAN FIGURE 5.
Biomass dynamics model, crystal crab in Zone 2. Model estimated (solid blue with 1 standard deviation) biomass with projections (based on achieving current TACC) out ten years (open triangles/dotted line).

BYCATCH AND PROTECTED SPECIES INTERACTIONS

In 2022, 2 ecological risk assessments (ERAs) were undertaken to consider the potential ecological impacts of the commercial and recreational fisheries that target champagne crab, crystal crab, giant crab, southern rock lobster, and western rock lobster (How et al. 2023, Stoklosa 2022).

Bycatch

The gear used in this fishery generates minimal bycatch, and the design of the pots is such that their potential to 'ghost fish' if lost is minimal.

The ERAs in 2022, assessed the impact of the SCCMF on stocks of bycatch species as being **negligible** risk (How et al. 2023, Stoklosa 2022).

Protected Species

In 2022, the risk of the SCCMF to southern right whales was assessed as **medium** for the western rock lobster resource (Stoklosa 2022). The risk ratings for all other protected species were assessed as low and negligible risks.

Alterations to fishing gear requirements are in effect at certain times of year and locations to reduce the risk of ETP interactions. Specifically, this includes rope and float modifications during the whale migration season, and the use of sea lion exclusion devices (SLEDs) in areas frequented by juvenile sea lions.

There were no reported interactions of SCCMF gear with protected species in the 2023-24 season.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

Fishing activity associated with the SCCMF resource has been assessed as a **low** risk for habitats (How et al. 2023, Stoklosa 2022).

Ecosystem

Fishing activity associated with the SCCMF resource has been assessed as an overall **medium** risk to ecosystem structure (How et al. 2023, Stoklosa 2022).

SOCIAL AND ECONOMIC OUTCOMES

Social

The SCCMF utilises fishing vessels that employ a skipper and 1-3 crew. Catches are landed live at ports between the SA/WA border and Augusta, generating some additional economic activity and benefits. There is a small recreational fishery for rock lobsters on the south coast of WA (Smallwood et al. 2024). **Medium** risk.

Economic

The beach value of the fishery was approximately $1.8 million in 2023-24 with the majority of the catch being sold live to Asian markets both locally and internationally. **Medium** risk.

GOVERNANCE SYSTEM

Harvest Strategy (formal)

The resource is harvested in accordance with the South Coast Offshore Crustacean Resource of Western Australia Harvest Strategy (DPIRD 2023) which was implemented in September 2023.

Current fishing level – Acceptable

The SCCMF operates under an Individual Transferrable Quota System, with set TACCs for five target species in each of the four coastal zones.

Management Initiatives

In January 2024, the Australian Department of Climate Change, Energy, Environment and Water approved the entry of SCCMF target species onto the List of Exempt Native Specimens (LENS) for a period of 5 years until 25 January 2029.

Management is focused on maintaining sustainable stocks, improving SCCMF arrangements to support the ITQ system, improving whale mitigation measures and supporting operational flexibility while addressing compliance risks.

Compliance

Compliance effort is both opportunistic and targeted. Practices include on-land and at-sea inspection of vessels, gear, authorisations, and catch.

Consultation

Consultation occurs between DPIRD and the commercial sector through annual management meetings convened by WAFIC, and DPIRD-initiated meetings as necessary.

DPIRD is committed to an annual review process including statutory consultation to inform annual TACC setting.

Consultation with Recfishwest and other key stakeholders is conducted through specific meetings and DPIRD's website. Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

EXTERNAL DRIVERS

Climate change

South Coast Crustacean Resource Table 1 provides a summary of the climate vulnerability risk assessment outcome for the southern rock lobster stock in the SCCMF.

Southern rock lobsters are a shallow-medium water depth temperate species (0-150 m) that are limited to reef structures. Under a warming ocean climate this stock is likely to shift in distribution towards cooler depths or towards southern latitutes. Adverse impacts from warming temperatures on temperate reef systems is also likely to limit its distribution along the WA coast. Thus this resource was deemed to be at **high** risk from climate change.

SOUTH COAST CRUSTACEAN RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for the southern rock lobster resource in the SCCMF.

Indicator species	Sensitivity	Exposure	Climate Change risk
Southern rock lobster	High	Negative effects are possible	High

Other

Given a large export market, fluctuation in the Australian dollar and international market access can have impacts on the economic performance of the fishery. The price obtained for rock lobsters has been affected by limitations in exporting live lobster into the Chinese market. This dependence on the Chinese market is considered a **high** risk.

Preparations and negotiations are underway for a proposed south coast marine park in State waters out to 3 nautical miles. The impact on fishing for crustaceans is unknown. Potential closures of fishing grounds present a **high** risk.

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SOUTH COAST GREENLIP/BROWNLIP ABALONE RESOURCE STATUS REPORT 2025

L. Strain, F. Fabris, D. Nolan



OVERVIEW

The Greenlip/Brownlip Abalone Resource is a dive fishery that operates in the shallow coastal waters off the south west and south coasts of WA. The fishery targets two large species of abalone: Greenlip abalone (*Haliotis laevigata*) and Brownlip abalone (*H. conicopora*), both of which can grow to approximately 20 cm shell length. The commercial Greenlip/Brownlip abalone fishery is managed primarily through Total Allowable Commercial Catches (TACCs) for each species in four management areas (Greenlip/Brownlip Abalone Figure 1), which are allocated annually as Individually Transferable Quotas (ITQs).

Recreational fishing only occurs in the Southern Zone (Greenlip/Brownlip Abalone Figure 1) with management arrangements that include a specific abalone recreational fishing licence, size limits, daily bag and possession limits, and temporal closures. Further information on the fishery can be sourced from Hart et al. (2017) and Strain and Nolan (in press).

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery (32.2 t)	Total Catch 2024: 24.1 t	Management Action
Recreational fishery (not formal)	Total Catch 2024: 14.4 t (11.6 – 17.2 t)	Management Action
EBFM		
Indicator species		
Greenlip abalone (*Haliotis laevigata*)	Area 2 – PI below threshold but above limit. Area 3 – PI below limit. Closed in 2023.	Inadequate
Brownlip abalone (*Haliotis conicopora*)	Area 2 – PI below limit. Closed in 2024. Area 3 – PI above target.	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Negligible risk	Adequate
Habitat	Negligible risk	Adequate
Ecosystem	Negligible risk	Adequate
Economic (GVP $1.4 m)	High risk	Management Action
Social (amenity)	High risk	Management Action
Governance	High risk	Management Action
External Drivers – Other	High risk	Acceptable
External Drivers – Climate change	Severe risk (Greenlip abalone Areas 2 & 3, Brownlip abalone Areas 2 & 3)	

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Total Catch	41.4 t (whole weight) Greenlip: 27.3 t Brownlip: 14.1 t	38.5 t (whole weight) Greenlip: 28.0 t Brownlip: 10.5 t	Decrease in commercial catch (2.9 t). Updated recreational catch estimate from phone-recall survey (increase from 8 t in 2007 to 14.4 t in 2021).
Commercial Effort	875 hours	728 hours	Commercial effort below the expected range.
Participation	Com: 15 vessels Rec: 17,401 licenses	Com: 15 vessels Rec: 16,114 licenses	Stable number of commercial vessels and 7.4% decrease in recreational abalone licences.
Beach price	Greenlip: $61.94/kg Brownlip: $50.00/kg	Greenlip: $61.87/kg Brownlip: $50.24/kg	Prices remained stable and still at record highs.
Main (>20%) by-catch species	NA	NA	Targeted hand collection fishery that does not inadvertently harvest bycatch.
Listed Species interactions	0	0	The only potential listed species interaction is with the white shark (*Carcharodon carcharias*).

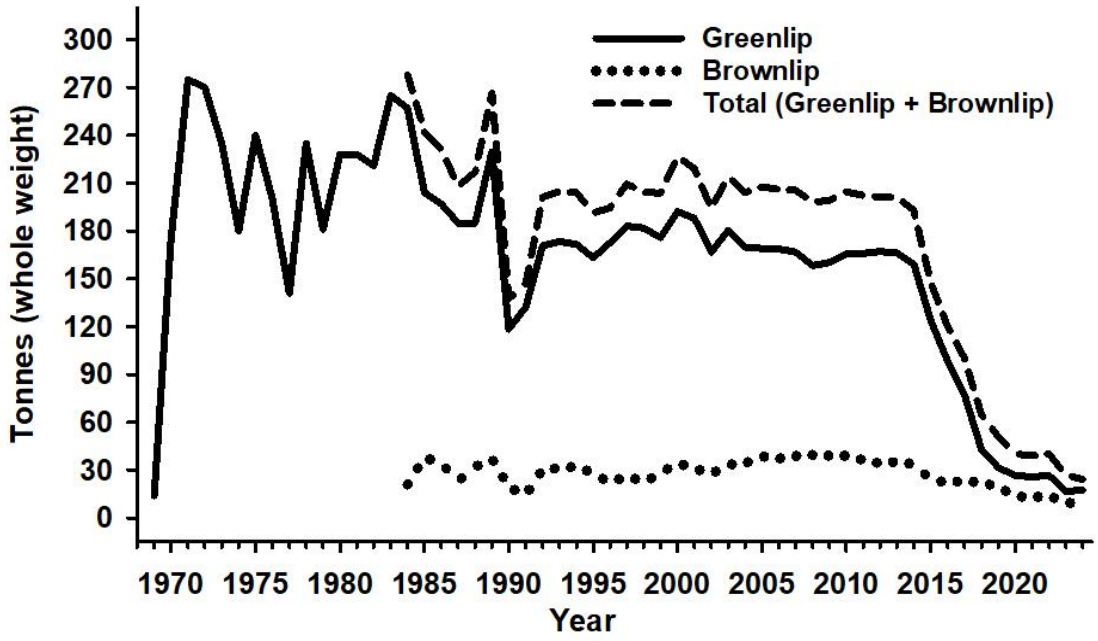


GREENLIP/BROWNLIP ABALONE FIGURE 1.
Boundaries of the management areas for Greenlip/Brownlip abalone in the commercial Abalone Managed Fishery. The 3 zones of the Recreational Abalone Fishery (Western Zone, the Northern Zone, and the Southern Zone) are also shown.

CATCH AND LANDINGS

In 2024, the total commercial Greenlip/Brownlip abalone catch was 24.1 t whole weight (Greenlip 17.4 t, and Brownlip 6.7 t), which was 75% of the combined TACC (32.2 t whole weight). This was a decrease in catch of 2.9 t from 2023 and was the lowest recorded catch in 55 years (Greenlip/Brownlip Abalone Figure 2). The 2024 catch declined further given the low TACCs for both species, which included a closure of the Area 2 Brownlip abalone fishery (TACC reduction of 0.75 t).

The combined statewide recreational harvest of Greenlip and Brownlip abalone was 14.4 t whole weight (95% CI 11.6 – 17.2 t). This estimate was derived from a phone-recall survey for the 2021-22 recreational abalone season (Smallwood et al. 2023), updating the previous estimate of 8 t (combined catch) from the 2007 phone-diary survey.



GREENLIP/BROWNLIP ABALONE FIGURE 2.
Commercial Greenlip and Brownlip abalone catch (t, whole weight) by season as recorded against the nearest calendar year.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Greenlip abalone (Inadequate)

Greenlip abalone are distributed from south west WA across southern Australia to Victoria and Tasmania. A genomic study suggests the existence of a single Greenlip abalone population along the WA coast, but with 5 adaptive populations (Sandoval-Castillo et al. 2018). The fishery has a legal minimum length of 14.5 cm in Area 2, and 15 cm in Area 3, which allows 2–5 years of spawning to occur before recruitment to the fishery.

To determine the TACCs for each management area, the stock status is assessed by the performance indicator (PI) of annual standardised catch per unit effort (SCPUE), which uses commercial catch and effort statistics, and other measures such as fisheries-independent sampling. The reference levels for Greenlip abalone (Area 2 and 3) have recently been updated based on estimates of biomass relative to the levels associated with maximum sustainable yield (MSY), i.e. B_{MSY} (DPIRD 2023).

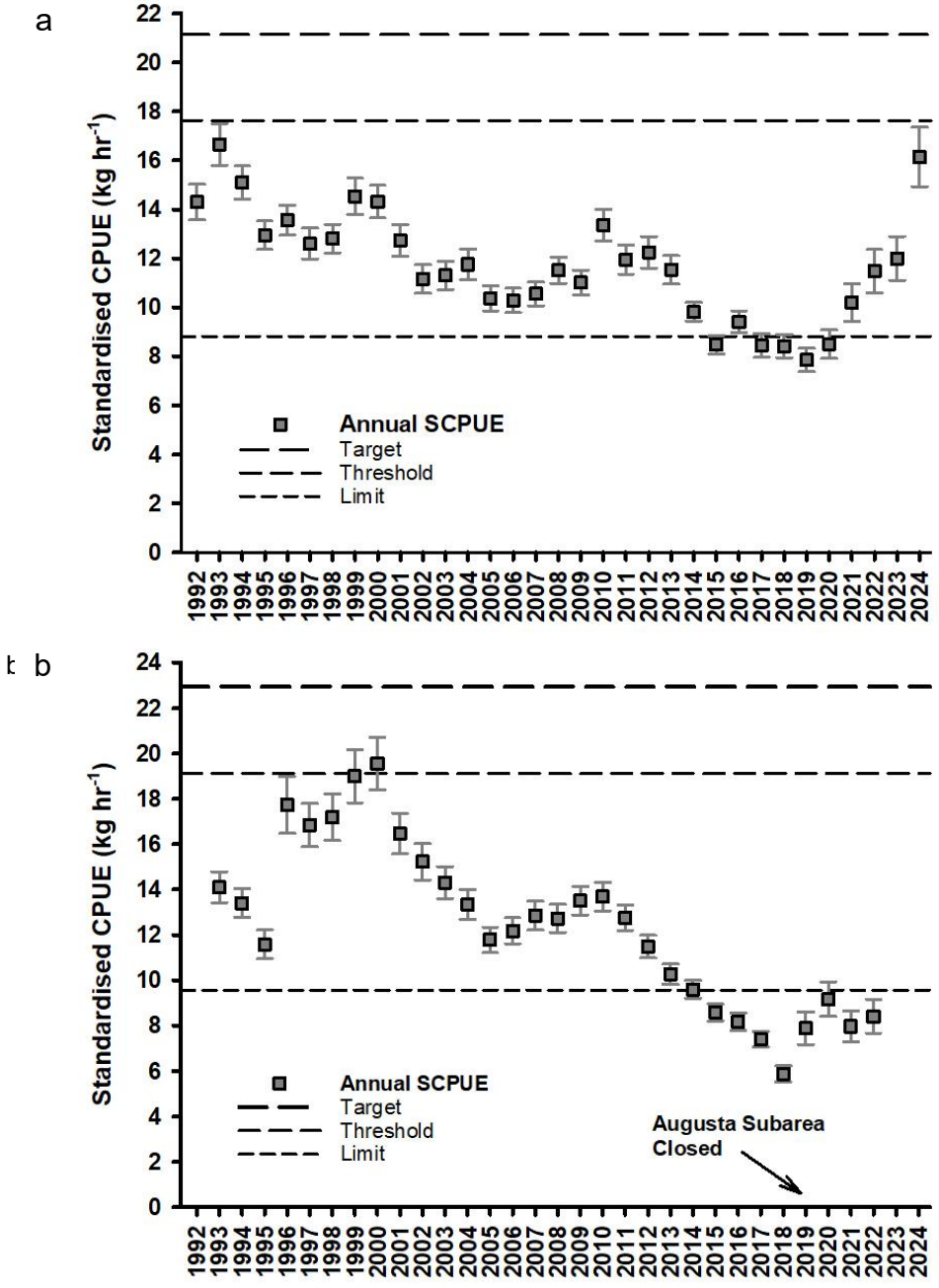
In Management Area 2 (Esperance) there was a declining trend in the PI (annual SCPUE) from 2010 to below the limit reference level in 2015, followed by a stable trend in the PI below the limit reference level between 2015 and 2020. The PI has increased over the last four seasons, been above the limit reference level since 2021 and was approaching the threshold reference level in 2024 (Greenlip/Brownlip Abalone Figure 3a).

In Management Area 3 (Busselton Jetty to Shoal Cape) the PI (annual SCPUE) declined between 2010 and 2018 but went below the limit reference level in 2015 (Greenlip/Brownlip Abalone Figure 3b). Note, the reference levels were updated in 2021, as part of the Harvest Strategy review. In 2019, a major region (Augusta) of Area 3 was closed to commercial fishing and the TACC reduced to 10.7 t (whole weight). The PI

increased over the next two seasons to the limit reference level but declined again in 2021, however, this only represents the open regions of Area 3.

Analysis of raw catch rate, average meat weight per individual and length-frequency trends also support evidence of the declining trend in abundance between 2010 and 2018. However, steady raw catch rates and increases in meat weight per individual were present over the last 5-6 seasons. Fishery-independent surveys in the Augusta region indicate the total density of Greenlip abalone to be at low levels for the last 10 years. The densities of juvenile animals (4-8 cm shell length) increased in 2018 after 4 years of record lows (2014 to 2017), but has since declined marginally post 2018. The stock has shown limited positive response (increase) to the reduced TACC and the closure of the Augusta region. Based on the Recovery Strategey (DPIRD 2023) the Area 3 Greenlip abalone fishery was closed to all fishing in 2023.

Stock status of Greenlip abalone is considered **inadequate**.



GREENLIP/BROWNLIP ABALONE FIGURE 3.
The standardised CPUE (kg.hr^{-1}) for Greenlip abalone (performance indicator) and reference levels (target, threshold, and limit) in Management Area 2 (a), and Area 3 (b).

Brownlip abalone (Adequate)

Brownlip abalone are limited to WA and are distributed from the south-west to the WA/SA border. There is evidence to suggest Brownlip abalone are genetically similar to, and potentially considered conspecific with, Blacklip abalone (*Haliotis rubra*) (Brown and Murray, 1992), which are distributed east from the WA/SA border to northern NSW, and Tasmania. Estimates of Brownlip abalone biological characteristics can be found in Strain et al. (2017), and given the fishery has a legal minimum length of 14.5 cm in Area 2, and 15 cm in Area 3, it allows 2–4 years of spawning to occur before recruitment to the fishery.

The stock status is assessed using commercial catch and effort statistics, and an integrated length-based model. Trends in the PI (annual SCPUE) were used for the assessment of the 2024 TACC for each management area. Reference levels for Brownlip abalone (Area 2 and 3) have recently been updated based on estimates of biomass relative to the levels associated with MSY, i.e. B_{MSY} (DPIRD 2023).

In Management Area 2 (Esperance), the PI (annual SCPUE) for Brownlip abalone was relatively stable between 1999 and 2011 just under the threshold reference level. Over the next 5 seasons (2012 to 2016) the PI declined markedly, and was below the limit reference level. The PI then increased over the next 2 seasons to above the limit (2018) before declining again in 2019. The PI has been below the limit reference level for the 5 seasons between 2019 and 2023 and at a historical low in 2023. Based on the Recovery Strategy (DPIRD 2023) the Area 2 Brownlip abalone fishery was closed to all fishing in 2024.

In Management Area 3 (Busselton Jetty to Shoal Cape), the PI (annual SCPUE) for Brownlip abalone fluctuated greatly during the 1999 to 2010 period. A relatively stable, increasing trend from below the threshold level to above the target level has been observed from 2011 to 2018. The PI fluctuated around the target reference level between 2018 and 2022 before increasing significantly in 2023.

An integrated length-based assessment model has been fitted to commercial catch and catch rate data, length composition data, and modelled growth of Brownlip abalone from Management Areas 2 and 3 combined (Strain et al. 2017). The integrated model estimated that the spawning biomass (relative to that for an unfished stock) has remained above the level equating to B_{MSY} in 2020.

Stock status of Brownlip abalone is considered to be **adequate**.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Divers have the ability to target abalone of their choice (species, sizes and quality of abalone), and do not inadvertently harvest bycatch in their normal fishing activities. The only potential listed species interaction is with the white shark (*Carcharodon carcharias*). Most divers now use diving cages and/or electronic shark deterrent devices for their personal protection, and are recording their encounters with white sharks. **Negligible** risk.

HABITAT AND ECOSYSTEM INTERACTIONS

The fishing activity makes minimal contact with the habitat, which typically consists of hard rock surfaces in a high wave-energy environment. As abalone are drift algae feeders, their removal is unlikely to result in any change to the algal cover in fished areas, and hence it is considered unlikely that the fishery has any significant effect on the food chain in the region. **Negligible** risk.

SOCIAL AND ECONOMIC OUTCOMES

Social

There were 15 vessels registered to operate in the commercial Greenlip/Brownlip abalone fishery, but given the low catches in 2024 only a proportion of these were active. The dispersed nature of the Greenlip/Brownlip abalone fishery means that small coastal towns from Busselton to the WA/SA border receive income from the activity of divers. Recreational diving for Greenlip and Brownlip abalone is a small but active sector, with dive shops and vessel manufacturers benefitting from this activity. The recreational fishery provides a major social benefit to those community members that appreciate abalone as a delicacy. There were 16,114 recreational abalone licenses issued in 2024 that would have allowed fishers to participate in the recreational abalone fishery, although most of these would have targeted the Roe's Abalone Fishery in the Perth metropolitan area. **High** risk.

Economic

Estimated annual value (to commercial fishers) for 2024 was $1.4 million, based on the estimated average price received by commercial fishers of $165.01/kg meat weight ($61.87/kg whole weight) for Greenlip abalone, and $125.60/kg meat weight ($50.24/kg whole weight) for Brownlip abalone. Greenlip and Brownlip abalone prices remained steady in 2024, and the price for Greenlip abalone is still well above the high prices of 20 years ago (e.g. $146/kg meat weight in 2001). **High** risk.

GOVERNANCE SYSTEM

Harvest Strategy (Formal)

The Harvest Strategy uses SCPUE as a proxy for biomass as the key performance indicator, which are assessed against specified biological reference levels for both species in each management area. Reference levels for Greenlip and Brownlip abalone (Area 2 and 3) have recently been updated based on outputs from model-based assessments that have provided estimates of biomass relative to the levels associated with MSY (DPIRD 2023), which is consistent with MSC principles.

The TACCs (whole weight) have been set for the 2025-26 season using the outcomes of the 2024-25 season stock assessment applied against the Harvest Strategy (DPIRD 2023). For Greenlip abalone these TACCs are 3.2 t in Area 1, 19.4 t in Area 2, and 0 t in Area 3, while for Brownlip abalone they are 150 kg in Area 1, 0 t in Area 2, and 11.2 t in Area 3.

Annual Catch Tolerance Levels

Commercial – Acceptable
Recreational – Acceptable

Commercial: 32.2 t (TACC for 2024/25) (3,440 – 5,270 fishing hours).

Recreational: Not formal.

Commercial catch was below the TACC due to commercial industry decisions. The commercial fishing effort (728 hours) was also below the expected range. The Greenlip abalone stock indicator was below the threshold reference level for Area 2, and Area 3 was closed to fishing. The TACC was increased to 34 t for the 2025-26 season, while Area 2 remains closed to Brownlip abalone fishing and Area 3 remains closed to Greenlip abalone fishing.

A phone-recall survey of recreational fishers was undertaken for the 2021-22 season (Smallwood et al. 2023) to provide updated estimates of recreational catch from the previous 2007 phone-diary survey. The combined statewide recreational harvest of Greenlip and Brownlip abalone was 14.4 t whole weight, which was an increase on the previous recreational catch level (8 t whole weight), and therefore the acceptable recreational catch tolerance levels require review.

Compliance

DPIRD conducts regular inspections of commercial catch at both the point of landing and processing facilities to ensure the commercial industry is adhering to the governing legislation.

The recreational fishery has a level of enforcement appropriate to the distribution of recreational fishing effort.

Consultation

DPIRD undertakes consultation directly with the Abalone Industry Association of Western Australia (AIAWA), licensees and the Western Australian Fishing Industry Council (WAFIC) on operational issues. DPIRD convenes annual management meetings through the Industry Consultation Unit of WAFIC, who are also responsible for undertaking statutory management plan consultation under a Service Level Agreement with DPIRD.

Recreational consultation processes are facilitated by Recfishwest under a Service Level Agreement, although DPIRD undertakes direct consultation with the community on specific issues.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

A Recovery Strategy for Greenlip abalone has been produced and implemented in Area 3, while a Recovery Strategy for Brownlip abalone is currently in development. DPIRD has reviewed the Harvest Strategy for the Western Australian Abalone Resource in consultation with the commercial and recreational sectors.

Recreational fishing for Greenlip abalone (Busselton Jetty and Shoal Cape) was closed in 2023 to align with the commercial closure in Area 3.

The commercial Greenlip/Brownlip abalone fishery underwent a full MSC assessment and achieved certification in 2017. The Abalone Managed Fishery successfully completed its first re-certification in 2022. At the second annual surveillance audit during 2024, the AIAWA removed the Greenlip and Brownlip abalone units of certification from the certifcate (https://fisheries.msc.org/en/fisheries/western-australia-abalone-fishery/@@view).

EXTERNAL DRIVERS

Climate change

Both Greenlip and Brownlip abalone stocks have demonstrable negative effects associated with high SSTs and MHW events. Thus, there is high confidence that projected increase in SSTs and MHWs will further negatively impact these stocks in the future. A weaker Leeuwin Current may lead to increased self-recruitment but this benefit maybe offet by the projected increase in ocean acidification that would negatively impact abalone shell formation. Thus these stocks are deemed at **severe** risk from climate change.

SOUTH COAST GREENLIP/BROWNLIP ABALONE RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for Greenlip and Brownlip abalone species on the South Coast.

Indicator species	Sensitivity	Exposure	Climate Change risk
Greenlip abalone (Area 2)	High	Demonstrable negative effects evident	Severe
Greenlip abalone (Area 3)	High	Demonstrable negative effects evident	Severe
Brownlip abalone (Area 2)	High	Demonstrable negative effects evident	Severe
Brownlip abalone (Area 3)	High	Demonstrable negative effects evident	Severe

Other

In the last few years there have been a number of changes which impact on fishery governance, and particularly on catch rates. The fishery is dominated by lease divers, and two divers per fishing day are more common. Industry size limits have varied substantially above the legal minimum lengths.

Commercial fishers in Area 3 are considering a different industry fishing model, which may require review of the current fishery management arrangements over the next few years. In addition, environmental effects such as weather conditions, and the effect of technology changes, continue to have significant impacts on diver efficiency.

The South Coast Marine Park has been implemented by the Department of Biodiversity, Conservation and Attractions, in state waters (out to 3 nautical miles) from Bremer Bay to the SA border. The impact on fishing for Greenlip/Brownlip abalone is still to be determined. **High** risk.

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SOUTHERN SAUCER SCALLOP RESOURCE STATUS REPORT 2025

S. Wilkin, J. How, S. Brown



OVERVIEW

Saucer scallops, *Ylistrum balloti* (formerly *Amusium balloti*), are fished using otter trawl nets in 4 separate fisheries in WA. Recent genetic information has revealed that these 4 fisheries access 2 distinct genetic stocks (Pyne 2024). The 2 southern fisheries, the South West Trawl Managed Fishery (SWTMF) and the recently formalised South Coast Scallop Managed Fishery (SCSMF) target a single genetic stock. The SCSMF on the south coast has 4 licences, while the SWTMF is a multi-species trawl fishery that primarily targets scallops with 7 licences. Management for all fisheries is generally based on limited entry, gear controls, and seasonal closures.

Catches in these fisheries vary widely depending on the strength of recruitment, which is thought to be influenced by the strength of the Leeuwin Current and water temperature. They also experience low levels of effort which has impacted catch levels.

The SCSMF was recently declared an approved wildlife trade operation until May 2028 by the Australian Government in accordance with the EPBC Act.

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery (2024)	Total Catch 2024: <50 t whole weight	Acceptable
Recreational fishery (N/A)		
EBFM		
Indicator species		
Saucer Scallop	South-West	Adequate
	South Coast	Adequate
Ecological		
Bycatch	Low risk	Adequate
Listed Species	Low risk	Adequate
Habitat	Low risk	Adequate
Ecosystem	Low risk	Adequate
Economic (GVP <$500,000)	Low risk	Acceptable
Social (1 amenity)	Low risk	Acceptable
Governance	Moderate risk	Acceptable
External Drivers – Other	High risk	Acceptable
External Drivers – Climate change	Medium risk (South-West), Low risk (South Coast)	

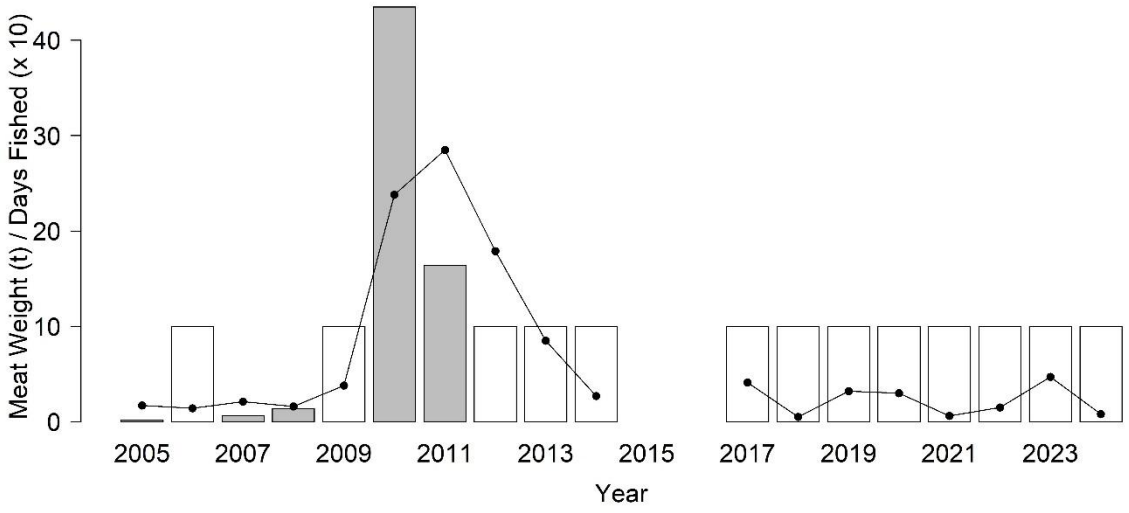
SUMMARY STATISTICS

Statistics	Previous season (2023)	Current season (2024)	Further description
Total Scallop Catch meat weight t (whole weight t)	SW - <5 (<20) SC - 28 (140)	SW - <5 (<20) SC - <10 (<50)	
Main byproduct species	SW – N/A SC – NIL	SW – N/A SC – N/A	Negligible catches, stable.
Commercial Effort (nom. hrs)	SW – N/A SC – 1413	SW – N/A SC – N/A	SW & SC low fishing effort.
Participation (vessels)	SW – 2 SC – 4	SW – 1 SC –1	Stable.
Beach price	$43.37 / kg (whole weight	$44.90 / kg (whole weight	
Bycatch	-	-	Limited data available.
Listed Species interactions	SW/SC - NIL	SW/SC - NIL	No reported interactions.

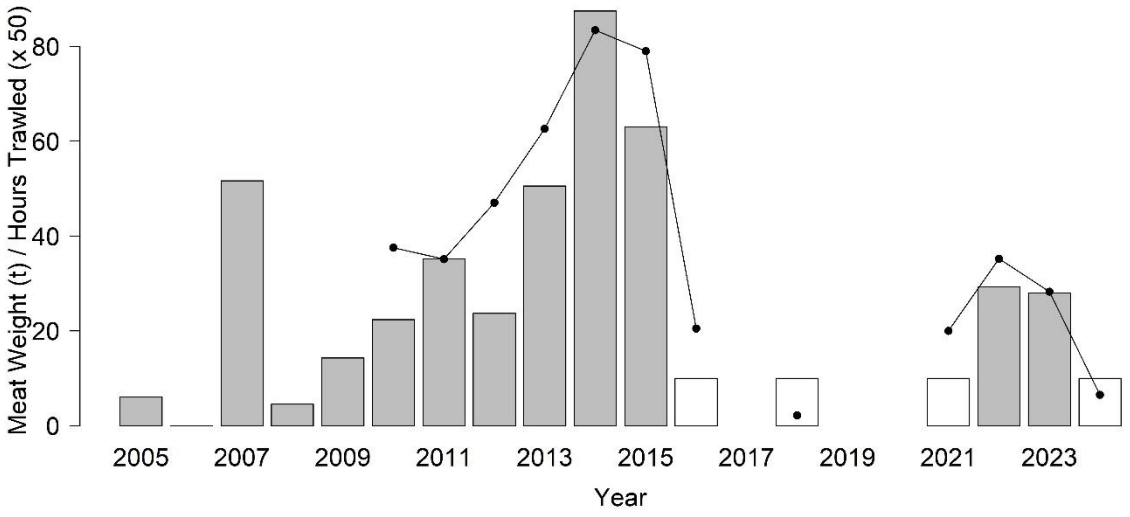
Key to table: AB –SW – South West Trawl Managed Fishery, SC – South Coast Scallop Managed Fishery. No recreational sectors. N/A = not available due to <3 boat rule.

CATCH AND LANDINGS

The total scallop landings from the southern scallop resource in WA in 2024 was low but within historical bounds.



SAUCER SCALLOP FIGURE 1.
Annual scallop landings (t; bars) and fishing effort (days fished; dot and line) for the South West Trawl Managed Fishery. Arbitrary catch levels (10 t) for years with < 3 vessels fishing (i.e. confidential data) as open bars.



SAUCER SCALLOP FIGURE 2.
Annual scallop landings (t; bars) and fishing effort (trawl hours; dot and line) for the South Coast Scallop Managed Fishery. Arbitrary catch levels (10 t) for years with < 3 vessels fishing (i.e. confidential data) as open bars.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

South-West Trawl Managed Fishery (Sustainable-adequate)

Effort in the SWTMF can be highly variable due to sporadic scallop recruitment, and the abundance of western king prawn. The catch rate of scallops was lower than in recent seasons. However, with very few fishing days in 2024, this catch rate might not be representative of overall stock levels. Owing to the low levels of effort and associated catch, the stock is considered to be fished at a sustainable level, with an adequate level of breeding stock.

South Coast Scallop Managed Fishery (Sustainable-adequate)

Effort in the SCSMF is related to the abundance of scallops in any given year, which can be highly variable due to sporadic recruitment. The reduction in effort, and concomitant reduction in catch saw the mean catch rate remain within the historic range in 2024, similar to recent seasons. Based on the levels of catch, effort and catch rate the stock is considered to be fished at a sustainable level, with an adequate level of breeding stock

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Bycatch

Bycatch reduction devices (BRDs) are mandatory in the SCSMF, with all boats required to fish with a ‘grid’ which allows large marine animals to escape trawl nets. Grids have been fully implemented since 2003.

As the Zone A licensee of the SWTMF is currently fishing under an exemption, which permits the use of a vessel larger than that legislated in the Management Plan, BRDs (grids) have been introduced into the fishery through exemption conditions. An initial bycatch study has been initiated for the SCSMF with results to be collated and analysed in the coming seasons.

Protected species

Protected species susceptible to capture by trawling do not regularly occur in the SWTMF and SCSMF fishing areas. Turtles do not breed in the area because water temperatures are too low. No protected species interactions were reported in the SCSMF or the SWTMF in 2024. **Low** risk.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

Habitat effects are considered low risk, with trawl boats generally sweeping a small proportion of the designated and available trawl area. Trawling occurs over sandy habitats where scallops reside and as trawling activity has a low physical impact on the substrate (Laurenson et al. 1993), the overall habitat effects are considered **low** risk. The allowable area trawled in the SWTMF and SCSMF was <1% in each fishery.

Ecosystem

The ecosystem impacts of scallop fisheries are considered **low** risk, due to the relatively low total biomass taken by these operations. The high natural recruitment variability, and therefore scallop stock abundance, and short life span (up

to 3 years) also means that few predators have become highly dependent on the species.

SOCIAL AND ECONOMIC OUTCOMES

In 2024 there were 2 vessels which accessed the resource, 1 vessel in each of SWTMF and SCSMF. Crewing typically consists of a skipper and 4 or 5 crew, resulting in approximately ~10 fishers employed in scallop fishing for the Resource, though there are additional support staff in Geraldton and Fremantle. The overall GVP for the fisheries that operated in 2024 was < $500,000 which was similar to the GVP for 2023.

GOVERNANCE SYSTEM

Harvest Strategy

A Harvest Strategy for the SCSMF will be developed in 2026 in consultation with industry. A Harvest Strategy for the SWTMF has not yet been developed.

Annual Catch Tolerance Levels

South West: Catch range not developed.

South Coast: Catch range not developed.

Compliance

It is a requirement that all vessels in each of the fisheries are fitted with an Automatic Location Communicator (ALC). The implementation of an ALC enables the department to monitor the fleet using a Vessel Monitoring System (VMS) and manage compliance with temporal and spatial closures. Regular vessel inspections are also conducted to ensure fishing is being undertaken in accordance with the governing legislation (e.g. gear requirements, catch reporting).

Under the quota management arrangements in the SBSMF, operators are required to provide catch and disposal records (CDRs), including the weight of scallops landed. Inspections at the landing port and CDRs are monitored throughout the season to maintain the integrity of the quota system.

Consultation

Management meetings are held between DPIRD and licensees, in conjunction with the Industry Consultation Unit of the Western Australian Fishing Industry Council (WAFIC). These meetings provide an opportunity for DPIRD, WAFIC, and industry to discuss research outcomes and initiatives, management of the fishery, and industry issues.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

An FRDC project involving the collection of scallop broodstock from the SWTMF to trial hatchery rearing of scallops with growth and development in situ commenced in 2023. The project successfully released aquaculture grown scallops back into the fishery to contribute to localised stock enhancements. The project is ongoing.

In 2024, DPIRD commenced development of a new management plan for the SCSMF to formalise management arrangements previously authorised through an instrument of exemption. The SCSMF Management Plan was implemented in late 2025.

The South Coast Marine Park, implemented by the Department of Biodiversity, Conservation and Attractions was formalised in 2025, reducing available SCSMF trawl areas. As a result, industry can apply for compensation through a formal process led by DPIRD, which will commence in late 2025.

EXTERNAL DRIVERS

Environment

Strong La Niña events that typically result in strong Leeuwin Currents and warm sea-surface temperatures can enhance recruitment in the SCSMF (Chandrapavan et al. 2020).

Climate Change

Southern Saucer Scallop Table 1 provides a summary of the climate vulnerability risk assessment outcomes for the southern saucer scallop stocks in the SWTMF and SCSMF. Within this resource, saucer scallops are at their southern end of their spatial distribution with spawning predominantly over the peak summer months. There had already been demonstrable positive effects associated with higher SSTs and MHW events in the SCSMF. Warmer ocean conditions and a weaker LC will likely lead to more protracted spawning and increased recruitment. Risk from ocean acidification remains but overall scallops on the south coast will likely increase in productivity from climate change.

SOUTHERN SAUCER SCALLOP TABLE 1. Summary of the climate vulnerability risk assessment output for the southern saucer scallop resources in the SWTMF and SCSMF.

Indicator species	Sensitivity	Exposure	Climate Change risk
South West	High	Remote or potentially positive effects	Medium
South Coast	Medium	Demonstrable positive effects are evident	Low

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SOUTH COAST ESTUARINE AND NEARSHORE SCALEFISH AND INVERTEBRATE RESOURCE STATUS REPORT 2025

D. Yeoh, D. Harris, T. Leary, B. Brooks



OVERVIEW

The South Coast Estuarine and Nearshore Scalefish and Invertebrates Resource (SCENSIR) encompasses 3 commercial fisheries: the South Coast Estuarine Managed Fishery (SCEMF), the South Coast Salmon Managed Fishery (SCSMF), the South Coast Nearshore Net Managed Fishery (SCNNMF), as well as a number of conditional and exemption-based fisheries (sand crab and herring G-trap), and recreational and customary fishing for nearshore and estuarine species throughout the SCB.

Commercial catch is monitored via compulsory catch returns (monthly for the SCEMF and SCSMF, daily for the SCNNMF). Commercial fishers use a variety of nets (gill net, haul net, beach seine and G-trap nets) and purpose-designed crab pots.

This chapter focuses on nearshore and estuarine species, noting that fishers in the SCEMF and SCNNF also capture other species.

Recreational fishers also target nearshore and estuarine species from the shore or a boat. The main recreational fishing methods are line fishing for scalefish, with netting accounting for a small percentage of the catch and drop and scoop nets for blue swimmer crabs. Boat-based recreational catches are monitored every 3 years. Shore-based recreational catches are unquantified and may be substantial for some species.

Customary fishers also harvest nearshore and estuarine species. Customary catch has not been assessed but anecdotally is low.

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery	Total Catch 2024: 338.6 t	Acceptable
Recreational fishery	Total Catch 2023-24 (boat only): 11–25 t	Acceptable
EBFM		
Indicator species		
Western Australian Salmon	Low Risk: Above target	Adequate
Australian Herring	Low Risk: Above target	Adequate
Estuary Cobbler (Wilson Inlet)	Medium Risk: Catch within target range	Adequate
Black Bream	Medium Risk: Variable catch trends	Adequate
Blue Swimmer Crab	Low Risk: Catch within historical range	Adequate
Ecological		
Bycatch	Low risk	Adequate
Protected Species	Low risk	Adequate
Habitat	Low risk	Adequate
Ecosystem	Medium risk	Adequate
Social (high amenity)	Medium risk	Acceptable
Economic (commercial GVP $1–5 m)	Medium risk	Acceptable
Governance	Medium risk	Acceptable
External Drivers – Other	Medium risk	Acceptable
External Drivers – Climate change	Low risk (Blue Swimmer crab); Medium risk (Australian Salmon); High risk (Estuary cobbler); Severe risk (Black bream)	

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Commercial catch	2023: 238.6 t	2024: 338.6 t	Scalefish and blue swimmer crab combined.
Recreational catch	2020-21 (boat only): 14-31 t (95% CI)	2022-23 (boat only):11-25 t (95% CI)	Top 10 nearshore and estuarine species in SCB, boat-based fishing only (Ryan et al. 2025)
Beach price	2022-23 Blue Swimmer Crab: $10.90 WA Salmon: $0.97 Australian Herring: $2.47 Black Bream: $7.26	2023-24 Blue Swimmer Crab: $10.84 WA Salmon: $0.88 Australian Herring: $1.84 Black Bream: $5.32	Prices for top three scalefish species and blue swimmer crab. Prices vary with domestic market supply and demand.
Bycatch	-	-	Limited data available.
Listed species interactions	1		None reported 2024.

CATCH AND LANDINGS

In 2024, the total commercial catch of the SCENSIR was 338.6 t. The top six species, by weight, caught in the SCENSIR are shown in South Coast Estuarine And Nearshore Scalefish And Invertebrate Table 1. Catch data for the last 5 years has been updated to reflect slight changes in reporting that have taken effect in 2022.

Since 1990 there has been a major decline in the total catch in each of the main commercial scalefish fisheries, resulting in a steady decline in commercial production in the SCB. This has been due to a complex suite of drivers, including effort reductions, changing environmental conditions, changing market demands, and the declining abundance of some species.

The boat-based recreational harvest range for the top 10 nearshore and estuarine species in the SCB (representing 95% of the resource kept catch by numbers) was steady at 18 t (95% CI 11–25) in 2023-24 compared with 22 t (95% CI 14–31) in 2020-21, 12 t (95% CI 5–19) in 2017-18, 14 t (95% CI 6–21) in 2015-16, 24 t (95% CI 14–35) in 2013-14 and 37 t (95% CI 22–52) in 2011-12 (Ryan et al. 2025).

The harvest range for blue swimmer crab in the SCB was steady at 0.2 t (95% CI 0–0.4) in 2023-24 compared with previous surveys (Ryan et al. 2025). Blue swimmer crab in the SCB represents <1% of the statewide catch and estimates were not robust.

No current estimates of shore-based recreational catches are available.

SOUTH COAST ESTUARINE AND NEARSHORE SCALEFISH AND INVERTEBRATE TABLE 1.
Catch (tonnes) of the top 6 species (ordered by weight in 2024) from the South Coast Estuarine and Nearshore Scalefish and Invertebrate Resource in the previous 5 years.

Common name	Scientific name	2020*	2021*#	2022	2023	2024
Western Australian Salmon	*Arripis truttaceus*	78.2	48.5	54.5	6.7	97.8
Australian Herring	*Arripis georgianus*	36.5	51.9	57.3	52.1	77.7
Black Bream	*Acanthopagrus butcheri*	70.0	80.5	44.1	54.5	38.5
Sea Mullet	*Mugil cephalus*	20.0	20.8	17.7	23.7	22.4
Blue Swimmer Crab	*Portunus armatus*	10.7	3.5	15.9	25.0	20.5
Estuary Cobbler	*Cnidoglanis macrocephalus*	41.2	32.8	25.5	20.1	19.8
Other		88.8	57.6	54.0	56.5	61.9
Total		345.4	295.6	269.0	238.6	338.6

* Catch in these years is based on Open Access fishery data collected prior to the creation of the SCNNMF and thus is not strictly comparable with the catch in the years since creation of the SCNNMF.

Data consists of six months of Open Access catch data and six months of SCNNMF data as the SCNNMF began data collection in July of that year.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

The status of each stock listed below is assessed using a weight-of-evidence approach that considers all available information about the stock. The species reported below, WA salmon, Australian herring, estuary cobbler (Wilson Inlet) and black bream, are those currently identified as indicator species (DoF, 2011). Use of the indicator species approach for the SCENSIR is currently under review. Blue swimmer crab catch has been included in this report as increasing warmer temperatures (such as the 2011 extreme marine heatwave), which are influenced by the strength of the Leeuwin Current, have resulted in substantial periodic increases in crab catches on the south coast.

Western Australian Salmon (Sustainable—Adequate)

WA salmon are managed as a single stock in WA, consistent with its structure as a single biological stock across southern Australia. Higher level assessments are periodically undertaken (approximately every five years). Stock status is assessed annually based on commercial and recreational catches in relation to recent trends and management action.

The most recent high-level stock assessment (Duffy et al. 2023) indicates that catches have been below the estimated MSY for more than a decade due to low market demand, and therefore, low effort by commercial fishers. The spawning biomass is estimated to be well above the target.

The statewide commercial catch of salmon in 2024 was 213.3 t, of which 97.88 t was taken from the SCB (Figure 1). This represents a marked increase from 2023 (i.e. statewide catch 35.1 t, the lowest on record) and is a return to recent catch levels throughout the past decade. It should be noted that current commercial catch levels are far below historical quantities taken from the mid-1980s to mid-2000s, which typically exceeded 1,000 t annually (Figure 1). The long-term drop in catch is considered to be due to a declining market demand, catch processing capacity and changes in migratory behaviour of fish, which anecdotally now school further offshore, out of reach of shore-based operators.

On this basis, the risk to the WA salmon stock is assessed as **low** and the stock is classified as **sustainable-adequate.**

Australian Herring (Sustainable-Adequate)

Australian herring in WA are managed as a single stock, consistent with its structure as a single biological stock across southern Australia, with the spawning biomass primarily located in south-west WA. Higher level assessments are periodically undertaken (approximately every 5 years). Stock status is assessed annually based on commercial and recreational catches in relation to recent trends and management action.

The most recent high-level stock assessment (Duffy et al. 2021) indicated that after a period of very high catches prior to 2000 (see also South Coast Nearshore and Estuarine Figure 1), catches have now been below the estimated MSY for more than a decade. The spawning biomass is now considered to have recovered to a level where it is at or above the target level (40%).

The commercial catch of Australian herring in the SCB in 2024 was 77.7 t, above that of recent years, but still at a relatively low level compared to historical maximums (South Coast Nearshore and Estuarine Figure 1). Statewide (WCB & SCB) commercial catch in 2024 was 132.1 t (South Coast Nearshore and Estuarine Figure 1).

On this basis, the risk to the Australian herring stock is assessed as **low** and the stock is classified as **sustainable—adequate.**

Estuary Cobbler (Wilson Inlet: Sustainable—Adequate)

Estuary cobbler is an estuarine and marine species considered to comprise discrete biological stocks within individual estuaries (Avayzian et al. 1994). Historically, the majority of the cobbler catch in the SCB has occurred in Wilson Inlet and stock status of cobbler for the SCB is therefore assessed annually based on this estuary. Higher level stock assessments are periodically undertaken (approximately every 5 years).

A level 4 assessment completed in 2020 found a high risk to the sustainability of the Wilson Inlet stock based on catches of over 50 t, that occurred prior to 2018 (South Coast Nearshore and Estuarine Figure 1). A catch tolerance level of 40 t was implemented for the estuary, and the stock is now assessed against this level. The catch of cobbler in Wilson Inlet in 2024 was 13.7 t, marginally higher than in 2023 (11.2 t) and remaining well below the 40 t tolerance level (South Coast Nearshore and Estuarine Figure 1).

On this basis, the risk to the Wilson Inlet estuary cobbler stock is assessed as **medium** and the stock is classified as **sustainable-adequate**.

Black Bream (Sustainable-Adequate)

Black bream is an estuarine species with limited population connectivity among estuarine systems (Sarakinis et al. 2024). Total commercial catch in the SCB has been generally increasing since the late-1990s and peaked at 80 t in 2021 (South Coast Nearshore and Estuarine Figure 1). Total catch during 2024 was 38.5 t, a slight decline from 2023 and 2022 (54.5 and 44 t, respectively). Stock status, based on commercial catch and effort, is assessed annually for 5 main estuaries:

Irwin Inlet, Oyster Harbour, Beauford Inlet, Stokes Inlet, and Wilson Inlet.

Commercial black bream fishing resumed in Beaufort Inlet during 2024, following several years of unfavourable water conditions including extreme hypersalinity (Cronin-O'Reilly et al. 2024). However, the catch of 1.5 t was low in comparison to the previous decade. Catches in other estuaries ranged ~0.5 to 22 t, being highest in Stokes Inlet (South Coast Nearshore and Estuarine Figure 1). In all 5 estuaries catches were lower during 2024 than 2023. It is postulated that low freshwater flow during 2024 has resulted in fish remaining in the upper brackish reaches of the estuaries, beyond fishers' access. A research project is underway evaluating black bream biology and stock levels in south coast estuaries. This work is anticipated to provide a greater understanding of the influence of environmental conditions on bream biology and abundance, including influences of recent climate changes. In turn, this will provide a greater understanding of fishery dynamics and drivers of catch variation.

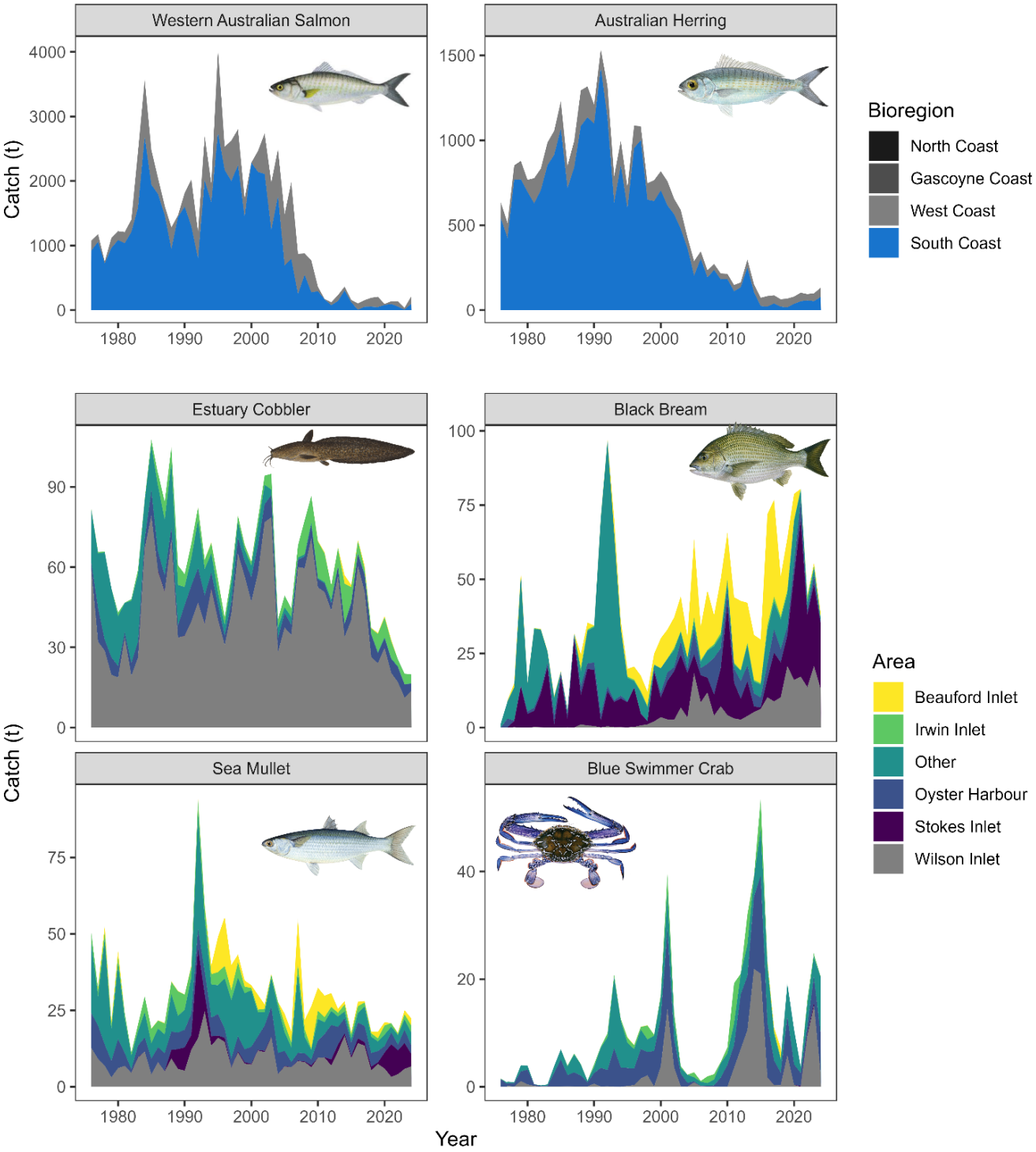
On this basis, the risk to the black bream stocks is assessed as **medium** and the stocks are classified as **sustainable-adequate**.

Blue Swimmer Crab (Sustainable—Adequate)

While there is the potential for recruitment from northern waters, blue swimmer crab populations in each south coast estuary are managed as discrete stocks. Stock status is assessed annually based on commercial and recreational catches in relation to historical trends and management action. Stock abundance of blue swimmer crab in the SCB is heavily influenced by the environment (e.g. water temperature, rainfall, sea level), with catch and effort highly variable in response to warm water events usually linked with the strength of the warm, southward-flowing Leeuwin Current. For more detailed description of blue swimmer crab biology and south coast crab fisheries refer to the Resource Assessment Report (Johnston et al. 2020).

The SCEMF reported a total annual blue swimmer crab catch for 2024 of 20.5 t, down from 25.0 t in 2023 (Figure 1). The largest proportion of the 2024 catch (7.5 t) was taken in Oyster Harbour.

While the size of stock and relative exploitation level along the south coast is yet to be fully understood, the environmentally driven nature of stock abundance and relatively low commercial and recreational catch and effort suggest the risk to the blue swimmer crab stock is **low**. The stock is classified as **sustainable-adequate**.



SOUTH COAST NEARSHORE AND ESTUARINE FIGURE 1.
Annual commercial catch of WA salmon and Australian herring in the South Coast bioregion (SCB) and other bioregions since 1976. Annual commercial catch of estuary cobbler, black bream, sea mullet and blue swimmer crab within areas of the SCB since 1976. 'Other' areas of the SCB include Broke Inlet, Culham Inlet, Dempster Inlet, Gordon Inlet, Irwin Inlet, Stokes Inlet, Waychinicup Inlet, Hamersley River, Oldfield River, King George Sound, and Esperance.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

In 2024 DPIRD convened an ecological risk assessment (ERA) of the fisheries that access the Southern Nearshore Fish Resource, which included commercial nearshore net fisheries within the WCNEF Resource and recreational fishing for nearshore scalefish species. The ERA considers the potential ecological impacts of these fisheries on all relevant retained and bycatch (non-retained) species; endangered, threatened and protected (ETP) species; aquatic habitats; and the broader ecosystem. Full details of the assessment are available in Smith et al. (2025), with key aspects relevant to the WCNEF Resource summarised below.

Bycatch

The small-scale commercial fisheries in nearshore and estuarine waters mainly use haul, seine, and gill nets that are deployed in a targeted manner, with gear configurations (e.g. mesh sizes) chosen to minimise capture of undersized fish. These are also mainly multispecies fisheries which retain and market most encountered species. There is therefore typically minimal discarded bycatch.

Recreational fishers mainly use line-based fishing methods in nearshore and estuarine waters. This can result in the capture and release of non-target species and undersized fish.

The risks associated with post-release mortality vary considerably among species and with individual fisher behaviour (e.g. hook type/size, handling practices). In general, nearshore and estuarine species have lower risks of post-release mortality than deep water oceanic species which can suffer barotrauma. Overall, bycatch species from this resource are at **low** risk.

Commercial blue swimmer crab pots used in the SCB are designed to minimise the capture of non-target species and undersized crabs. Crabs can also occasionally become entangled in gill nets which are set for specific scalefish in the SCENSIR. However, the small quantity of bycatch that is caught and returned by commercial crab potting and netting is considered to pose a **negligible** risk to these stocks.

Protected Species

It is compulsory for commercial fishers to report all interactions with protected and listed marine species. New Zealand fur seals and Australian sea lions are occasionally surrounded by beach seine nets used in the SCB nearshore and estuarine fisheries but are quickly released without harm by the fishers. There are no recent reports of seal or sea lion interactions. There is also the potential risk of birds, pinnipeds and cetaceans becoming entangled in set nets (Smith et al. 2025). There have also been no reports of incidental mortalities in these fisheries, and it is believed that the present level of interaction (direct and indirect) poses a **negligible** risk to these taxa.

Large sharks and rays are occasionally caught in nearshore nets. Two white sharks have been reported from the SCNNMF since 2021, with both released alive (Smith et al. 2025). Risks to white sharks from the SCNNMF are considered **low** risk and risks from other sharks SCENSIR activities are considered **negligible** risk.

Recreational fishing gear, including discarded or lost tackle, can occasionally hook or entangle waterbirds, pinnipeds and dolphins, which can result in injury and mortality (Smith et al. 2025). Four-wheel drive vehicles and boats used as part of recreational fishing activities can also negatively impact wildlife such as shorebirds and dolphins (Smith et al. 2025). Overall, the impacts of recreational fishing activity on protected species are considered to be **low** risk.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

The operation of haul nets, gill nets, and crab pots over predominantly sand and mud bottoms is unlikely to have a major impact on these habitats in estuaries and nearshore waters. Similarly, the main recreational fishing methods (line, drop and scoop netting) are likely to have minimal impact on habitats. Anchoring by fishing vessels and anchoring of commercial gear (e.g. G-traps; a net set perpendicular to the shore in a ‘G’ shape and typically left overnight) may have localised impacts on habitats such as seagrass.

Haul nets may be deployed over low or medium density seagrass. This type of net tends to ‘roll’ over the surface of seagrass beds without removing attached leaves or uprooting plants. At times, haul nets may collect floating vegetation including seagrass leaves or algae.

Commercial and recreational fishers walking and driving on beaches can cause compaction, erosion, vegetation damage and disturbance to fauna (Smith et al. 2025).

Overall, there is a **low** risk to benthic habitats.

Ecosystem

Excessive removal by commercial and recreational fisheries of certain species, such as Australian herring, or WA salmon, could potentially impact on prey and predator species including larger fish, cetaceans, and seabirds (Smith et al. 2025). However, commercial fishing effort directed towards these species in recent years has been declining and is very low compared to historic levels.

Commercial fishers in the WCNEF rarely use bait or burley, but this practice is common among recreational fishers. There are biosecurity risks

associated with the use of imported bait products from interstate and international waters (Smith et al. 2025). There is also potential for localised trophic impacts through food provisioning at popular recreational fishing locations (e.g. a reliance on bait/burley as a regular food source or attracting unnaturally high numbers of certain species).

Ghost fishing from lost nets is considered to be negligible in nearshore and estuarine fisheries, however, discarded or lost gear associated with line fishing (e.g. line, hooks and plastic bait bags) can be a substantial problem, impacting wildlife, at popular fishing locations (Smith et al. 2025).

The overall risk of the SCENSIR to ecosystems is therefore **medium** risk.

SOCIAL AND ECONOMIC OUTCOMES

Social

Commercial fisheries supply human consumption and bait markets. The SCEMF is a particularly important source of fresh local fish and crabs to regional centres. The use of beach seine nets by commercial salmon fishers may temporarily impact on beach access by members of the public. There is also occasional conflict between commercial and recreational fishers in estuarine and nearshore areas.

An estimated 753,000 WA residents went recreational fishing in 2023-24 (DPIRD 2024). The recreational fishing participation rate in WA (26%) is higher than the Australian average (21%) (Moore et al. 2023). Western Australians spent an estimated 4.8 million days fishing each year (Moore et al. 2023). The nearshore and estuarine recreational fisheries of the SCB provide a high social amenity for the WA community.

There is currently a **medium** risk to social values.

Economic

The estimated annual value (Gross Value of Production) to commercial fishers for 2024 was $1–5 million (Level 2). This commercial catch was taken from 30 licenced fishing vessels operating in the 3 managed fisheries. An additional commercial fisher targeted sand crabs with crab pots in the SCB via an exemption under the FRMA. This reflects the commercial beach price of landed product only and does not include economic flow-on values such as employment within the fishery, additional employment/value in distribution networks, retail fish sales sectors, repairs and maintenance of vessels, and ongoing spending on fuel and equipment.

Recreational fishing in WA contributes over 9,000 jobs and over $1.1 billion per year to the economy and supports economic activity in many regional locations (Moore et al. 2023). A significant amount of this value is derived from boat and shore-based fishing for nearshore and estuarine species in the SCB.

Due to low catches in commercial salmon and estuarine fisheries, as well as the long-term decline in commercial production, the economic risk is considered **medium.**

GOVERNANCE SYSTEM

Harvest Strategy

This resource is harvested using a constant exploitation approach, where the annual catch taken varies in proportion to variations in the stock abundance. Indicator species are used to determine the status of the resource. Indicator species are assessed annually based on catch and/or catch rate trends, where data are available (noting that recreational fishery data are limited for these stocks). Additionally, higher level assessments are periodically undertaken for some stocks.

Annual Catch Tolerance Levels

A voluntary 40 t tolerance level for estuarine cobbler in Wilson Inlet has been in place since 2020. An informal statewide catch limit of 300 t is in place for Australian herring, with a 70 t limit for the south coast G-trap exemption (see below). Maintenance of catch below these levels is considered appropriate to maintain the stock around the target level.

Management Initiatives

A working group has been tasked with developing a future management strategy for the Australian herring resource. This strategy will be developed in collaboration with herring stakeholders to ensure that management of the herring stock is in line with the main objective for the resource set by the WA Minister for Fisheries, which is to support quality recreational fishing experiences, and commercial fishing operations focused on the supply of herring for human consumption.

Whilst the strategy is under development, DPIRD has progressed interim management arrangements for the fishery, including the increase of the recreational herring bag limit from 12 to 20, and the resumption of G-trap operations under an annual Instrument of Exemption under the FRMA. This Exemption allows for authorisation holders to retain a total of 70 t of herring per year from specified beaches.

In 2024, the WA G-trap endorsement holders received Australian Government approval to export Australian herring, subject to the conditions of their Wildlife Trade Operation approval (delivery of an interim stock assessment and development of a Harvest Strategy).

A 5 year Exemption was issued to a single fisher in 2016 to target ocean sand crab (*Ovalipes australiensis*) in coastal waters between Augusta and Hopetoun to assess the commercial viability

of this species. Despite the Exemption being extended for a further 5 years, limited fishing was undertaken over the period.

EXTERNAL DRIVERS

Environment

The abundance of fish species in SCB estuaries is strongly influenced by climatic and other environmental factors, independent of fishing. Catchment processes (e.g. runoff and river flow) can have major effects on estuary condition and ocean connectivity, and in turn, fishery production. Annual variations in coastal currents (particularly the Leeuwin and Capes Currents) influence spawning, recruitment, distribution, and catchability of species such as Australian herring, WA salmon, whiting and blue swimmer crab in estuaries. Cool inshore temperatures due to a strong Capes Current provided a favourable corridor for salmon to migrate northwards in 2016, with exceptionally high numbers of fish observed along the west coast during the autumn spawning period, and some travelling as far north as Exmouth. Subsequent years of strong southward flowing Leeuwin Current events appear to have caused migrating WA salmon schools to avoid the nearshore coastal areas.

Climate change

South Coast Nearshore and Estuarine Scalefish and Invertebrate Table 2 provides a summary of the climate vulnerability risk assessment outcomes for the key indicator species.

Increased SSTs and MHW events, declining freshwater flows, and increasing sea levels is likely to lead to less brackish habitat and increased stratification in upper estuarine habitats that is already having negative effects on the black bream stocks. Therefore this species this deemed to be at **severe** risk from climate change.

Salmon migrate from the south coast to lower west coast to spawn in autumn. There is some evidence from commercial/recreational catches and observations from fishers that during warm autumn conditions fish stop their migration further south, which could inhibit spawning success for following years. Strong Leeuwin Current conditions are believed to be favourable for larval/egg dispersal, but also can inhibit initial spawning, with timing important. Reduced rainfall in southern Australia could also reduce coastal productivity and therefore juvenile growth rates.

Blue swimmer crab are considered a semi-tropical species at the southern end of its distribution along the south coast of WA, with demonstrable positive effects evidenced with increases in SST (likely due to increased primary productivity, expanded spawning seasons and/or accelerated growth). Rising sea levels and declining rainfall will increase marinification of SCB estuaries, which is expected to benefit resident crab stocks. Therefore, overall climate change is anticipated to have a positive effect.

Air temperature is likely to have more influence on estuary cobbler than ocean temperatures, although warmer marine waters could penetrate the lower reaches of estuaries. Reduced flow results in degradation of estuarine habitats, which is in turn likely to reduce habitat availability and food (invertebrates) for cobbler. There is clear evidence of stock declines in west coast estuaries over past century. Increased sea levels could flood estuary bars more frequently or could have the reverse effect, and increase vertical accretion of sand thereby keeping an estuary closed for longer.

SOUTH COAST NEARSHORE AND ESTUARINE SCALEFISH AND INVERTEBRATE TABLE 2.

Summary of the climate vulnerability risk assessment output for the key indicator species in the SCENSIR resource. Risk assessment for Australian herring is captured in the West Coast Nearshore and Estuarine Scalefish Resource chapter.

Indicator species	Sensitivity	Exposure	Climate Change risk
Blue swimmer crab	Medium	Demonstrable positive effects evident	Low
WA Salmon	Medium	Negative effects are unlikely	Medium
Estuary cobbler	High	Negative effects are possible	High
Black bream	High	Demonstrable negative effects evident	Severe

Other

Fluctuating market demand is a significant factor affecting the annual commercial catch level of many species. On the basis of market demand and price, commercial fishers sometimes elect not to capture a school of fish, or release part of their catch, when a market is not available. This is particularly relevant to WA salmon, and Australian herring.

The South Coast Marine Park has recently been gazetted in State waters (out to 3 nautical miles) from east of Bremer Bay to the South Australian border. Zoning schemes from this marine park, including no-take sanctuary areas, will take legal effect from late-2026. The potential impact of this proposed marine park on fish and fishing is not yet known.

The risk to the fisheries posed by external factors is therefore considered **medium**.

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SOUTH COAST SMALL PELAGIC SCALEFISH RESOURCE STATUS REPORT 2025

J. Norriss and A. Moses



OVERVIEW

The 5 species comprising the small pelagic scalefish resource in the SCB are the Australian sardine (pilchards, *Sardinops sagax*), yellowtail scad (*Trachurus novaezelandiae*), Australian anchovy (*Engraulis australis*), scaly mackerel (*Sardinella lemuru*), and maray (*Etrumeus jacksoniensis*). Australian sardine is the indicator species and dominates the catch, taken almost exclusively by the catch quota managed, limited entry South Coast Purse Seine Managed Fishery (SCPSMF). These fishers may use purse seine gear in waters between Cape Leeuwin and the South Australian border; however, effort is concentrated close to embayments at Albany, Bremer Bay, and Esperance. The SCPSMF is also permitted to take sandy sprat (*Hyperlophus vittatus*) and blue sprat (*Spratelloides robustus*), which form part of the South Coast Nearshore and Estuarine Finfish Resource, however these species have not been reported in the catch since 1993-94 and 2010-11, respectively. The SCPSMF has 5 management zones (South Coast Small Pelagic Figure 1): King George Sound (Zone 1), Albany (Zone 2), Bremer Bay (Zone 3), Esperance (Zone 4), and a developmental zone near Cape Leeuwin (Zone 5) where catches have been negligible. The SCPSMF was the largest tonnage fishery in WA during the late 1980s and early 1990s, until a virus devastated Australian sardine stocks in 1995 and 1998-99. While surveys demonstrated a strong recovery by the mid-2000s, low fishing effort has resulted in catches remaining well below the total allowable commercial catch (TACC), which was conservatively set at 5,683 t.

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
SC Purse Seine Managed Fishery (5,683 t)	Total Catch 2023-24: 1,835 t	Acceptable
Recreational fishery (not applicable)	Total Catch 2023-24: negligible (boat only)	Acceptable
EBFM		
Indicator species		
Australian sardine	Low risk: Above target	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	High risk	Voluntary monitoring and mitigation, industry consultation
Habitat	Negligible risk	Adequate
Ecosystem	Low risk	Adequate
Economic (GVP $1-5 m)	Medium risk	Acceptable
Social (low amenity)	Low risk	Acceptable
Governance	Stable	Acceptable
External Drivers – Other	High risk	Acceptable (monitored)
External Drivers – Climate change	High risk (Australian sardine)	

SUMMARY STATISTICS

Statistics	Season 2022-23	Season 2023-24	Further description
Commercial Catch SCPSMF#	Total: 1,622 t Zones 1: 1,081 t Zones 2, 3 & 4: 541 t	Total: 1,835 t Zones 1: 1,020 t Zones 2, 3 & 4: 815 t	TACC*: 5,683 t Zones 1 & 2: 2,683 t Zones 3: 1,500 t Zones 4: 1,500 t
Commercial Effort	460 boat days	479 boat days	
Active vessels	6	6	
Beach price: Aust sardine	$1.28	$1.23	
Listed species interactions	Flesh footed shearwaters Alive: 80 Dead: 11 Condition unrecorded: 6	Flesh footed shearwaters Alive: 90 Dead: 14 Dolphins Alive and unharmed: 2	Recorded by fishers on Catch Disposal Records and monthly Catch And Effort Statistics returns.

Confidentiality requirements preclude disclosure of catch in some zones due to insufficient fishers (i.e. not reportable as there is less than 3 active authorisation holders).

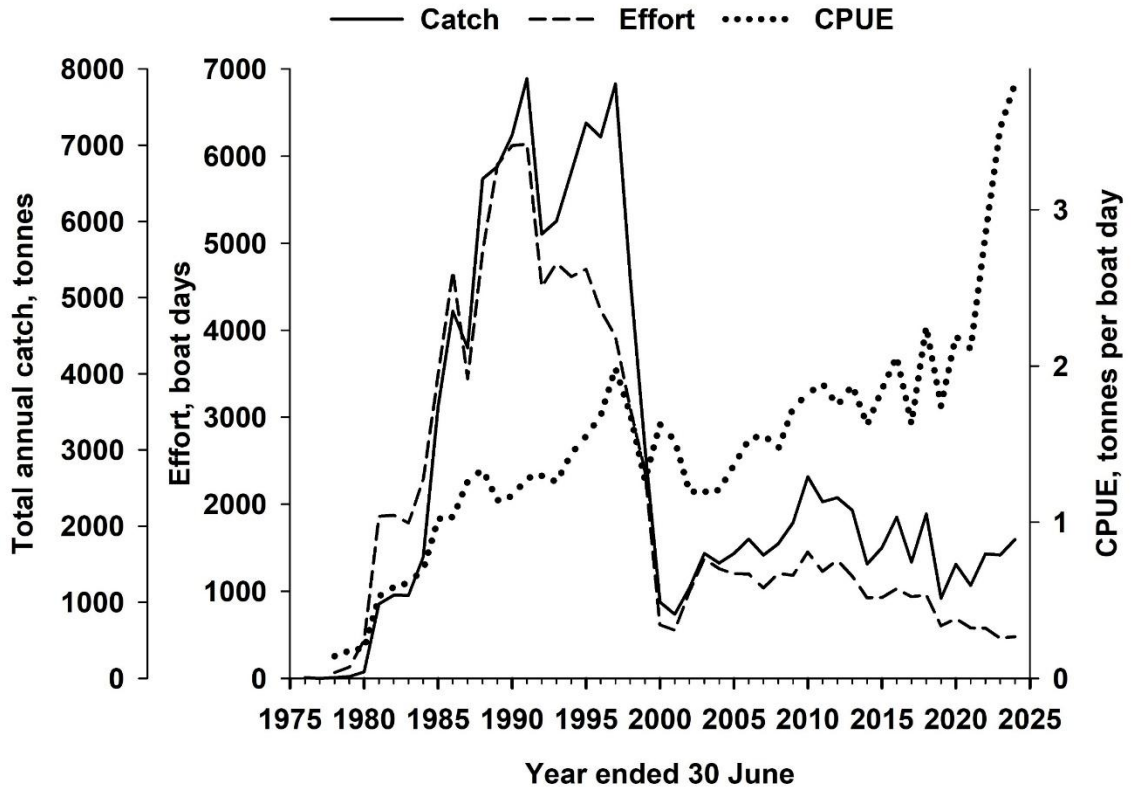
* TACC= Total Allowable Commercial Catch.



SOUTH COAST SMALL PELAGIC FIGURE 1.
Boundaries and management zones of the South Coast Purse Seine Managed Fishery. Fishing operations occur over a small area, almost exclusively in coastal embayment's near Albany, Bremer Bay, and Esperance.

CATCH AND LANDINGS

The total recorded SCB commercial catch of small pelagic scalefish in 2023-24 was 1,835.2 t, of which 1,834.7 t was taken by the SCPSMF, well within the conservatively set TACC of 5,683 t and comprising >99% Australian sardine. The SCPSMF catch increased by 13% from the previous year (South Coast Small Pelagic Figure 2). Substantial interannual variation in catch can result from fluctuations in recruitment strength of age cohorts and the extent to which fish move to inshore fishing grounds and become available to fishers.



SOUTH COAST SMALL PELAGIC FIGURE 2.
Total annual catch, effort, and nominal catch per unit effort (CPUE) for Australian sardine in the SCPSMF from 1975-76 to 2023-24.

INDICATOR SPECIES ASSESSMENT AND STOCK STATUS

Australian sardine (Sustainable-Adequate)

The Australian sardine is a small, low trophic level pelagic species that feeds by filtering plankton. Longevity is reported to be up to 9 years of age, with sexual maturity achieved in the second year of life, and a maximum size of 200-250 mm SL.

Population modelling, based on spawning biomass estimates (using the daily egg production method), catch-at-age, and catch data, shows that by the mid-2000s the stock had recovered from a mass mortality event in 1998-99 caused by a herpesvirus (Gaughan et al. 2008). The annual exploitation rate in the mid-2000s was around 3 per cent (less than 3,000 t from an estimated spawning biomass of approximately 97,000 t), and since that time the total annual catch has not exceeded 3,000 t. From 2008-09, the nominal catch rate (tonnes per boat day) has remained relatively high, with 2023-24 the highest on record, facilitated by recent increased onshore processing capacity that vessels could supply without a comparable increase in fishing effort. (South Coast Small Pelagic Figure 2). A risk based, weight of evidence assessment (Blazeski et al. 2021) found catches and the biological stock to be **sustainable-adequate**.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Bycatch

The SCPSMF is a species-restricted fishery (listed above) prohibiting the landing of any species not permitted in the management plan. Small quantities of fish bycatch species are sometimes captured incidentally, but this occurs infrequently, and the majority are released from the net unharmed resulting in a **negligible** risk (Blazeski et al. 2021).

Protected species

SCPSMF operators must record all interactions with endangered, threatened, and protected species on Catch and Disposal Records (CDRs) for each fishing trip and on statutory monthly Catch and Effort Statistics returns.

Interactions with protected species, particularly Flesh-footed shearwaters (FFS), are mitigated and managed through the implementation of a voluntary SCPSMF Code of Practice (Code), which is reviewed annually. A Special Management Period (SMP) in March & April has been designated under this Code, when the risk of FFS interactions is highest (Norriss et al. 2020). During the SMP fishers avoid fishing at dawn when the interaction risk is believed to be elevated. Based on observer data, total annual FFS mortalities for 2016-17 and 2017-18 were estimated (±95% confidence limits) to be 123 (52-251) and 172 (91-302), respectively (Norriss et al. 2020). Although these estimates are below the sustainable limits estimated for WA's FFS population, the extent of other anthropogenic mortalities is unknown. During 2023-24 18 trips were undertaken by independent observers and FFS were the only protected species interactions recorded: 18 released alive and unharmed and 6 dead.

The SCPSMF commenced an ongoing trial of newly constructed purse seine nets and upgraded net retrieval roller systems during the 2024 SMP. The nets featuring weighted lines added during manufacture, designed to reduce incidental seabird bycatch. The project is funded by a grant to the Western Australian Fishing Industry Council (WAFIC) from the Australian Department of Climate Change, Energy, the Environment and Water.

An Ecological Risk Assessment (Blazeski et al. 2021) found FFS to be at **high** risk from SCPSMF operations. For dolphins there was a **low** risk, and for other protected species there was a **negligible** risk.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

Purse seine nets are pelagic in nature, with no impact on benthic habitats during normal operations. On rare occasions nets may be deployed in shallow waters and come into contact with habitats such as seagrass beds. The light structure of the net is expected to cause minimal damage to benthic habitats when this occurs, and any impact is restricted to a small, localised area. Moreover, the likelihood of net damage motivates fishers to avoid contact with reef or coral. An Ecological Risk Assessment (Blazeski et al. 2021) found there was a **negligible** risk to habitats from the SCPSMF operations.

Ecosystem

Australian sardines are a low trophic level species important for ecosystem structure and function. Their abundance is subject to large natural variation in response to environmental conditions, and catch quotas are likely to be <10% of the spawning biomass. An Ecological Risk Assessment (Blazeski et al. 2021) found there was a **low** ecosystem risk from the SCPSMF.

Broader environment

An Ecological Risk Assessment (Blazeski et al. 2021) found risks associated with air quality, water quality, and noise pollution from SCPSMF operations was **negligible**.

SOCIAL AND ECONOMIC OUTCOMES

Social

Small pelagic fish are not a major target for recreational fishers and catches are low. No small pelagic species were detected in the SCB catch of boat-based recreational fishers during 2023-24 (Ryan et al. 2025). Australian sardines are an important bait for recreational fishers. **Low** risk.

Economic

Six active vessels as well as specialised small pelagic fish processing facilities in Albany, Bremer Bay, and Esperance provided local employment during 2023-24. Most catches are sold as bait for recreational and commercial fishers. Some is for human consumption, aquaculture feed, and pet food. The estimated gross value of product (GVP) for the SCPSMF in 2023-24 was level 2 ($1-5 million). The gross state product for 2020-21 was estimated at $7.2 million, with 60 full-time equivalent jobs, and $3.8 million in household income (BDO EconSearch, 2023). Considering possible management responses to seabird interactions, there is a **medium** risk to this level of return.

GOVERNANCE SYSTEM

Harvest Strategy

The SCPSMF is managed under a constant catch harvest strategy approach, with catches limited to quotas (TACC) set for each management zone. Any proposed changes to the TACC are made with regard to total catches and nominal catch rates, in consultation with stakeholders.

Allowable Catch Tolerance Levels

The SCPSMF total annual catch for all species combined in the 2023-24 quota year was only 32% of the TACC.

Compliance

DPIRD undertakes regular compliance inspections at-sea and on land.

Consultation

DPIRD undertakes consultation directly with licensees on operational issues. Industry management meetings are held between the DPIRD and licensees, in conjunction with WAFIC, who are also responsible for statutory management plan consultation under a Service Level Agreement with DPIRD.

Consultation on recreational fishing regulations or relevant commercial management changes is undertaken through the peak body Recfishwest.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

The South Coast Small Pelagic Scalefish Resource will continue to be monitored using catch and nominal catch rates.

In July 2023, the SCPSMF was declared an approved WTO under Parts 13 and 13A of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) for 3 years to July 2026. The WTO export approval includes conditions associated with ongoing monitoring of interactions with protected species and continuation of existing bycatch mitigation measures.

A formal harvest strategy for the Statewide Small Pelagic Scalefish Resource is yet to be developed, however it is a future management initiative that is scheduled to be completed by November 2025.

EXTERNAL DRIVERS

Climate change

South Coast Small Pelagic Scalefish Resource Table 1 provides a summary of the climate vulnerability risk assessment outcome for Australian sardine in the SCPSMF. This species prefers cooler temperate conditions and known to migrate towards the coast to avoid the warmer southward flowing Leeuwin Current. Thus, net negative effects are likely from increased SSTs, and MHW events while a weaker Leeuwin Current may reduce larval dispersal and impact recruitment dynamics into the future. This stock is deemed at **high** risk from climate change.

SOUTH COAST SMALL PELAGIC SCALEFISH RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for Australian sardine in the SCPSMF.

Indicator species	Sensitivity	Exposure	Climate Change risk
Australian sardine	Medium	Negative effects are possible	High

Other

Preparations and negotiations are underway for a marine park proposed by the Department of Biodiversity, Conservation and Attractions. This marine park will be situated in State waters (out to 3 nautical miles) from Bremer Bay to the South Australian border, and the impact on fishing is yet known.

These external drivers represent a **high** risk.

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TEMPERATE DEMERSAL GILLNET AND DEMERSAL LONGLINE FISHERIES RESOURCE STATUS REPORT 2025

M. Braccini and L. Rynvis



OVERVIEW

The Temperate Demersal Gillnet and Demersal Longline Fisheries (TDGDLF) comprises the West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery (WCDGDLF), which operates between 26° and 33° S, and the Southern Demersal Gillnet and Demersal Longline Managed Fishery (SDGDLF)[1], which operates from 33° S to the Western Australian/South Australian border. Most fishers employ demersal gillnets to target mainly sharks with scalefish being a byproduct. Demersal longline is also permitted but is not widely used. Gummy (*Mustelus antarcticus*), dusky (*Carcharhinus obscurus*), whiskery (*Furgaleus macki*), and sandbar (*C. plumbeus*) sharks are the main shark species targeted (~80% of the fisheries' shark catch) and they have been identified as indicators for the status of the temperate shark suite as they represent the range of life history strategies of other shark species caught by these fisheries. For further details, see Braccini et al. (2018) and SAFS (2024).

SUMMARY FEATURES

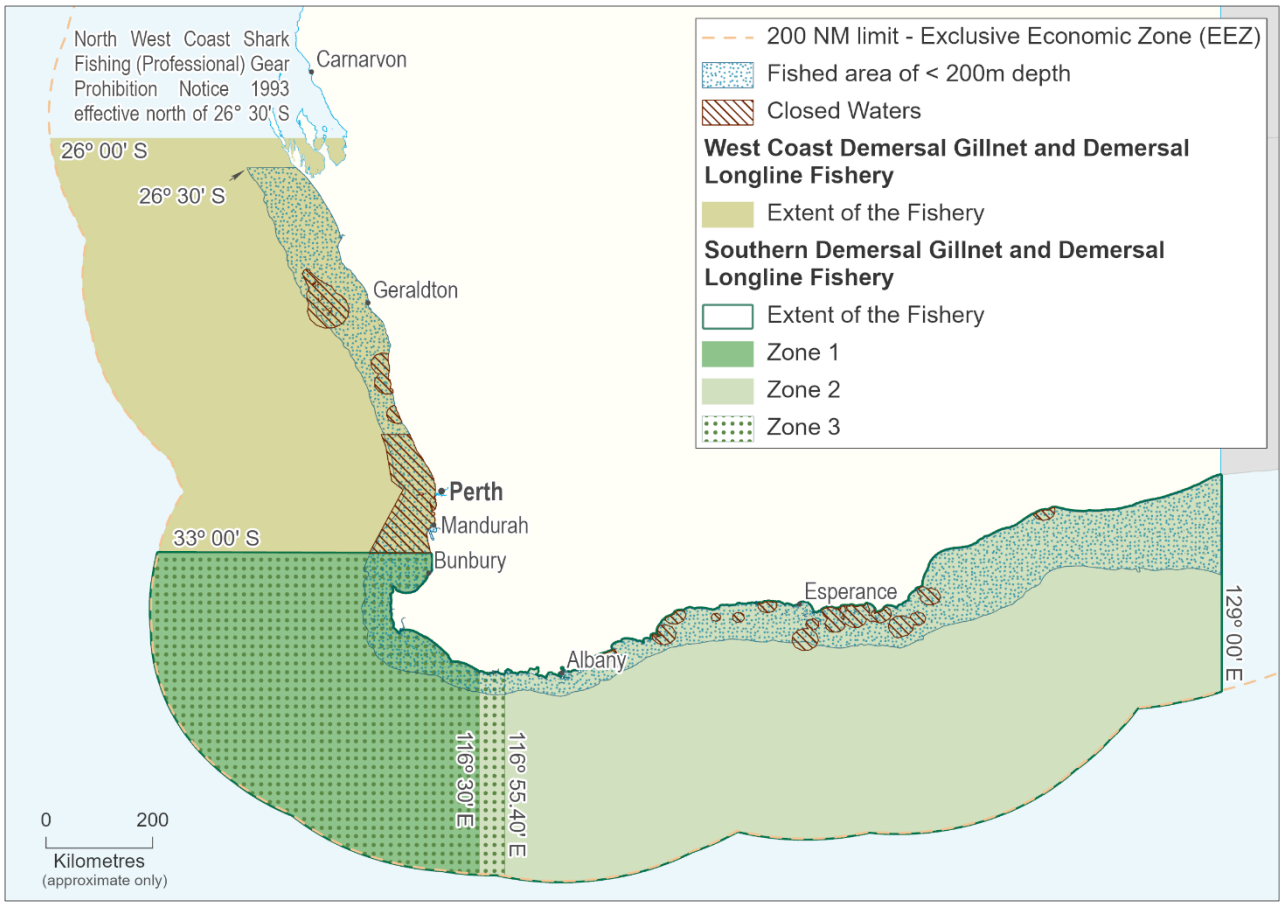
Asset (Allowable catch for indicator species)	Outcome	Status
Commercial fishery (725−1,095 t for sharks and rays)	Total Catch 2023-24 Sharks and rays*: 831 t Scalefish*: 107 t	Acceptable
Recreational fishery (not defined)	Reconstructed statewide total catch 2023-24: 22% of commercial catch	Acceptable
EBFM		
Indicator species		
Gummy shark	Low risk: Above biomass threshold	Adequate
Dusky shark	High risk: Above biomass limit	Recovering
Whiskery shark	Medium risk: Above biomass threshold	Adequate
Sandbar shark	Low risk: Above biomass threshold	Adequate
Ecological		
Bycatch	Low risk	Adequate
Listed Species	Negligible – High risk	Adequate – Unacceptable
Habitat	Negligible risk	Adequate
Ecosystem	Low risk	Adequate
Economic (GVP $1-5 m)	Medium risk	Acceptable
Social (Medium amenity)	High risk	Unacceptable
Governance	Medium risk	Acceptable
External Drivers – Other	Medium risk	Acceptable
External Drivers – Climate change	Medium risk (Gummy shark, Dusky shark); Low risk (Whiskery shark, Sandbar shark)	

*All reported weights are live weight

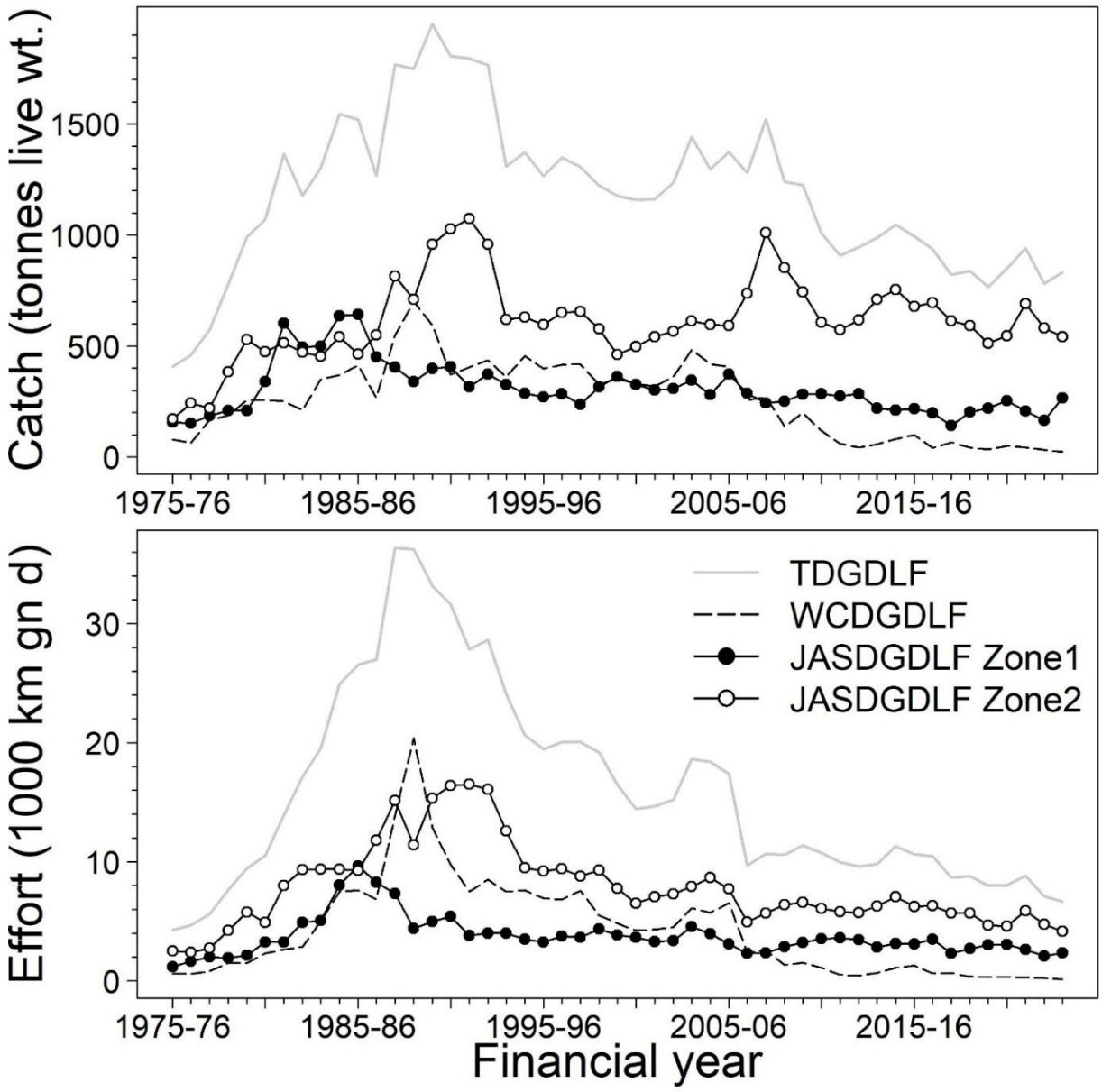
1 Previously the Joint Authority Southern Demersal Gillnet and Demersal Longline Fishery (JASDGDLF). The JASDGDLF transitioned from joint Commonwealth/State management to State only management in December 2018.

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Commercial catch	Sharks and rays*: 766 t Scalefish*: 109 t	Sharks and rays*: 831 t Scalefish*: 107 t	Within acceptable range.
Commercial effort	Zones 1/3 of the SDGDLF: 31,400 km gn.hr^{-1} or 2097.6 km gn.d^{-1} Zone 2 of the SDGDLF: 93,300 km gn.hr^{-1} or 4,748.3 km gn.d^{-1} WCDGDLF: 7,200 km gn.hr^{-1} or 241.2 km gn.d^{-1}	Zones 1/3 of the SDGDLF: 37,600 km gn.hr^{-1} or 2,354.7 km gn.d^{-1} Zone 2 of the SDGDLF: 77,700 km gn.hr^{-1} or 4,187.2 km gn.d^{-1} WCDGDLF: 3,800 km gn.hr^{-1} or 143.6 km gn.d^{-1}	Below maximum acceptable effort levels.
Participation	Between 22 and 36 skippers and crew were employed in the SDGDLF (19 vessels) and between 5 and 6 skippers and crew were employed in the WCDGDLF (4 vessels)	Between 25 and 41 skippers and crew were employed in the SDGDLF (20 vessels) and between 3 and 4 skippers and crew were employed in the WCDGDLF (3 vessels)	Stable.
Beach price	Gummy shark: $5.36/kg Dusky shark: $5.20/kg Whiskery shark: $5.07/kg Sandbar shark: $4.01/kg	Gummy shark: $5.13/kg Dusky shark: $5.05/kg Whiskery shark: $4.9 /kg Sandbar shark: $4.48/kg	Stable.
Compliance infringements	Brief: 0 Infringements: 1 Warnings: 3	Brief: 3 Infringements: 3 Warnings: 8	Stable.
Listed Species interactions	Australian sea lions (ASL): 0, grey nurse sharks: 1 dead and 10 alive, white sharks: 9 dead and 11 alive	Australian sea lions (ASL): 0, grey nurse sharks: 3 dead and 5 alive, white sharks: 3 dead and 12 alive	Stable.



TEMPERATE DEMERSAL FIGURE 1.
Boundaries of the Temperate Demersal Gillnet and Demersal Longline Fisheries.



TEMPERATE DEMERSAL FIGURE 2.
Total elasmobranch catches, and demersal gillnet and longline effort (in km gillnet days, km gn d^{-1}). Black circles = SDGDLF Zone 1; white circles = SDGDLF Zone 2; dashed black line = WCDGDLF; plain grey line = total from the 3 management zones.

CATCH AND LANDINGS

The 2023-24 total catch of sharks and rays was 831 t (284 t for gummy, 192 t for dusky, 33 t for sandbar, and 160 t for whiskery sharks), similar to previous years and mostly within the acceptable catch ranges (725-1,095 t for the four key species and 350-450 t for gummy, 200-300 t for dusky, < 120 t for sandbar, and 175-225 t for whiskery sharks). Relative lower catches of gummy shark in 2023-24 are attributed to a reduction in the number of fishing trips, particularly in Zone 2, where most of the gummy shark catch originates from, followed by Zone 1, where most of the dusky shark catch originates from.

Standardised catch rates remain stable for these species. Whiskery shark catch was maintained below historical allowable levels due to reductions in targeted effort. Therefore, the recommended catch ranges should be revisited as part of the development of a new harvest strategy.

The catch levels of both the commercial and recreational sectors indicate that the fishery performance for both sectors is considered **acceptable**.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Gummy shark (Sustainable - Adequate)

Previous calculations of catch rates defined fishing effort as the product of the net length used per day and the number of days fished per month. This resulted in a historical peak in catch rates in the mid/late 2000s, which coincides with the historical peak in catches. Unfortunately, this catch rate series could not be used to fit population dynamics models. The peak in catch rates was partly due to a systematic increase in the number of hours fished per day in Zone 2 during that period of time. Hence, a new standardisation process was implemented where hours fished per day was included in the definition of fishing effort. Based on this, standardised catch rates have been stable since 2010 (Temperate Demersal Figure 3).

The most recent weight of evidence assessment estimated a **low** current level of risk for the gummy shark stock, with 99%, 100%, and 100% probability of the simulated current (2021-22) biomass being above the target, threshold, and limit biomass reference points, respectively (Braccini and Hesp, 2025). On the basis of the above, the current status of gummy sharks is **sustainable-adequate.**

Dusky shark (Sustainable - Recovering)

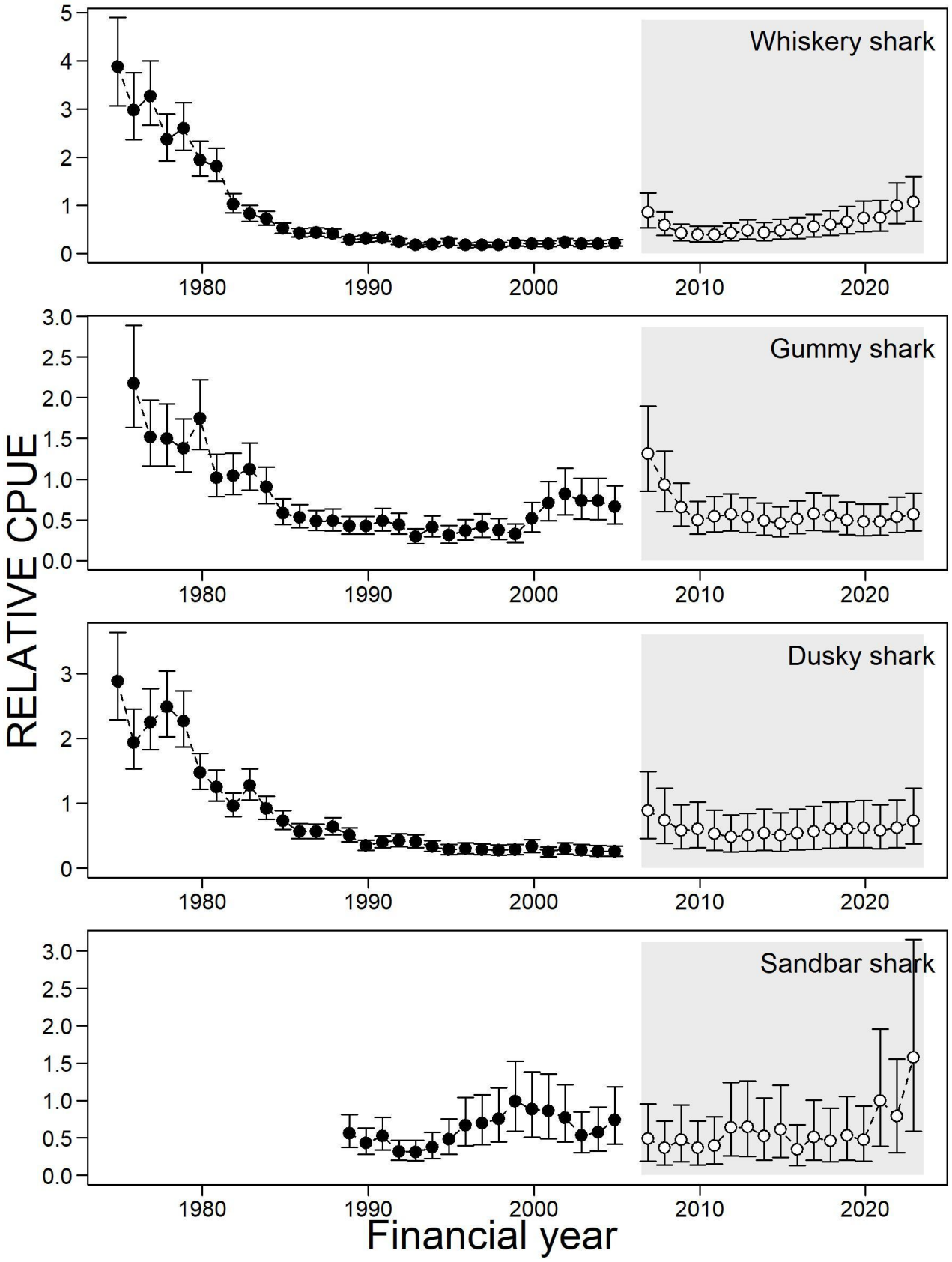
Standardised catch rates have been stable since 2009 (Temperate Demersal Figure 3). The most recent weight of evidence assessment estimated a **high** current level of risk for the dusky shark stock, with 3%, 49%, and 100% probability of the simulated current (2021-22) biomass being above the target, threshold, and limit biomass reference points respectively, but 51% probability of being between the limit and threshold (Braccini and Hesp, 2025). Current management arrangements are considered suitable to facilitate the gradual recovery of the breeding stock. On the basis of the above, the current status of dusky sharks is **sustainable-recovering.**

Whiskery shark (Sustainable - Adequate)

Significant declines in standardised catch rates in the early 1980s (Temperate Demersal Figure 3) was likely a result of changes in targeting practices (Simpfendorfer et al. 2000). Since 2010, standardised catch rates have steadily increased. The most recent weight of evidence assessment estimated a **medium** current level of risk for the whiskery shark stock, with 51%, 69%, and 96% probability of the simulated current (2021-22) biomass being above the target, threshold, and limit biomass reference points, respectively (Braccini and Hesp, 2025). On the basis of the above, the current status of whiskery sharks is **sustainable-adequate.**

Sandbar shark (Sustainable - Adequate)

Standardised catch rates have fluctuated since 2007 but increased in 2023-24, though showing higher uncertainty (Temperate Demersal Figure 3). The most recent weight of evidence assessment estimated a **low** current level of risk for the sandbar shark stock, with 97%, 100%, and 100% probability of the simulated current (2021-22) biomass being above the target, threshold, and limit biomass reference points, respectively (Braccini and Hesp, 2025). In addition, recent annual catches have been well below allowable catch tolerance levels. On the basis of the above, the current status of sandbar sharks is **sustainable-adequate.**



TEMPERATE DEMERSAL FIGURE 3.
Relative annual standardised catch rates by species (mean and 95% confidence intervals). Each series has been normalised to a mean score of 1. The shaded area highlights the daily logbook time period.

BYCATCH AND LISTED SPECIES INTERACTIONS

Bycatch

The TDGDLF has low levels of discarded bycatch of unsaleable species of sharks, rays, and scalefish (McAuley and Simpfendorfer, 2003). As maximum potential fishing effort is now explicitly capped at less than 70% of the mid to late 1990s levels, bycatch in all management zones has reduced. Reconstructions of annual bycatch found dusky morwong, buffalo bream, and Port Jackson shark to be the most commonly discarded species (Braccini and Murua, 2022).

The impact of the TDGDLF activities on stocks of bycatch species was assessed in 2021, in an ecological risk assessment (ERA) for the Temperate Demersal Elasmobranch Resource (TDER), and, for sharks and rays, in 2025 in a weight of evidence assessment (Braccini and Hesp, 2025). Risk to bycatch species was assessed for Port Jackson shark (negligible), dusky morwong (low), buffalo bream (low), and other bycatch species (negligible; see Watt et al. 2021; Braccini and Hesp, 2025).

Listed Species

The TDGDLF has low reported interactions with listed species (McAuley and Simpfendorfer, 2003). For 2023-24, fishers reported catching and releasing no Australian sea lions (ASL), 3 dead and 5 alive grey nurse sharks, 3 dead and 12 alive white sharks (Appendix 2).

The impact of TDGDLF activities on protected species was assessed in 2021 in the ERA for the TDER. Risk to protected species were assessed for grey nurse shark (medium), white shark (medium), ASL (high), seabirds (negligible), dolphins (low), and other protected species (negligible); (see Watt et al. 2021).

CITES Species

The TDGDLF catch and retained CITES listed species within approved non-detrimental finding (NDF) and Wildlife Trade Operation (WTO) certifications (Temperate Demersal Table 1 and Temperate Demersal Table 2).

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

The level of effort in the TDGDLF is such that the gear is deployed infrequently over approximately 40% of the fishery's area, and under normal circumstances the physical impact of the gear on the benthic habitat is minimal. Moreover, the very small footprint of each net when combined results in a very small percentage (<5%) of the available fishable area that would be contacted by this gear on an annual basis and therefore represents a **negligible** risk to benthic habitats (Watt et al. 2021).

Ecosystem

There is no evidence of any systematic change in species diversity, richness, trophic index or functional richness (Braccini et al. 2025), indicating that the TDGDLF is not having a material impact on the food chain or ecosystem structure, therefore representing a **low** risk to the ecosystem. For a detailed description of habitat and ecosystem effects refer to Braccini et al. (2018, 2015) and Watt et al. (2021).

SOCIAL AND ECONOMIC OUTCOMES

Social

Fishing returns reported that between 25 and 41 skippers and crew were employed in the SDGDLF, and between 3 and 4 skippers and crew were employed in the WCDGDLF during 2023-24.

A small proportion of boat-based and shore-based recreational fishers take sharks in WA, mainly in the West Coast and South Coast bioregions (Ryan et al. 2025). Whilst sharks are generally not a target species, recreational fishers accidentally catch sharks and experience catch depredation by sharks with impact on social amenity. Increasing rates of shark depredation, particularly in the northwest of WA, has a direct social impact for fishing sectors, creating a **medium** level of social amenity and **high** social risk.

Economic

Revenue mostly originates from the domestic sale of shark meat, not fins. Shark meat is mostly sold in the WA fish and chip shop market (WCDGDLF and Zone 1 of the SDGDLF) or sold to wholesalers in Adelaide and Melbourne (Zone 2 of the SDGDLF). Shark meat is also sold to restaurants and fish retailers around landing ports, particularly in the south-west of WA (Braccini et al. 2024).

The estimated annual value (to fishers) for 2023-24 is $4.72 million, and $0.13 million for the SDGDLF, and WCDGDLF, respectively (GVP Level 2). There is currently a **medium** risk to this return.

GOVERNANCE SYSTEM

Harvest Strategy

The TDGDLF is managed under a constant catch harvest strategy. Although the harvest strategy has not been formally developed, the operational management objective of the TDGDLF has been 'to maintain the biomass for the three traditional target stocks (gummy, whiskery, and dusky sharks) at or above 40% of their unfished levels'. Management is via input controls in the form of

transferable time/gear effort units and gear restrictions.

Maximum acceptable effort levels for each management zone have been based on their respective 2001-02 (daily) levels (Zones 1 and 3 of the SDGDLF: 84,075 km gn.hr^{-1} or 3,503 km gn.d^{-1}; Zone 2 of the SDGDLF: 144,102 km gn.hr^{-1} or 7,205 km gn.d^{-1}; WCDGDLF: 67,692 km gn.hr^{-1} or 2,832 km gn.d^{-1}).

The 2023-24 effort levels were maintained below these effort levels (37,600 km gn.hr^{-1} or 2354.7 km gn.d^{-1} for Zones 1 and 3 of the SDGDLF; 77,700 km gn.hr^{-1} or 4,187.2 km gn.d^{-1} for Zone 2 of the SDGDLF; 3,800 km gn.hr^{-1} or 143.6 km gn.d^{-1} for the WCDGDLF).

Management Initiatives

In 2024, the TDGDLF was reaccredited as a Wildlife Trade Operation (WTO) under Parts 13 and 13A of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

The development of a formal harvest strategy for the Statewide Elasmobranch Resource is currently in preparation and is expected to be completed by mid-2026.

EXTERNAL DRIVERS

Climate change

The vulnerability assessment found a large degree of uncertainty regarding response to current and future ocean climate change by the key target shark species. A warming south coast is likely to have a net negative effect associated with nearshore habitat availability and adverse impacts on reproductive success and juvenile survival from warming SSTs. Spatial expansion by adults may also occur especially if dietary prey species increase concurrently. Thus, the assessment deemed gummy and dusky sharks at **medium** risk from climate change, while whiskery and sandbar sharks at **low** risk.

Other

The TDGDLF key target species span multiple regional boundaries, and sandbar and dusky sharks were historically targeted in the Northern Shark Fisheries. The risks to these stocks are currently negligible, with no fishing in the Northern Shark Fisheries since 2008-09, and low catches from fisheries other than the TDGDLF.

The main external risk to the viability of the TDGDLF is loss of access with the introduction of Commonwealth and State Marine Parks and ASL gillnet exclusion zones. The introduction of these spatial closures has resulted in the displacement of fishing effort, which has implications for the interpretation of standardised catch rates. Another external risk to the TDGDLF is social licence, and public understanding and acceptance of the fisheries operations.

These external drivers represent a **high** risk.

TEMPERATE DEMERSAL TABLE 1.
Summary of the CITES listed species retained by the Temperate Demersal Gillnet and Demersal Longline Fisheries (TDGDLF) in the 2023 fishing season.

Species	Common Name	Live Weight (tonnes)
Carcharhinus brachyurus	Bronze whaler	58
Carcharhinus brevipinna	Spinner shark	20
Carcharhinus obscurus	Dusky shark	134
Carcharhinus plumbeus	Sandbar shark	33
Isurus oxyrinchus	Shortfin mako	2
Sphyrna lewini	Scalloped hammerhead	<1
Sphyrna mokarran	Great hammerhead	<1
Sphyrna zygaena	Smooth hammerhead	45

TEMPERATE DEMERSAL TABLE 2.
Summary of the CITES listed species discarded by the Temperate Demersal Gillnet and Demersal Longline Fisheries (TDGDLF) in 2023 fishing season.

Species	Common Name	Alive	Dead	Unknown
Carcharodon carcharias	White shark	12	2	1
Isurus oxyrinchus	Shortfin mako	0	1	0

TEMPERATE DEMERSAL TABLE 3.
Summary of the climate vulnerability risk assessment output for the key target species in the WCDGDLF and SDGDLF.

Indicator species	Sensitivity	Exposure	Climate Change risk
Gummy shark	Medium	Negative: effects unlikely	Medium
Dusky shark	Medium	Negative: effects unlikely	Medium
Whiskery shark	Medium	Remote or potentially positive effect	Low
Sandbar shark	Medium	Remote or potentially positive effect	Low

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SOUTH COAST DEMERSAL SCALEFISH RESOURCE STATUS REPORT 2025

J. Norriss, M. Watt, T. Thompson



OVERVIEW

The South Coast Demersal Scalefish Resource (SCDSR) comprises around 35 demersal species taken predominantly in inshore (20-250 m deep) and offshore (>250 m) marine waters in the SCB, which extends from 115°30' E to the South Australian border at 129°00' E (South Coast Demersal Figure 1). The indicator species for inshore waters are snapper (*Chrysophrys auratus*), Bight redfish (*Centroberyx gerrardi*), blue morwong (*Nemadactylus valenciennesi*) and Western blue groper (*Achoerodus gouldii*), and for offshore waters, hapuku (*Polyprion oxygeneios*).

Commercial catches of snapper, Bight redfish, and hapuku are predominantly line caught by the South Coast Line and Fish Trap Managed Fishery (SCLFTMF), whereas blue morwong and Western blue groper are predominantly taken by gillnet in the Southern Demersal Gillnet and Demersal Longline Managed Fishery (SDGDLMF; see Temperate Demersal Gillnet and Demersal Longline Fisheries Resource Status Report 2025). Significant catches of snapper are also taken by the SDGDLMF and in some years by the South Coast Estuarine Managed Fishery (SCEMF; see South Coast Nearshore and Estuarine Finfish Resource Status Report 2025) using nets in estuaries, principally Wilson Inlet.

Recreational and tour operator (charter) catches are almost exclusively boat-based, using hook and line. Details of the biology and latest stock assessment of the indicator species are reported by Norriss et al. (2024).

A SCDSR Recovery Plan is under development, following a stock assessment that showed the resource was at **high** risk (Norriss et al. 2024). Management measures are likely to include unitisation of the SCLFTMF.

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery (no formal)	2023-24: 184 t	Not acceptable
Recreational fishery (no formal)	Recreational# 2023-24: 53 t Charter 2023-24: 4 t	Not acceptable
EBFM		
Indicator species		
Snapper	High risk: $F_{threshold} < F < F_{limit}$, $B_{threshold} > B > B_{limit}$ (2024)	Inadequate
Bight redfish	High risk: $F > F_{limit}$, $B_{threshold} > B_{rel} > B_{limit}$ (2024)	Inadequate
Blue morwong	Medium risk: $F_{threshold} < F_{male} < F_{limit}$, $F_{target} < F < F_{lhreshold}$, $B \approx B_{target}$ (2024)	Adequate
Western blue groper	High risk: $F > F_{MSY}$, $B_{0.5MSY} < B_{rel} < B_{MSY}$ (2024)	Inadequate
Hapuku	Medium risk: $F > F_{MSY}$, $B_{rel} > B_{1.2MSY}$ (2024)	Adequate
Ecological		
Bycatch	Low risk	Acceptable
Listed Species	Negligible risk	Acceptable
Habitat	Negligible risk	Acceptable
Ecosystem	Low risk	Acceptable
Economic (GVP $1-5 m)	Medium risk	Acceptable
Social (moderate amenity)	Medium risk	Acceptable
Governance	High risk	Not acceptable; management action required
External Drivers – Other	Medium risk	Acceptable
External Drivers – Climate change	Medium risk (Hapuku); High risk (Pink snapper, Bight redfish, Blue morwong, Western blue groper)	

Top ten species.

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Commercial retained catch	2022-23 Total commercial: 213 t SCLFTMF: 128 t SDGDLMF: 78 t Other: 7 t	2023-24 Total commercial: 184 t SCLFTMF: 99 t SDGDLMF: 71 t Other: 14 t	
Commercial effort SCLFTMF	2022-23: 674 vessel days	2023-24: 610 vessel days	
Charter retained catch	2022-23: 4 t	2023-24: 4 t	Top 10 demersal species/groups in SCB
Charter effort	2022-23: 106 trips	2023-24: 133 trips	Trips when demersal species were caught.
Recreational retained catch	2020-21: 26-67 t (95% CI)	2023-24: 36-71 t (95% CI)	Top 10 demersal species in SCB, boat-based fishing only (Ryan et al. 2025)
Recreational effort	2020-21: 19,361–32,411 days (95% CI)	2023-24: 17,443–27,917 days (95% CI)	Days fished in SCB, boat-based fishing only (Ryan et al. 2025).
Participation	SCLTMF: 42 vessels Charter 2022-23: 881 client trips, 6 active licences. Recreational 2020-21: 87,000 line fishing hours.	SCLTMF: 36 vessels Charter 2023-24: 828 client trips, 5 active licences. Recreational 2023-24: 77,000 line fishing hours.	Commercial and Charter: taking demersal species only.
Average beach price per kg whole weight	2022-23 Bight redfish: $9.92 Snapper: $11.31 Blue morwong: $4.90 Western blue groper: $5.11 Hapuku: $10.20	2023-24 Bight redfish: $10.46 Snapper: $11.16 Blue morwong: $5.15 Western blue groper: $5.09 Hapuku: $10.62	Domestic market supply and demand.
Bycatch	-	-	Line fishing for demersal species using baited hooks is highly selective for fishes.
Listed species interactions SCLFTMF	2022-23: 1 grey nurse shark, 1 gannet, 1 white shark, all released alive.	2023-24: nil	Mandatory reporting by commercial and charter fishers suggests line fishing interactions with listed species are rare.

CATCH AND LANDINGS

Catch reviews for the demersal suite and key species are undertaken annually based on available information. This review incorporates catch information from the commercial sector and charter fishery from the 2023-24 financial year and from the integrated survey of boat-based recreational fishing from September 2023 to August 2024.

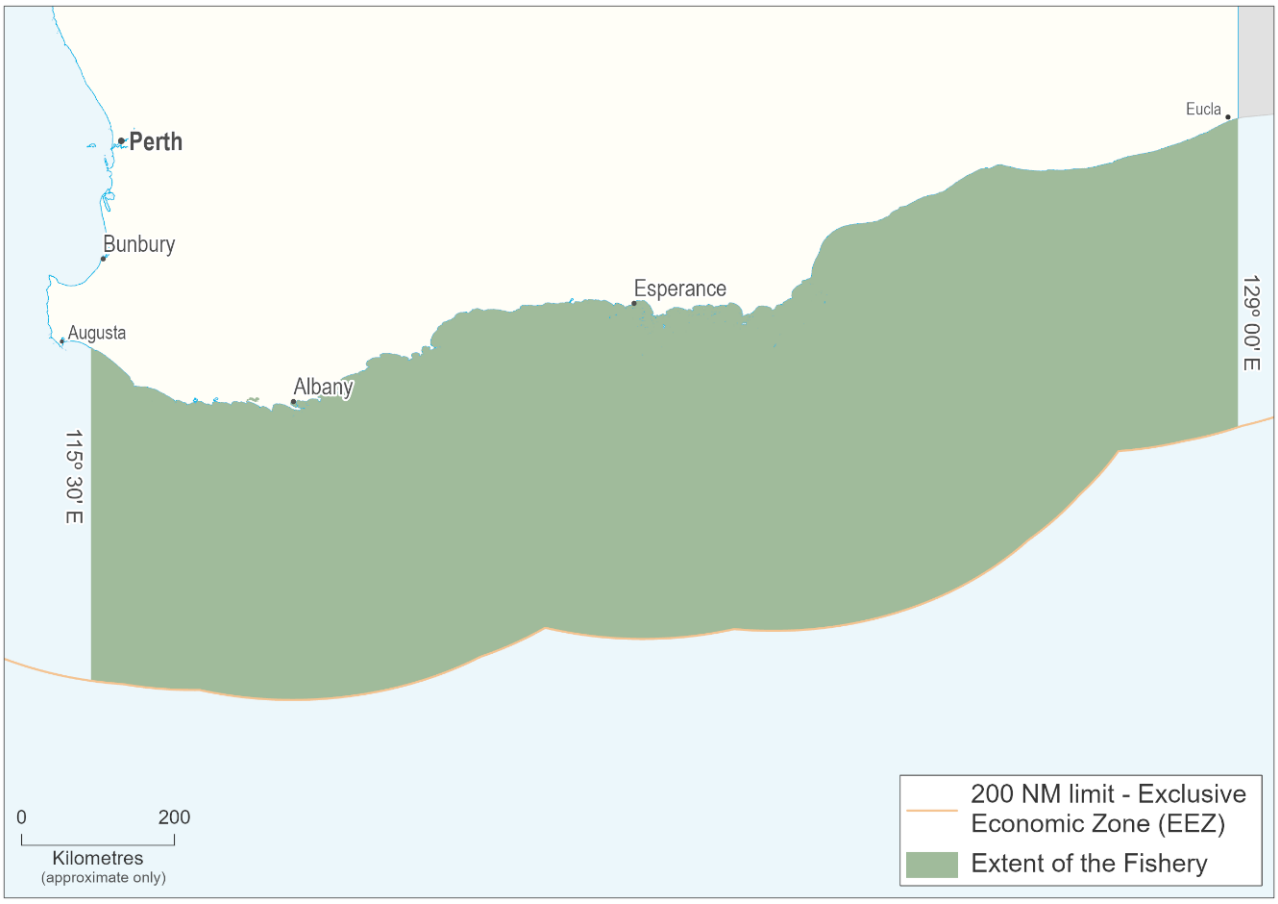
Commercial sector

The SCDSR total commercial catch of 184 t in 2023-24 decreased by 14% from the 213 t landed in 2022-23. The commercial catch of demersal scalefish has been historically dominated by the SCLFTMF and SDGDLMF (South Coast Demersal Figure 2). The commercial catches of indicator species during 2023-24 were as follows: For snapper 39 t, comprised of 17 t by the SCLFTMF, 17 t by the SDGDLMF and 4 t by SCEMF. For Bight redfish also 39 t, with 37 t taken by the SCLFTMF and 2 t by the SDGDLMF. Hapuku catches were 15 t, landed almost entirely by the SCLFTMF. Historically about one third of the hapuku catch has been taken from near Albany. For blue morwong, 28 t were landed, comprising 25 t by the SDGDLMF using almost exclusively gillnets, and 3 t by the SCLFTMF. For Western blue groper, 18 t were landed, >99% taken by the SDGDLMF using almost exclusively gillnets.

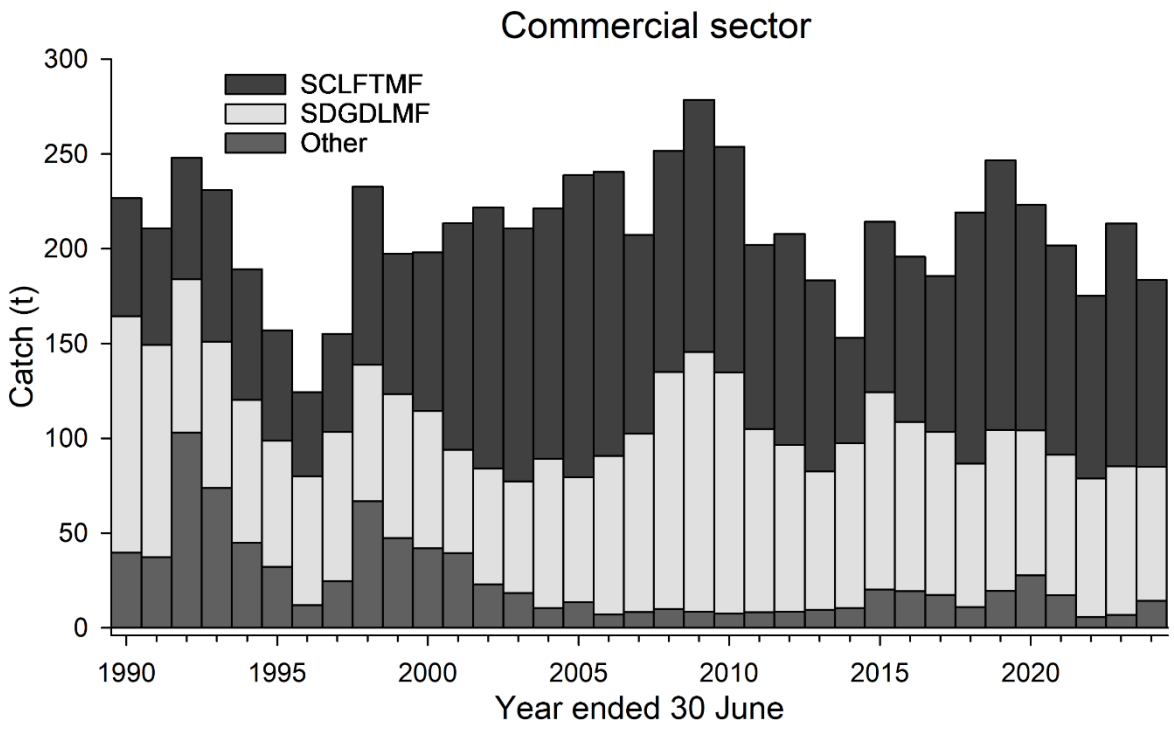
Recreational sector

Most recreational catches of demersal species are from boat-based recreational fishing (South Coast Demersal Figure 3). The boat-based recreational harvest range for the top 10 demersal species in the SCB (representing 97% of the resource kept catch by numbers) was steady at 53 t (95% CI 36–71) in 2023-24 compared with 46 t (95% CI 26–67) in 2020-21, 59 t (95% CI 37–82) in 2017-18, 48 t (95% CI 29–68) in 2015-16, 36 t (95% CI 24–49) in 2013-14 and 49 t (95% CI 30–68) in 2011-12 (Ryan et al. 2025). The 2023-24 charter catch of 4 t is consistent with a long term catch decline in this fishery.

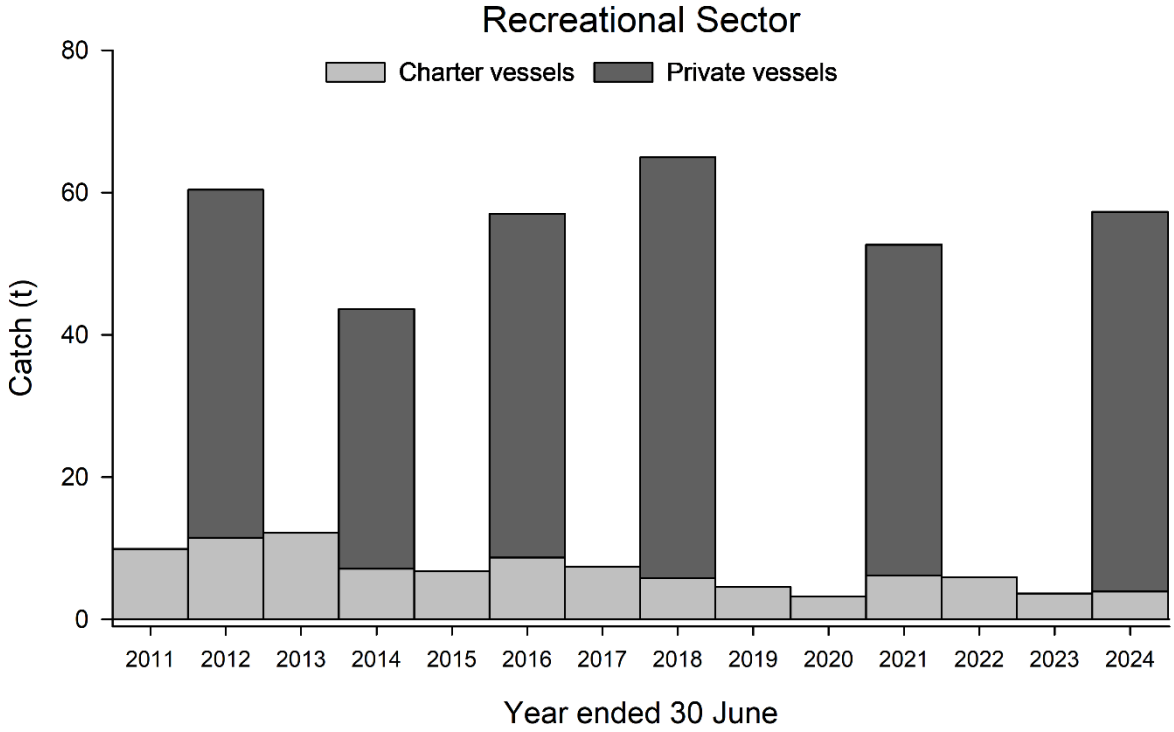
The boat based recreational harvest for snapper in 2023-24 of 12 t (95% CI 7–16) equalled the highest estimate from the previous surveys which ranged from 6 to 12 t (South Coast Demersal Figure 4). The boat based recreational harvest for Bight redfish of 17 t (95% CI 10–24) was also equal highest in the range (10 to 17 t). The blue morwong estimate of 9 t (95% CI 6–13) was in the middle of the range (7 to 12 t). Robust estimates for hapuku and Western blue groper are unavailable.



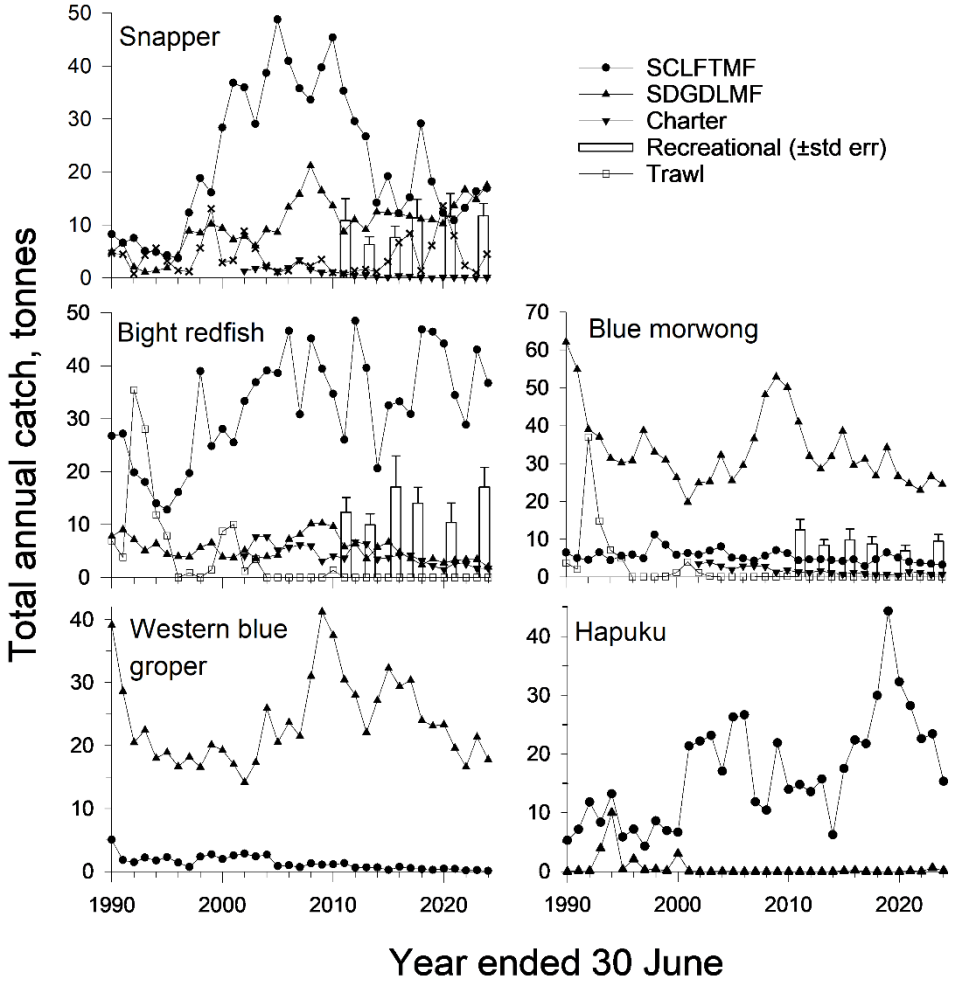
SOUTH COAST DEMERSAL FIGURE 1.
Boundaries of the South Coast Demersal Scalefish Resource.



SOUTH COAST DEMERSAL FIGURE 2.
Total commercial catch of the demersal scalefish suite in the SCB from 1989-90 to 2023-24 by the two fisheries dominating the catch (SCLFTMF and SDGDLMF). Other includes the SCEMF, the South Coast Nearshore Net Managed Fishery, and historical catches by the South Coast Trawl Fishery.



SOUTH COAST DEMERSAL FIGURE 3.
Total catch of the demersal scalefish suite in the SCB from 2010-11 to 2023-24 from charter and boat-based recreational fishing. Note that boat-based recreational catches are only shown for years with available estimates from statewide recreational fishing surveys.



SOUTH COAST DEMERSAL FIGURE 4.
Annual catches by sector for each demersal indicator species in the SCB from 1989-90 to 2023-24. Recreational catch (harvest weight) estimates for Western blue groper and hapuku were insufficiently robust to be presented. SCLFTMF includes, from before its inception, all catches by line (excluding longline) and trap. SDGDLMF includes, from before its inception, all catches by oceanic gillnet and longline. Estuarine and net includes all catches in estuaries, and oceanic net catches excluding gillnet. For clarity negligible catches by some sectors for some species are omitted.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Demersal species on the south coast are typically long lived (≥24 years), making them inherently vulnerable to overfishing. The SCB snapper genetic population structure exhibits an isolation by distance configuration with a temporal and spatial discontinuity near Esperance (Bertram et al., 2022). Bight redfish in southern WA comprise a single genetic stock, but there is some adult population separation between southwest WA and the Great Australian Bight (GAB) based on otolith chemistry. The stock structure of the other 3 indicator species is less well known.

SCDSR (Inadequate)

Snapper (Inadequate)

Snapper are long lived with a maximum observed age in the SCB of 40.3 years. Catch-at-age sampling undertaken from 2012-2014 and 2019 showed the rate of fishing mortality (*F*) increased from 0.12 yr^{-1} to 0.14 yr^{-1}, respectively, both estimates breaching the threshold (but not limit) level. Over the same period the estimate of spawning stock relative to unfished levels fell from 0.23 to 0.22, between threshold and limit reference levels. Considering all lines of evidence, snapper in the SCB is classified as **inadequate** with a **high** risk to sustainability.

Bight redfish (Inadequate)

Bight redfish are exceptionally long lived with a maximum observed age of 84.6 years. Catch-at-age sampling undertaken from 2012-2014 and 2019 showed *F* increased from 0.06 yr^{-1} (breaching threshold) to 0.08 yr^{-1} (breaching limit). Over the same period the estimate of spawning stock relative to unfished levels fell from 0.31 yr^{-1} (above threshold) to 0.27 yr^{-1} (between threshold and limit). Considering all lines of evidence Bight redfish in the SCB is classified as **inadequate** with a **high** risk to sustainability.

Hapuku (Sustainable-Adequate)

Hapuku are very long lived (maximum observed age in WA is 52 years) with an extended pelagic juvenile stage (3-5 years) followed by demersal settlement along the continental shelf edge to depths of about 150 – 500 m, when they are immediately recruited to the fishery. The pelagic phase facilitates long distance recruitment for hapuku. The SCB stock has a spatially complex age composition, likely due to habitat choice at the time of demersal settlement, as the bioregion has a series of steeply sloping canyons intersecting the shelf edge, with intermittent localised nutrient upwelling and patchily distributed zones of high benthic productivity. Catch samples appear unrepresentative of the population age structure.

A biomass dynamics model applied to line-based catch rates from 2020-21 indicates that overfishing may be occurring but that the stock is not currently overfished, with the ratio of biomass to B_{MSY} at 1.30, above the target reference level. However, there was some uncertainty in the model. Considering all lines of evidence hapuku in the SCB is classified as **adequate** with a **moderate** risk to sustainability.

Blue morwong (Sustainable-Adequate)

Blue morwong are long lived with a maximum recorded age of 24.8 years. They do not become fully selected by the gillnets until a relatively large size, particularly so for females which attain a smaller size than males. Catch rates in the SDGDLMF indicate a stable abundance since at least 2010-11, except for a decline in the last year observed (2021-22). A revised assessment of SDGDLMF catch-at-age data sampled from 2012 to 2014 showed estimates of $F_{females}$ = 0.13 yr^{-1} (below threshold) and F_{males} =0.21 yr^{-1} (between threshold and limit). The estimate of combined sexes spawning stock relative to unfished levels at that time was 0.39, above threshold and close to target. Considering all lines of evidence, blue morwong in the SCB is classified as **adequate** with a **moderate** risk to sustainability.

Western blue groper (Inadequate)

Western blue groper is a protogynous hermaphrodite (some change sex from female to male) with exceptional longevity (up to 71 years), late onset of sexual maturity (~17 years) and very late sex change (~35 years). A biomass dynamics model applied to SDGDLMF catch rates from 2021-22 indicated stock biomass had fallen below B_{MSY}, the threshold reference level, but a breach of the limit unlikely. A revised assessment of SDGDLMF catch-at-age data sampled from 2013 to 2014 showed F= 0.04, breaching the threshold (but not limit) level. Revised estimates of spawning stock relative to unfished levels at that time for female, male and sexes combined were 0.49, 0.24 and 0.35, being above target, between threshold and limit, and between target and threshold, respectively. Using a precautionary approach given the unknown potential for sperm limitation, the spawning stock assessment is therefore based on males. Considering all lines of evidence, Western blue groper in the SCB is classified as **inadequate** with a **high** risk to sustainability.

BYCATCH AND LISTED SPECIES INTERACTIONS

Bycatch

Line fishing for demersal species in the SCB using baited hooks is selective for demersal scalefish, with only low levels of catches of species that are not retained, representing a minor impact to their population. Therefore, the risk to bycatch is assessed as **low**.

Listed species

Mandatory reporting of listed species interactions by the SCLFTMF and charter fishers suggest interactions are relatively rare. Zero were reported in 2023-24. The risk level from interactions with listed species is therefore assessed as **negligible**.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

Line fishing using baited hooks has minimal physical impact on the benthic environment and therefore the risk to habitats is assessed as **negligible**.

Ecosystem

An analysis of a 30-year time series of commercial fishery data showed no reduction in mean trophic level in the finfish catches within the SCB (Hall and Wise 2011), suggesting a **low** ecosystem risk.

SOCIAL AND ECONOMIC OUTCOMES

Social

The SCDSR provides a moderate level of social amenity to recreational fishing and diving. There is currently a **medium** level of risk to these values.

An estimated 753,000 WA residents went recreational fishing in 2023-24 (DPIRD 2024). The recreational fishing participation rate in WA (26%) is higher than the Australian average (21%) (Moore et al. 2023). The boat-based recreational fishing effort in the SCB was steady in 2023-24 (95% confidence interval 17,743 - 27,917 vessel days) compared with 2020-21 (19,361 - 32,411 vessel days).

Economic

In 2023-24 a total of 36 vessels operating in the SCLFTMF reported taking demersal scalefish. Employment is also generated by seafood processors, markets, and restaurants in the south coast region and elsewhere. The estimated gross value of product (GVP) for the SCDSR in 2023-24 was $1-5 million, and risk to this level of economic return is assessed as **medium**.

Five tour operator licensees recorded demersal scalefish catch during 2023-24, generating economic value and employment.

Recreational fishing in WA contributes over 9,000 jobs and over $1.1 billion per year to the economy and supports economic activity in many regional locations (Moore et al. 2023). This includes value derived from boat-based fishing for demersal species in the SCB.

GOVERNANCE SYSTEM

Harvest Strategy

A draft Harvest Strategy is currently being developed for the SCDSR and is intended to be part of a statewide Harvest Strategy for demersal scalefish. The primary ecological objective of the SCDSR Harvest Strategy is to maintain spawning stock biomass of each retained species above B_{MSY}, to maintain high productivity, and ensure the main factor affecting recruitment is the environment.

The commercial SCLFTMF is managed through input controls under a formal management plan. The SDGDLMF and SCEMF continue to operate under their respective management plans.

The recreational sector is managed through a range of input and output controls such as the requirement for a Recreational Fishing from Boat Licence, daily bag and size limits authorised under the *Fish Resources Management Act 1994* (WA) and *Fish Resources Management Regulations 1995* (WA).

Allowable Catch Tolerance Levels

There are currently no formal allowable catch tolerance levels for commercial and recreational fisheries. These levels will be considered through the development of the new Harvest Strategy.

Management Initiatives

A statewide demersal scalefish Harvest Strategy is under development and will guide the management response to the high-risk rating for SCDSR indicator species. DPIRD will also engage key stakeholders to review the latest science and provide input to the response.

EXTERNAL DRIVERS

Climate change

South Coast Demersal Scalefish Table 1 provides a summary of the climate vulnerability risk assessment outcomes for the indicator species of the SCDSR.

For pink snapper stocks, warming waters and more frequent MHW conditions could lead to changes to spawning period. Projected weakening of the Leeuwin Current could also lead to reduced southward dispersal during winter spawning. Productivity of nursery areas (estuaries, nearshore embayments) could also be negatively impacted by reduced rainfall and habitat loss in the future.

Hapuku, although a deep-water species, has an extended 4-year pelagic juvenile phase. Blue morwong and Western blue grouper are largely found in shallow coastal waters. These stocks are also likely to be negatively impacted by increasing SSTs and MHW events with a high degree of uncertainty around availability of prey and diet species. Bight redfish is another deep-water species with larval supply from the WCB which may be impacted by a weaker Leeuwin Current in the future.

Thus, the assessment deemed Hapuku at **medium** risk while all remaining indicator species to be at **high** risk from climate change.

SOUTH COAST DEMERSAL SCALEFISH TABLE 1.
Summary of the climate vulnerability risk assessment output for the indicator species in the SCDSR.

Indicator species	Sensitivity	Exposure	Climate Change risk
Pink snapper	Medium	Negative effects are possible	High
Bight redfish	High	Negative effects are possible	High
Hapuku	Medium	Negative effects are unlikely	Medium
Western blue groper	Medium	Negative effects are possible	High
Blue morwong	Medium	Negative effects are possible	High

Other

Bight redfish are an important component of the catch of the Great Australian Bight Trawl Sector, an Australian Government managed fishery permitted to operate across southern Australia as far west as Cape Leeuwin. The Bight redfish catch in 2023-24 was 209 t from the Commonwealth's Total Allowable Catch in 2023-24 of 959 t (Moore et al. 2024). The large majority was from continental shelf edge waters off South Australia. The stock in that region was classified as not overfished and not subject to overfishing, but they are authorised to fish further westward and

include a higher proportion of the SCDSR in their catch.

A marine park is being implemented by the Department of Biodiversity, Conservation and Attractions in State waters (out to 3 nautical miles) from Bremer Bay to the South Australian border that prohibits fishing in some areas. This may trigger a spatial re-distribution of fishing effort to deeper waters where demersal species are more prevalent.

Other external drivers represent a **medium** risk.

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NORTHERN INLAND BIOREGION



NORTHERN INLAND BIOREGION

ABOUT THE BIOREGION

The Northern Inland bioregion (NIB), which encompasses the northern half of WA, is predominantly a desert area, with few permanent water bodies. As a result of occasional summer cyclones, the various river systems flow at flood levels for short periods before drying out to residual waterholes. The only exceptions to this are purpose-built dams which trap rainfall for water supply purposes and irrigation.

The only significant fishable water body in the region is Lake Argyle, created by the damming of the Ord River. The continuous release of water from the dam has resulted in the Ord River maintaining its freshwater fish populations year round, as does the lake, where some freshwater native fish populations have expanded (e.g. silver cobbler).

Populations of reptiles, such as the protected freshwater crocodile, are also supported by the expanded food chain of native fish, and are thought to have increased significantly from their original billabong-based populations.

SUMMARY OF ACTIVITIES POTENTIALLY IMPACTING THE BIOREGION

Commercial Fishing

The main water body in the NIB, Lake Argyle, is a man-made lake in the East Kimberley that was formed in 1973 following the completion of the Ord River Dam. The lake supports WA's only commercial freshwater fishery, the Lake Argyle Silver Cobbler Fishery (LASCF). In Lake Argyle, the population of silver cobbler (*Neoarius midgleyi*) increased after the Ord River Dam was first filled to capacity in the 1974 wet season. The LASCF uses gillnets to specifically target this species.

Recreational Fishing

Relative to the commercial catch, the total recreational catch of silver cobbler is likely to be small but is currently unable to be estimated. A small recreational and charter boat fishery for this species exists in Lake Argyle with fishing activities peaking during the dry season (winter months). The 2020-21 statewide survey of boat-based recreational fishing in WA[1] indicated that silver cobbler are targeted mainly by hook and line fishing, with the majority of fish being released after capture. A single charter vessel has operated in Lake Argyle since 2001, with very few silver cobbler being retained.

Lake Argyle and its associated river system also support recreational fishing for cherabin (freshwater prawns). Limited surveys of recreational fishing in this region have been completed and shore-based and riverine recreational catches are unavailable at this time.

Aquaculture

Aquaculture development operations in the region have previously included the small-scale production of barramundi from cage operations in Lake Argyle, and the small pond production of redclaw crayfish in the Ord River irrigation system around Kununurra.

Tourism

A small scale tourism industry operates on Lake Argyle, with boat operators, helicopter and plane flights, fishing, canoeing and bird watching. There is recreational boating usage on the lake including water skiing and swimming. Since 2012 the WA Government has funded a stock enhancement project at Lake Kununurra to create an impoundment based, recreational barramundi fishery in the region.

Other Factors

While Lake Argyle was created to supply water for irrigation and hydroelectric power generation in the Ord River Irrigation Area, it is also a source of water for mining operations, town water supplies and a large number of industrial operations.

BIOREGIONAL SPECIFIC ECOSYSTEM MANAGEMENT

Within each bioregion there are a range of management measures that have been implemented to manage the potential impact of activities (See the Ecosystem Management Section for an overview).

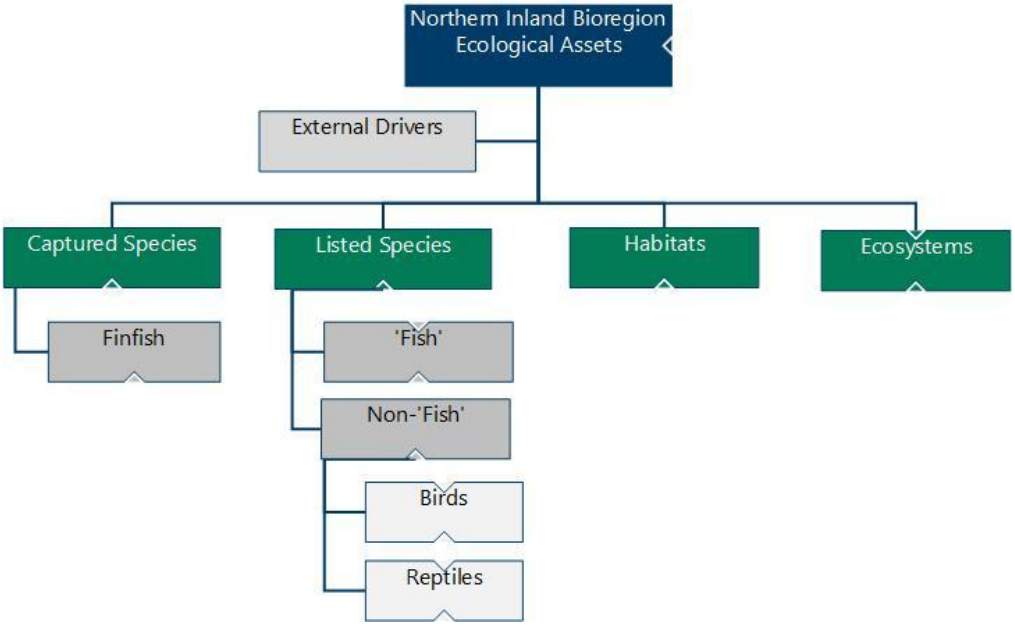
As one of the key ecosystem risks is the introduction of non-endemic species, DPIRD has an approval process in place for assessing proposals to translocate live non-endemic fish species into and within WA. This minimises the environmental risks to freshwater ecosystems in the NIB associated with this activity. The introduced cane toad (*Rhinella marina*) has also

1Ryan KL, Lai EKM, Smallwood CB. 2022. Boat-based recreational fishing in Western Australia 2020/21. Fisheries Research Report No. 327 Department of Primary Industries and Regional Development, Western Australia. 221p.

been reported from around Kununurra and Lake Argyle, posing a major threat to the system.

ECOSYSTEM MONITORING AND STATUS

In order to assess the adequacy of management arrangements aimed at ensuring sustainability of the ecological assets within the NIB, DPIRD must identify and monitor trends in the condition of these resources. This is achieved through the application of an Ecosystem Based Fisheries Management (EBFM) framework to identify, in a hierarchical manner, the key ecological resources that require ongoing monitoring and assessment. (See How To Use This Volume section for more details). The key ecological assets in the NIB are identified in Northern Inland Overview Figure 1 and their current risk status reported on in the following sections.



NORTHERN INLAND OVERVIEW FIGURE 1.
Component tree showing the ecological assets identified and separately assessed for the Northern Inland Bioregion.

External Drivers

External factors include factors impacting at the bioregional level that are likely to affect the ecosystem as a whole and may not fall within the direct control of Fishery legislation (e.g. climate change). An understanding of these factors, which are typically environmental (e.g. cyclones, floods and droughts) is necessary to fully assess the performance of the ecological resource. The main external drivers identified with potential to affect the NIB include climate change, and introduced pests and diseases.

Climate

The NIB is predicted to have relatively minor impacts from climate change in the coming decade, compared to more southerly Bioregions.

Captured Species

FINFISH

Captured Species	Aquatic zone	Ecological Risk
Native Finfish	Freshwater	LOW

The LASCF operates throughout Lake Argyle using gillnets to target silver cobbler (*N. midgleyi*). As silver cobbler is essentially the only retained species, the main impacts of the fishery on the ecosystem are likely to be due to the removal of individuals of this species. The fishery removes only a small portion of the overall biomass of this species within the lake.

Listed Species

Fish

Listed Species	Aquatic zone	Ecological Risk
Fish	Freshwater	LOW

The stocks of native freshwater fishes are not under threat.

Non-Fish

Listed Species	Aquatic zone	Ecological Risk
Birds and Reptiles	Freshwater	LOW

There is an incidental capture of freshwater or Johnston's crocodiles (*Crocodylus johnstoni*) and some tortoises by the LASCF. Where practicable freshwater crocodiles are released alive, however, there is an incidental mortality of some individuals that does not impact the ongoing sustainability of the species. It should be noted that Lake Argyle is an impoundment and despite incidental capture, the population of crocodiles in that water body is considerably larger than it was in its pre-impoundment state.

Habitats and Ecosystems

Category	Aquatic zone	Current Risk Status
Habitats	Freshwater	NEGLIGIBLE
Ecosystems	Freshwater	NEGLIGIBLE

The NIB occurs north of Shark Bay (27˚S), from the coastline to the Northern Territory border. Within the bioregion are a series of freshwater rivers and wetlands which have native fringing vegetation and aquatic plants, which provide habitat for birds, frogs, reptiles, native fish and macroinvertebrates.

Lake Argyle, with its large capacity, deep water and rapidly fluctuating water levels, provides a range of habitats not available at the adjacent Lake Kununurra or downstream Ord River. Most of the eastern and southern shoreline of Lake Argyle is bare sediment, with highly variable water levels preventing the establishment of plants. There are areas of emergent sedges (*Eleocharis brassii*), as well as submerged aquatic plants such as *Myriophyllum spp*., *Najas tenuifolia* and *Potamogeton sp*. However, distribution is limited to localised patches where large weed mats can form. The western and northern shorelines are generally steeper and consist of rock exposed by wave action.

Gillnets have relatively low habitat impacts and fishers actively avoid fishing in areas where the nets may become entangled on submerged vegetation.

FISHERIES

NORTHERN INLAND LAKE ARGYLE FINFISH RESOURCE STATUS REPORT 2025

F. Trinnie, C. Skepper, S. Newman, A. Moses

OVERVIEW

The Lake Argyle Silver Cobbler Fishery (LASCF) is the only commercial freshwater fishery in WA. This gillnet fishery is located in the artificially created Lake Argyle in the north-eastern Kimberley (Lake Argyle Silver Cobbler Figure 1) and specifically targets silver cobbler (*Neoarius midgleyi*).

The LASCF is managed primarily through input controls in the form of limited entry, seasonal and spatial area closures, and gear restrictions. Catches of barramundi (*Lates calcarifer*) are not permitted.

A small recreational and charter boat fishery also operates in Lake Argyle and surrounding waters for silver cobbler and barramundi, with fishing activities peaking during the dry season (winter months). Recreational fishers can also fish in all creeks and tributaries that feed into the Ord River and Lake Argyle.

Customary catch has not been assessed but anecdotally is low.

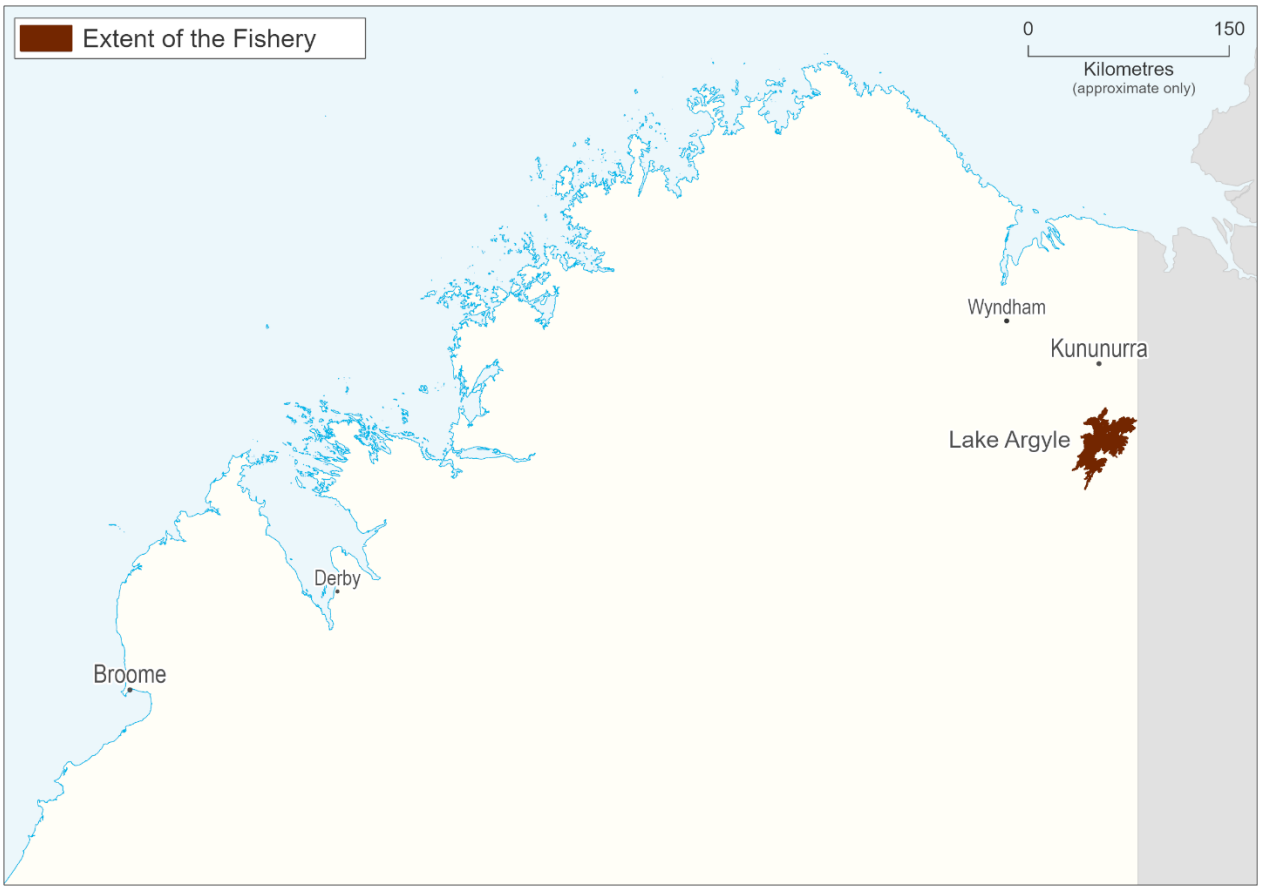
SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery (93–180 t)	Total Catch 2024: Not reportable.	Acceptable
Recreational fishery (NA)	Total Catch 2024: NA	Acceptable
EBFM		
Indicator species		
Silver Cobbler	Low risk: Below target commercial catch range (2024)	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Low risk	Adequate
Habitat	Negligible risk	Adequate
Ecosystem	Negligible risk	Adequate
Economic (GVP $ <1 m)	Low risk	Acceptable
Social (low amenity)	Low risk	Acceptable
Governance	Medium risk	Acceptable
External Drivers – Climate	Medium sensitivity	
External Drivers – Other	Low risk	Acceptable

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Commercial catch	2023 LASCF Total Catch: Not reportable*	2024 LASCF Total Catch: Not reportable*	Catches reported for calendar year.
Commercial catch (indicators)	Silver cobbler: Not reportable*	Silver cobbler: Not reportable*	Catches reported for calendar year.
Commercial effort (block days)	LASCF: Not reportable*	LASCF: Not reportable*	Effort reported for calendar year.
Recreational catch	Unknown	Unknown	Surveys have not been conducted in Lake Argyle
Recreational effort	Unknown	Unknown	Surveys have not been conducted in Lake Argyle
Charter catch	Negligible	0 t	
Charter effort	Negligible	0 days	
Beach price	2022-23 Silver cobbler: $5.40/kg	2023-24 Silver cobbler: $5.27/kg	Domestic market supply and demand.
Listed species interactions	Cormorants (Total): 15 (5 RA, 10 D) Australasian darter (Total): 1 (1 D) Freshwater crocodiles (Total): 24 (4 RA, 20 D) Freshwater turtle (Total): 18 (4 RA, 14 D)	Cormorants (Total): 9 (3 RA, 6 D) Freshwater crocodiles (Total): 13 (2 RA, 11 D) Freshwater turtle (Total): 18 (6 RA, 12 D)	Interactions are considered low risk.

Key to table: RA = Released Alive, D = Dead, U = Fate Unknown. GVP is presented on a calendar year basis. *Not reportable as there are less than 3 active authorisation holders.



LAKE ARGYLE SILVER COBBLER FIGURE 1.
Location of the Lake Argyle Silver Cobbler Fishery in north-western Australia illustrating the remoteness and extent of the fishery.

CATCH AND LANDINGS

The commercial fishery for silver cobbler commenced in 1979 following damming of the Ord River in 1971 and subsequent creation of Lake Argyle. Annual catches of silver cobbler were <41 t from 1979 to 1983 (Lake Argyle Silver Cobbler Figure 2). Annual catches increased from 1984 to the historical peak of 231 t in 2000, and then steadily declined to a low of <50 t by 2009 following reductions in effort. Annual catches since 2009 have fluctuated between 41 t and 119 t (Lake Argyle Silver Cobbler Figure 2).

No estimates of recreational catches in Lake Argyle are available. The statewide boat-based recreational fishing surveys provides coverage in marine and coastal waters. Given the isolated location of Lake Argyle, recreational catch is low (<1 t). No charter vessels reported operating in Lake Argyle in 2024.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Silver Cobbler (Sustainable-Adequate)

Data for assessing the status of the silver cobbler stock in Lake Argyle are derived from the catch and effort returns provided by industry. These data are compiled annually and used as the basis for this assessment. Biological data on the species' specialised reproductive behaviour and low fecundity are used to interpret these assessments. There remains uncertainty around the biological parameters (e.g. longevity, growth rate) for silver cobbler.

The level of catch in the fishery in 2024 is below the acceptable catch range. This level of catch is considered acceptable as the effort in the fishery is relatively low, and the catch rate is at the higher end of the historical range. The lower level of catch in the fishery in recent years is likely to have allowed the spawning stock biomass to increase, such that the stock biomass is unlikely to be depleted, recruitment is unlikely to be impaired and current levels of fishing mortality (catch) are unlikely to cause the stock to become recruitment impaired. On the basis of the evidence provided above, the silver cobbler stock is classified as **sustainable-adequate**.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Bycatch

As a result of the large mesh size used relative to the species present in the lake, there is minimal fish by-catch in this fishery. **Negligible** risk.

Listed species

Although Lake Argyle is an artificially created aquatic environment, it is now designated as a wetland of international importance under the Ramsar Convention. There is an incidental capture of cormorants (*Phalacrocorax sp.*), Australasian darters (*Anhinga novaehollandia*), freshwater crocodiles (*Crocodylus johnstoni*), and red-faced turtles (*Emydura victoriae*) (see Catch and Effort Summary Statistics table). Where practicable, any catches of cormorants, darters, freshwater crocodiles, and red-faced turtles are released alive, and based on reports by fishers, only very low levels of capture occur. Overall, the level of interactions with protected species is considered a **low** risk.

HABITAT AND ECOSYSTEM INTERACTIONS

The gillnets used in this fishery have minimal impact on the habitat. This results in a **negligible** risk to the overall ecosystem from the fishery.

SOCIAL AND ECONOMIC OUTCOMES

Social

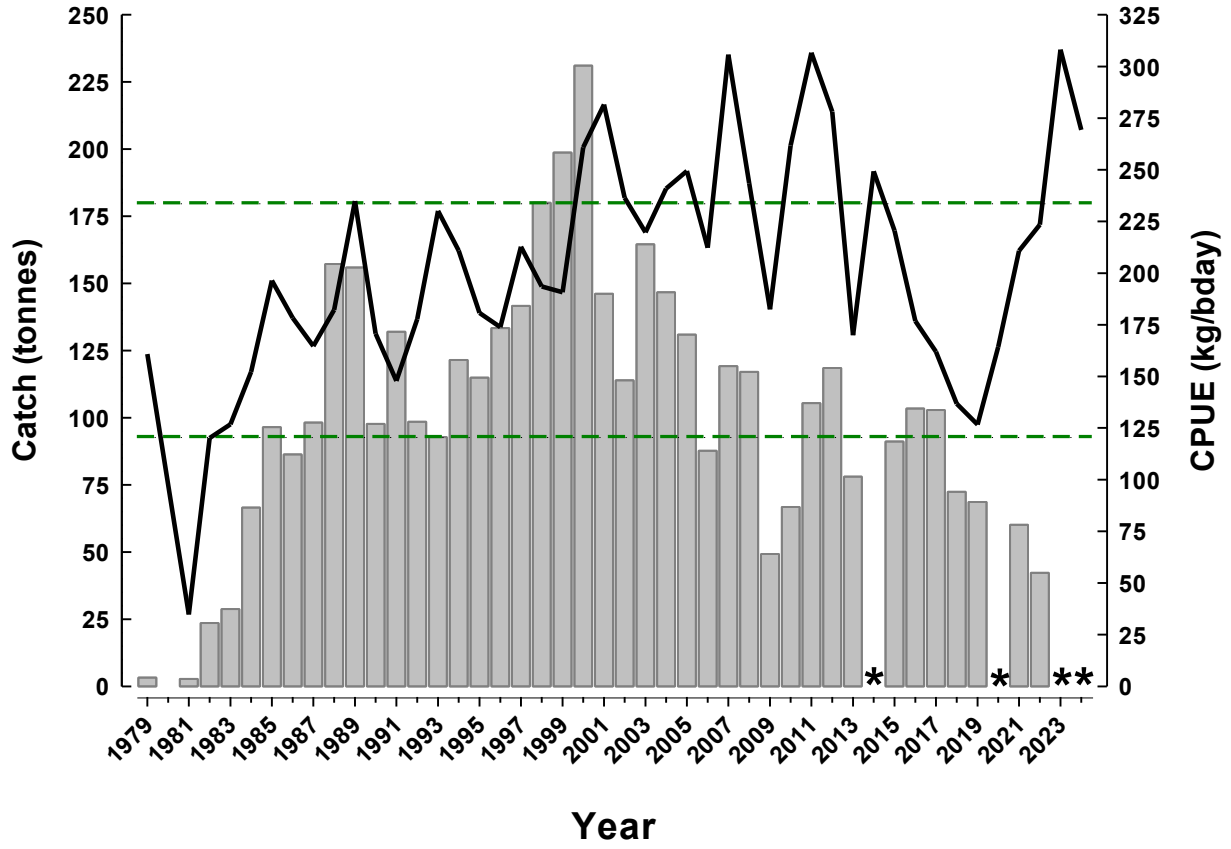
During 2024, only 1 vessel, under 1 licence, fished in the LASCF, resulting in 2 people being directly employed in the fishery, which operates from 1 January to 31 October each year. Additional employment occurs throughout the fish processing and distribution networks. The social risk is considered **low**.

An estimated 753,000 WA residents went recreational fishing in 2023-24 (DPIRD 2024). The recreational fishing participation rate in WA (26%) is higher than the Australian average (21%) (Moore et al. 2023). There is limited recreational fishing in Lake Argyle providing some social amenity (level 2).

Economic

Estimated Gross Value of Production to commercial fishers for 2024 is <$1 million (level 1). The economic risk is considered **low**.

Recreational fishing in WA contributes over 9,000 jobs and over $1.1 billion per year to the economy and supports economic activity in many regional locations (Moore et al. 2023). This includes value derived from recreational fishing in the NIB.



LAKE ARGYLE SILVER COBBLER FIGURE 2.
The annual catch and catch per unit effort (CPUE, kg block day^{-1}) for silver cobbler in the Lake Argyle Silver Cobbler Fishery from 1979 to 2024. The lower and upper bounds of the target commercial catch range (93–180 t) are shown by the green lines. *Not reportable as there are less than 3 active authorisation holders.

GOVERNANCE SYSTEM

Harvest Strategy

The harvest strategy for silver cobbler in the LASCF is based on a constant exploitation approach where the annual commercial catches of silver cobbler may vary proportional to stock abundance within the target catch range. The target commercial catch range is based on catch information from 1990 to 1998, a period when the fishery was stable, and levels of exploitation were considered to have been sustainable. The catch range is specified as the values within the minimum and maximum catches observed during the reference period.

Annual Catch Tolerance Levels (Acceptable)

The level of catch in the fishery in 2024, is well below the target commercial catch range of 93–180 t. The low level of catch in the fishery in recent years is likely to have allowed the stock to increase and it is thus considered **acceptable**.

Management Initiatives

The Lake Argyle Silver Cobbler Fishery Ecological Code of Practice will be reviewed and updated by DPIRD and industry as necessary.

EXTERNAL DRIVERS

Climate

Climate change and climate variability has the potential to impact fish stocks in a range of ways. However, it is unclear how climate change may affect the sustainability risks to Northern Inland Lake Argyle finfish resource. Silver cobbler in the Northern Inland Lake Argyle finfish resource is considered to have a **medium** sensitivity to climate change.

Other

Several external factors may impact on the silver cobbler biomass. These include the introduced cane toad (*Rhinella marina*), which has been observed in Lake Argyle and may affect prey and predators of silver cobbler.

The population of the freshwater crocodile has been increasing (Webb and Manolis, 2010) and is likely to impact silver cobbler biomass in the form of predation and competition for food. The

external drivers currently pose a **low** risk to the stock.

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SOUTHERN INLAND BIOREGION



SOUTHERN INLAND BIOREGION

ABOUT THE BIOREGION

The Southern Inland bioregion (SIB) contains WA's only natural permanent freshwater rivers, which are fed by rainfall through winter and spring. These permanent rivers are restricted to the high rainfall south-west corner of WA, and flow through native forest areas. Some of the rivers are more saline in their upper reaches owing to the effects of agricultural clearing of the native vegetation.

Across the remainder of the SIB, rivers flow primarily during the winter, with occasional summer flows from inland, and rain-bearing depressions resulting from decaying cyclones. Most large fresh water bodies are man-made such as drinking water dams, irrigation water supply dams, or stock-feeding dams.

There is a diverse variety of natural water bodies in this region ranging from numerous small springs and billabongs, up to Lake Jasper, the largest permanent freshwater lake in the South West region, with 440 ha of open water up to 10 m deep. In combination, these diverse natural and man-made permanent waterbodies provide valuable habitat for fish and freshwater crustaceans during the summer months. Some natural salt lakes also occur but these generally dry out over summer each year.

These natural freshwater rivers and man-made lakes are highly valued by the community for a variety of recreational pursuits.

SUMMARY OF ACTIVITIES POTENTIALLY IMPACTING THE BIOREGION

Commercial Fishing

There are currently no commercial fisheries in the SIB.

Recreational Fishing

The SIB provides significant recreational fishing opportunities. The major species fished recreationally are native marron, trout (both rainbow and brown trout) which are produced and stocked by DPIRD into public dams and rivers, and feral redfin perch, an introduced, self-perpetuating species. The native freshwater cobbler is also taken in small numbers.

Aquaculture

Aquaculture development in the SIB is dominated by the farm dam production of yabbies, which can reach approximately 200 t annually depending on rainfall and market demand. Semi-intensive culture of marron in purpose-built pond systems provides around 60 t per year and has some potential to expand.

Rainbow trout have historically been the mainstay of finfish aquaculture production in this region, originating from the heat tolerant stock maintained at DPIRD's Pemberton Freshwater Research Centre. Silver perch are also grown in purpose-built ponds to supply local markets.

In 2023, the WA Government provided funding, over 4 years, to re-furbish the Pemberton facility and boost research and development in the region. This funding will support the continued expansion of the freshwater trout fishery and the continued maintenance of the Albany Aquaculture Park and Albany Shellfish Hatchery to fuel the growth of shellfish aquaculture on the south coast.

Tourism

The bioregion is a popular tourist destination which is known for its national parks and wineries. Recreational fishing in the region's lakes and rivers is also important for both residents and tourists.

BIOREGIONAL SPECIFIC ECOSYSTEM MANAGEMENT

Within each bioregion there are a range of management measures that have been implemented to manage the potential impact of activities (See the Ecosystem Management Section for an overview). Management measures specific to the SIB are detailed below.

The conservation of the 11 species of freshwater native fishes in freshwater ecosystems in the south west of WA is an issue for DPIRD. Most of these species are only found in WA, and all have had major contractions in their distribution as a result of habitat loss. Many species now only consist of small, fragmented populations, and half are now listed as threatened. These species are under pressure from feral fish populations, migration barriers (bridges and dams), and urban land-use development resulting in unfiltered storm water discharge from roads into natural waterbodies.

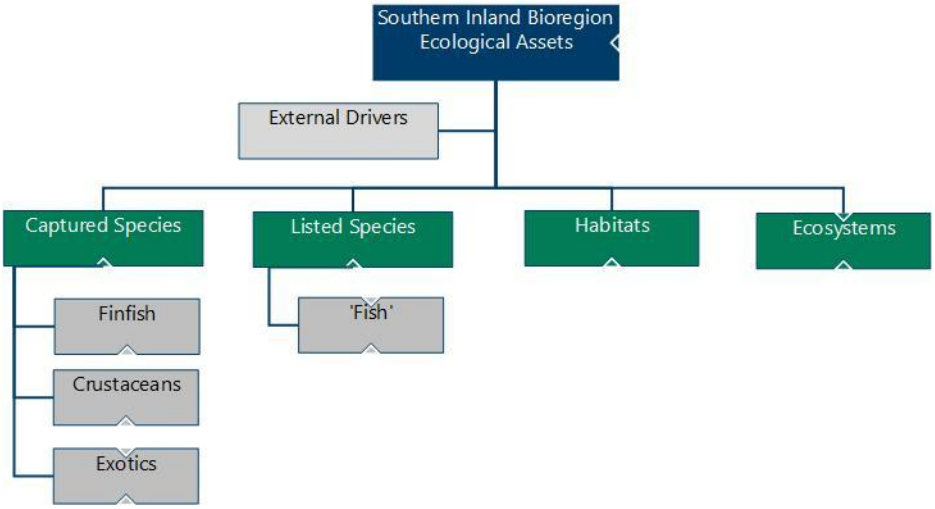
DPIRD undertakes a risk-based approach to managing the spread of feral fish in the bioregion. To support this, it has developed a community based reporting tool and education program to support its own routine surveillance activity. Information on aquatic pest distribution is used to prioritise management actions aimed at limiting

the impact and preventing the spread of high risk pest fish within the WA's freshwater ecosystems.

A key element of reducing the risk of feral fish is the approval process that DPIRD has in place for assessing proposals to translocate live non-endemic fish species into and within WA. This minimises the environmental risks to freshwater ecosystems associated with this activity.

ECOSYSTEM MONITORING AND STATUS

In order to assess the adequacy of management arrangements aimed at ensuring sustainability of the ecological assets within the SIB, DPIRD must identify and monitor trends in the condition of these resources. This is achieved through application of an Ecosystem Based Fisheries Management (EBFM) framework to identify, in a hierarchical manner, the key ecological resources that require ongoing monitoring and assessment (see How to Use This Volume section for more details). The key ecological assets in the SIB are identified in Southern Inland Ecosystem Management Figure 1, and their current risk status reported on in the following sections.



SOUTHERN INLAND ECOSYSTEM MANAGEMENT FIGURE 1
Component tree showing the ecological assets identified and separately assessed for the Southern Inland Bioregion.

External Drivers

External drivers include factors impacting at the bioregional level that are likely to affect the ecosystem as a whole and may not fall within the direct control of fisheries legislation (e.g. climate change). An understanding of these factors, which are typically environmental (e.g. floods and droughts) is necessary to fully assess the performance of the ecological resource. The main external drivers identified with potential to affect the SIB include climate (i.e. a drying climate), habitat loss and introduced pests and diseases.

Climate

The south west of WA is predicted to be heavily influenced by the impacts of climate change (e.g. declines in rainfall, increasing sea temperatures). Further reductions in rainfall are expected for the SIB.

Captured Species

Native Finfish

Captured Species	Aquatic zone	Ecological Risk
Native Finfish	Freshwater	HIGH (non-fishing)

The abundance and distribution of most native fish, include the native cobbler (*Tandanus bostockii*), have been severely impacted due to land and water management practices. These pressures have led to widespread fragmentation of native fish populations (i.e. local extinctions). Competition with feral fishes has also decreased the abundance of native fishes in freshwater systems in the SIB.

Native Crustaceans

Captured Species	Aquatic zone	Ecological Risk
Native Crustaceans	Freshwater	HIGH (non-fishing)

The Recreational Marron Fishery has its own licence. The abundance of smooth marron (*Cherax cainii*) has been monitored at regular intervals for a number of decades. The fishery

arrangements have been through a number of significant updates to ensure that the catch is sustainable. The biggest threat to these stocks is from non-fishing causes, especially due to reduced rainfall and habitat loss.

Exotics

Captured Species	Aquatic zone	Ecological Risk
Exotics (stocked)	Freshwater	LOW

Anglers require a south-west freshwater angling licence to capture trout, native cobbler, and other freshwater angling species. Trout have been stocked into a limited number of streams in WA for decades. The trout are produced from the Pemberton Freshwater Research Centre and are tolerant of warmer water temperatures. Research activities are aimed at improving the growth rate by increasing the number of sterile fish produced at the Centre. Trout are unlikely to breed naturally in local conditions. Combined with a decreased number of locations stocked with trout, this has reduced this ecological risk score.

Listed Species

Fish

Listed species	Ecological Risks
Fish*	SEVERE (non-fishing)

*Crustaceans are classified as fish under the FRMA 1994

Listed freshwater species in the SIB are subject to the same non-fishing ecological pressures as noted under Native Finfish.

Hairy marron (*Cherax tenuimanus*) are only found in the upper reaches of Margaret River and are a totally protected species. The largest negative impact on the hairy marron has been the illegal introduction of the recreationally fished smooth marron (*C. cainii*), which has outcompeted the hairy marron.

Habitats and Ecosystems

Habitat / Ecosystem	Aquatic zone	Current Risk Status
Habitat	Freshwater	MEDIUM (non-fishing)
Ecosystems	Freshwater	MEDIUM (non-fishing)

The community structure of most river and lake systems in this bioregion are substantially altered from historical levels. A survey of the main areas found that 24% no longer have any fish and less than 5% have native fish populations, the rest contain feral species.

In addition, there is concern that climate change may lead to a drying climate that could potentially alter the habitats and ecosystems in the bioregion. Given that these lakes are predominantly groundwater fed, a significant contributing factor is the over-extraction of water to supply Perth's increasing human population. This is causing the ground water levels to drop and is recognised as being unsustainable for both fish and people.

FISHERIES

SOUTH-WEST RECREATIONAL FRESHWATER RESOURCE STATUS REPORT 2025

D. Yeoh, B. Hodgson, C Smallwood, A. Moses



OVERVIEW

The South-West Recreational Freshwater Resource (SWRFR) incorporates the Recreational Marron Fishery that targets smooth marron (*Cherax cainii*), and the South-West Recreational Freshwater Angling fishery (SWRFA) which targets rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), redfin (*Perca fluviatilis*), and freshwater cobbler (*Tandanus bostocki*). Both fisheries have separate recreational licences and are managed with rules around gear, bag limits, size limits, and spatial and temporal closures.

Customary catch has not been assessed but anecdotally is low.

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery	Total Catch 2024: NA	NA
Recreational marron fishery (50,000–100,000 marron)	Total Catch 2024: 82,435 marron (kept only 95% CI 74,680–90,191)	Acceptable
Freshwater angling (50,000–120,000 fish–review required due to altered stocking practices)	Total Catch 2023-24: 64,616 fish (kept and released, 95% CI 50,503–78,729)	Acceptable
EBFM		
Indicator species		
Marron	Within acceptable range (50,000–100,000) marron	Adequate
Trout (Rainbow & Brown)	NA–stocked fishery	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Severe Risk	Management Action
Habitat	Medium risk	Adequate
Ecosystem	Medium risk	Adequate
Economic (GVP)	NA	NA
Social (High amenity)	Medium risk	Acceptable
Governance	Negligible risk	Acceptable
External Drivers–Climate	High sensitivity	
External Drivers–Other	High risk	Acceptable

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Recreational catch	2022-23 Marron: 98,887 (kept only, 86,384–111,391) Fish: 64,679 (kept and released, 53,738–75,621)	2023-24 Marron: 82,435 (kept only, 74,680–90,191) Fish: 64,616 (kept and released, 50,503–78,729)	Decrease in marron catch in current season. Freshwater (FW) angling similar across years.
Recreational effort	2022-23 Marron: 32,478 days (29,746–35,211) FW Angling: 37,389 days (32,991–41,786)	2023-24 Marron: 28,272 days (26,375–30,170) FW Angling: 39,520 days (33,336–45,704)	Decrease in marron effort in current season. FW angling similar across years.
Participation	Marron: 9,134 fishers (8,700–9,568) FW Angling: 5,160 (4,950–5,371)	Marron: 8,592 fishers (8,226–8,957) FW Angling: 4,424 (4,218–4,630)	Slight decrease in current season.
Bycatch	-	-	Limited data (considered negligible).

CATCH AND LANDINGS

The most current recreational catch and effort data for this resource is for the 2023-24 fishing season.

Marron

Participation in the Recreational Marron Fishery during 2024 was 8,592 fishers (95% CI 8,226–8,957). Catch and effort for this fishery is estimated through phone-recall (2000–2021) and online-recall (2022–2024) surveys (Smallwood et al. 2024). Total fishing effort by licensed fishers in 2024 was 28,272 days (26,375–30,170; South West Recreational Freshwater Resource Figure 1A); of which 64% or 18,186 (16,538–19,833) was in rivers and 36% or 10,087 (8,681–11,492) in dams. Fishing effort peaked in 2001 and 2002, then following a decline in 2003 remained relatively stable before an increase in 2022.

The retained catch (numbers) of smooth marron, hereafter ‘marron’, by licensed fishers in 2024 was 82,435 (74,680–90,191), which was slightly lower than 2023 and similar to 2022 (South West Recreational Freshwater Resource Figure 1A). Of the 2024 catch, 67% or 54,825 (48,211–61,438) marron were caught in rivers, and 33% or 27,611 (22,394–32,828) marron caught in dams (South West Recreational Freshwater Resource Figure 1A-B).

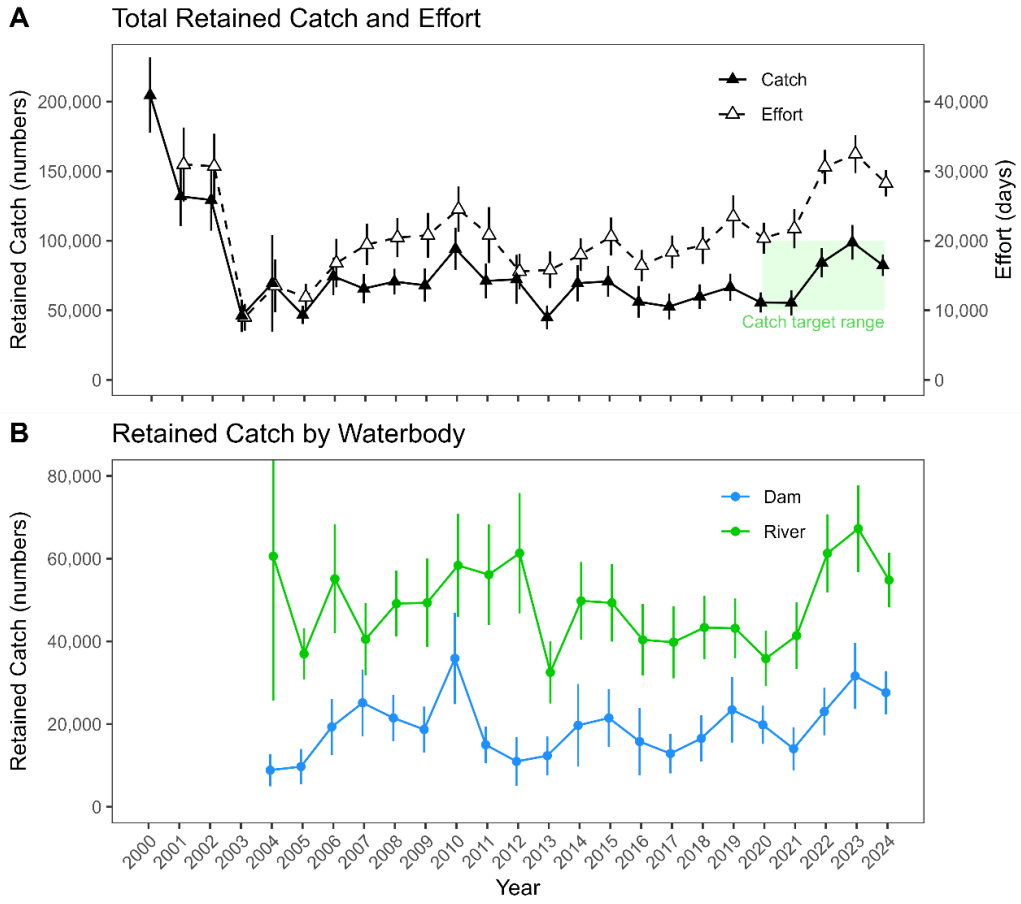
Catch and effort has generally increased over the past decade, with effort during 2023 being the highest on record and catch being the highest since 2010, but still within the acceptable catch range (South West Recreational Freshwater Resource Figure 1A). Retained catch taken in rivers has been consistently greater than dams across all years.

South-West Recreational Freshwater Angling Fishery

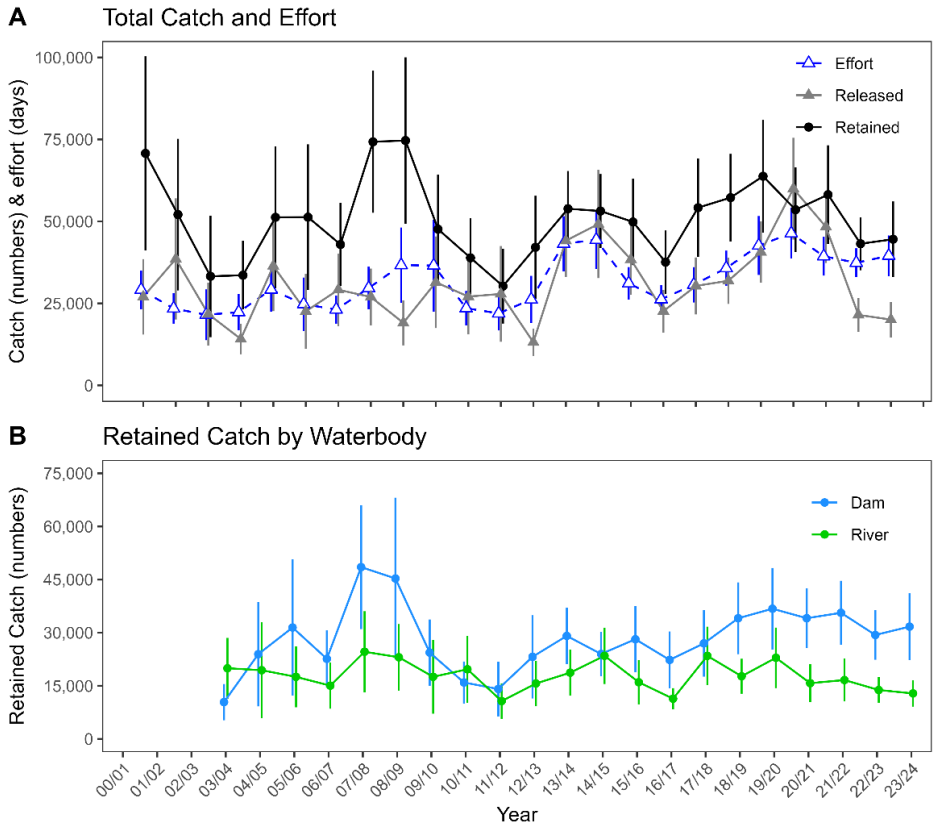
Participation in the South-West Recreational Freshwater Angling fishery (SWRFA) during 2023-24 was 4,424 licensed fishers (4,218–4,630). Total fishing effort in 2023-24 was 39,520 days (33,336–45,704; South West Recreational Freshwater Resource Figure 2A), of which 50% or 19,645 days (17,016–22,274) was in rivers and 50% or 19,875 days (14,396–25,354) was in dams. Fishing effort has generally increased over time since the early-2000s but has remained essentially stable over the past 3 years since 2021-22 (South West Recreational Freshwater Resource Figure 2A). Note that since March 2016, children under the age of 16 are no longer required to hold a Freshwater Angling licence, therefore total fishing effort since this time may be slightly greater than reported here.

The total recreational catch from the SWRFA (all species, kept and released) during 2024 (2023-24) was 64,616 fish (50,503–78,729). This catch comprised four species; redfin perch (*Perca fluviatilis*), rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), and freshwater cobbler (*Tandanus bostocki*) (Long et al. 2024).

Total retained catch of all species in 2023-24 was 44,566 fish (33,074–56,059); of which 29% or 12,853 fish (9,142–16,564) was in rivers and 71% or 31,713 fish (22,214–41,213) was in dams (South West Recreational Freshwater Resource Figure 2B). Retained catch was similar to the previous year, which was the lowest since 2016-17. Retained catch was greater in dams than in rivers in most years. Released catch in 2023-24 was 20,050 fish (14,625–25,474), a slight decrease from the previous year and the lowest since 2012-13 (South West Recreational Freshwater Resource Figure 2B).



SOUTH WEST RECREATIONAL FRESHWATER RESOURCE FIGURE 1.
(A) Total retained marron catch (numbers) and effort (days) from 2000–2024, and (B) retained catch by waterbody (dam, river). Error bars denote 95% CI.



SOUTH WEST RECREATIONAL FRESHWATER RESOURCE FIGURE 2.
(A) Total SWRFA fish catch for all species (numbers, retained and released) and effort (days) from 2000-01–2023-24), and (B) retained catch (numbers) by waterbody (dam, river). Error bars denote 95% CI.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Marron (Sustainable—Adequate)

Marron are managed as a single stock but comprise many discrete populations among systems that exhibit differing biological and life history traits, including fecundity (Beatty et al. 2016) and growth (Lawrence 2007). Stock status is assessed annually based on recreational catch, with an allowable catch range of 50,000 to 100,000 marron implemented since 2020.

A suite of external drivers is thought to be impacting marron stocks, including reduced rainfall and river flow, salinisation, habitat clearing, illegal fishing, invasive species, and high recreational fishing activity at some easily accessed and popular spots (see also 'External Drivers'). Changes in catch, effort and CPUE over time are also likely to reflect management changes implemented to reduce fishing impacts on stocks (e.g. reductions in fishing season and size and bag limits).

Despite this, the recreational catch of marron has been within the allowable catch range since 2020, including in 2024 (refer to Summary Statistics table; South West Recreational Freshwater Resource Figure 1A & B). On this basis, the marron stock is classified as **sustainable-adequate.**

Trout (Annually stocked)

Rainbow trout and brown trout are produced at the Pemberton Freshwater Research Centre and released into the rivers and dams of south-west WA. Wild self-sustaining populations are thought to be limited, with stock levels largely dependent on hatchery release rates and supplemented annually.

Retained catch for rainbow trout in 2023-24 was 1,118 fish (95% CI 794–1,1442) and is the lowest recorded since 2000-01, decreasing nearly 4-fold from a peak in 2021-22 (South West Recreational Freshwater Resource Figure 3A). Released catch was considerably higher at 8,856 fish (6,291–11,421) in 2023-24, a slight decline from a recent peak of 13,730 fish in 2021-22 (South West Recreational Freshwater Resource Figure 3A).

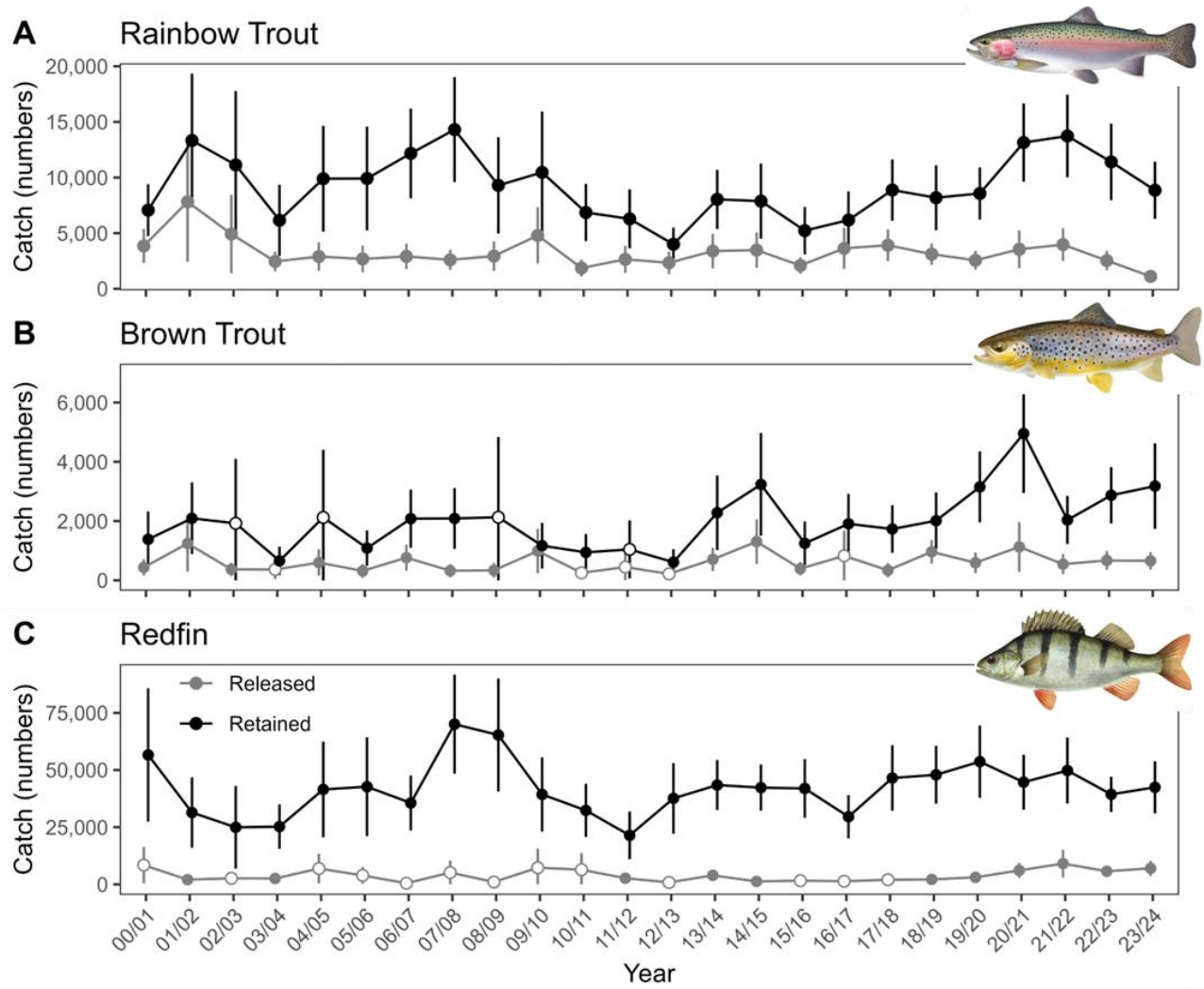
Retained catch of brown trout in 2023-24 was 658 fish (365–950; South West Recreational Freshwater Resource Figure 3B). The trend for retained catch of brown trout has been stable since 2000-01 with a peak in 2014-15 and trough in 2012-13. Released catch of brown trout in 2023-24 was 3,181 fish (1,737–4,625), a slight increase from the previous two years, but less than 2020-21 (4,954 fish; 2,947–6,960), which was the highest on record (South West Recreational Freshwater Resource Figure 3B).

Freshwater Cobbler (Not assessed—data deficient)

The statewide retained and released catches (combined across waterbody types) of freshwater cobbler are not presented as estimates as they were non-robust (i.e. low sample size of licence-holders and high relative standard error) for most survey years (Long et al., 2024).

Redfin (Freshwater pest species)

Redfin are a declared pest species in WA but commonly caught by recreational fishers in the SWRFA. Retained catch for redfin in 2023-24 was 42,462 fish (95% CI 31,069–53,854) (South West Recreational Freshwater Resource Figure 3C). Retained catch has been stable since 2000-01 with notable peaks in catch in 2007-08 and 2008-09. Retained catch was lowest in 2011-12. Released catch for redfin in 2023-24 was 6,998 fish (3,650–10,345) and has seen an overall increasing trend since 2016-17.



SOUTH WEST RECREATIONAL FRESHWATER RESOURCE FIGURE 3.
Statewide total catch (numbers, retained and released; ± 95% CI) of (A) Rainbow Trout, (B) Brown Trout and (C) Redfin, from 2000-01 to 2023-24. Empty symbols indicate that estimates are not robust (i.e. n <30 or RSE >0.4).

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Bycatch

Recreational marron fishers have reported captures of small quantities of non-target species, principally gilgies (*Cherax quinquecarinatus*, *C. crassimanus*) and koonacs (*C. plebejus, C. glaber*). Due to the low catch, the impact of the Recreational Marron Fishery on these species is thought to be minimal. The introduced yabby also comprises a small part of the fishery. There is negligible bycatch in the SWRFA fishery due to the small size of non-target native fish species in southern WA. Therefore, the impact of the fishery on bycatch species is a **negligible** risk.

Listed Species

A second species of marron, the critically endangered hairy marron, *Cherax tenuimanus*, occurs only in Margaret River. The largest negative impact on the hairy marron has been the illegal introduction of the recreationally fished smooth marron into Margaret River. In late 2002, recreational marron fishing within Margaret River, upstream of Ten Mile Brook Junction, was prohibited to remove the impacts of fishing on the remaining hairy marron stocks. Illegal fishing is still reported in this reach of the Margaret River and combined with the small population size and degrading habitats (e.g. reduced rainfall) is considered a **severe** risk.

Trout stocking occurs largely in waterways where protected species are not known to be present. However, if there are situations where they co-occur, the impact is unknown. Anecdotal evidence suggests that redfin perch are still illegally stocked and translocated by fishers. Therefore, they have the potential to negatively impact protected species through direct predation.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

The major habitat impacts of the Recreational Marron Fishery and the SWRFA fishery are littering and fishers trampling riparian vegetation, resulting in subsequent bank erosion. Fishers wading through shallow waters can also disturb benthic habitats and cause increased turbidity.

Therefore, impact on habitat is considered a **medium** risk.

Ecosystem

The removal of legal-sized marron from freshwater rivers is unlikely to have a significant effect on ecosystem function as the bulk of the marron biomass is below legal size, and marron of all sizes have similar food and habitat requirements. Marron taken from man-made dams are already living in highly modified habitats, as such their removal does not significantly impact on ecosystem function. To minimise adverse impacts of trout on native species, they are generally stocked only in rivers where other non-native fish species are also present, and protected species are absent.

The SWRFA is largely a lure and fly fishery, however, there is a small risk to the ecosystem through bait collection, its use, the release of unwanted live bait (mainly for redfin perch), and potential to spread disease and parasites (e.g. *Thelohania*). Whilst fishers can provide an environmental benefit through the removal of large numbers of feral redfin perch, some fishers also deliberately spread redfin perch into new water bodies.

Redfin are a voracious and hardy predator, known to consume native freshwater fishes and freshwater crustaceans including marron. It is recommended that redfin are not returned to the water when caught and are humanely euthanised and disposed of.

Therefore, the resource is considered to have a **medium** risk to the ecosystem.

SOCIAL AND ECONOMIC OUTCOMES

Social

The Recreational Marron Fishery is an iconic WA recreational fishery and provides a high social amenity. The SWRFA fishery has an enthusiastic recreational fishing community and a dedicated angling group (Western Australian Trout and Freshwater Angling Association [WATFAA]) and has a moderate social amenity. Both fisheries attract tourists to regional areas.

The effect of reduced rainfall on the availability of marron habitat is expected to increase awareness of changes in climate patterns in the south-west of WA. Social aspects are identified as having **high** amenity value and a **medium** risk.

Economic

Both the Recreational Marron and SWRFA fisheries support tourism to regional towns in the south-west. A risk score that captures non-GVP related risk has not been developed.

GOVERNANCE SYSTEM

Harvest Strategy

The Recreational Marron Fishery is managed under a constant catch harvest strategy, although the harvest strategy has not been formalised. Review of this approach is required.

The SWRFA fishery is primarily based on stocking (inputs) of trout. A stocking committee provides advice to DPIRD on numbers and locations to be stocked. As it is a stocked fishery, a harvest strategy focused on sustainability is not required.

Allowable Catch Tolerance Levels (Acceptable)

Marron: In 2006, the Recreational Freshwater Fisheries Stakeholder Subcommittee (RFFSS) proposed that, based on the available science the fishery be managed to a catch range of 96,000–136,000 marron. This level of catch has rarely been achieved except for 2010, which had extremely low rainfall. Recreational catch has largely fluctuated between 50,000 and 100,000 animals since 2001. Therefore, since 2020 this level has been assigned as the appropriate allowable catch range. The catch in 2024 was within the range and therefore status is considered **acceptable.**

Compliance

DPIRD's Southern Regional Fisheries and Marine Officers apply compliance through the delivery of an Operational Plan. Areas of high interest have been identified, and patrols are designed to frequent those and other areas. Patrol and compliance planning focuses on out-of-season illegal fishing, illegal use of fishing gear, and a high-profile presence throughout the marron season. Compliance activities are supported by educational activities.

Consultation

Meetings between DPIRD, Recfishwest, Freshwater Fisheries Reference Group, and freshwater fishers are held regularly.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

The Western Australian Inland Freshwater Research Advisory Committee was established in mid-2019 to enhance freshwater recreational fishing experiences in the south-west. The Committee is run by DPIRD and includes members from Recfishwest and WATFAA and is initially focusing on reviewing existing trout stocking strategies.

In September 2024, DPIRD supported a licence free weekend for the SWRFA to coincide with the beginning of the peak recreational freshwater

fishing season and the annual TroutFest family fishing day run by Recfishwest. This initiative has also been supported by DPIRD in previous years.

The licence-free weekend applied to all inland waters south of Greenough (29°S) and above the tidal influence, including all lakes, dams, rivers, and their tributaries. All other freshwater recreational fishing rules still applied.

In 2021, juvenile marron of a commercial strain were released into Logue Brook and Waroona dams through an external project supported by Recfishwest. Since these releases DPIRD has conducted regular population monitoring in these and nearby dams to determine the influence of stocking on the fishery.

EXTERNAL DRIVERS

Climate

Rainfall throughout much of south-west WA has declined by approximately 10-25% since the 1970s (McFarlane et al. 2020). Continued drying of the south-west is predicted due to further rainfall declines and warmer air temperatures (*State of the Climate 2022*). In recent decades, streamflow declined at more than 3 times the rate of rainfall (Silberstein et al. 2012, McFarlane et al. 2020), substantially impacting water levels and environmental conditions in freshwater rivers and dams. A major impact of these changes for freshwater fishes and crustaceans is a reduction in habitat availability due to lower water levels and reduced water quality (e.g. increased salinity and decreased dissolved oxygen content). Reduced river flows can also inhibit the movement and migrations of some species. In addition, the drying climate may lead to more frequent and higher intensity bushfires that can impact the fisheries through restricting fisher access, and associated impacts of fire, and fire management methods on stream fauna.

Sensitivity to climate change was assessed for smooth marron based on their biological attributes (see Ocean Climate Summary chapter for details of scoring; Appendix 5) and resulted in a **high** sensitivity rating.

Other

Population growth in the south of Western Australia has been accompanied by increasing clearing, urbanisation and industrialisation of catchments and riverbanks. Impacts of these changes on freshwater ecosystems include pollution, eutrophication and reduced water quality, erosion and sedimentation, altered flow regimes and reduced habitat complexity and connectivity.

These external drivers are therefore considered to be **high** risk.

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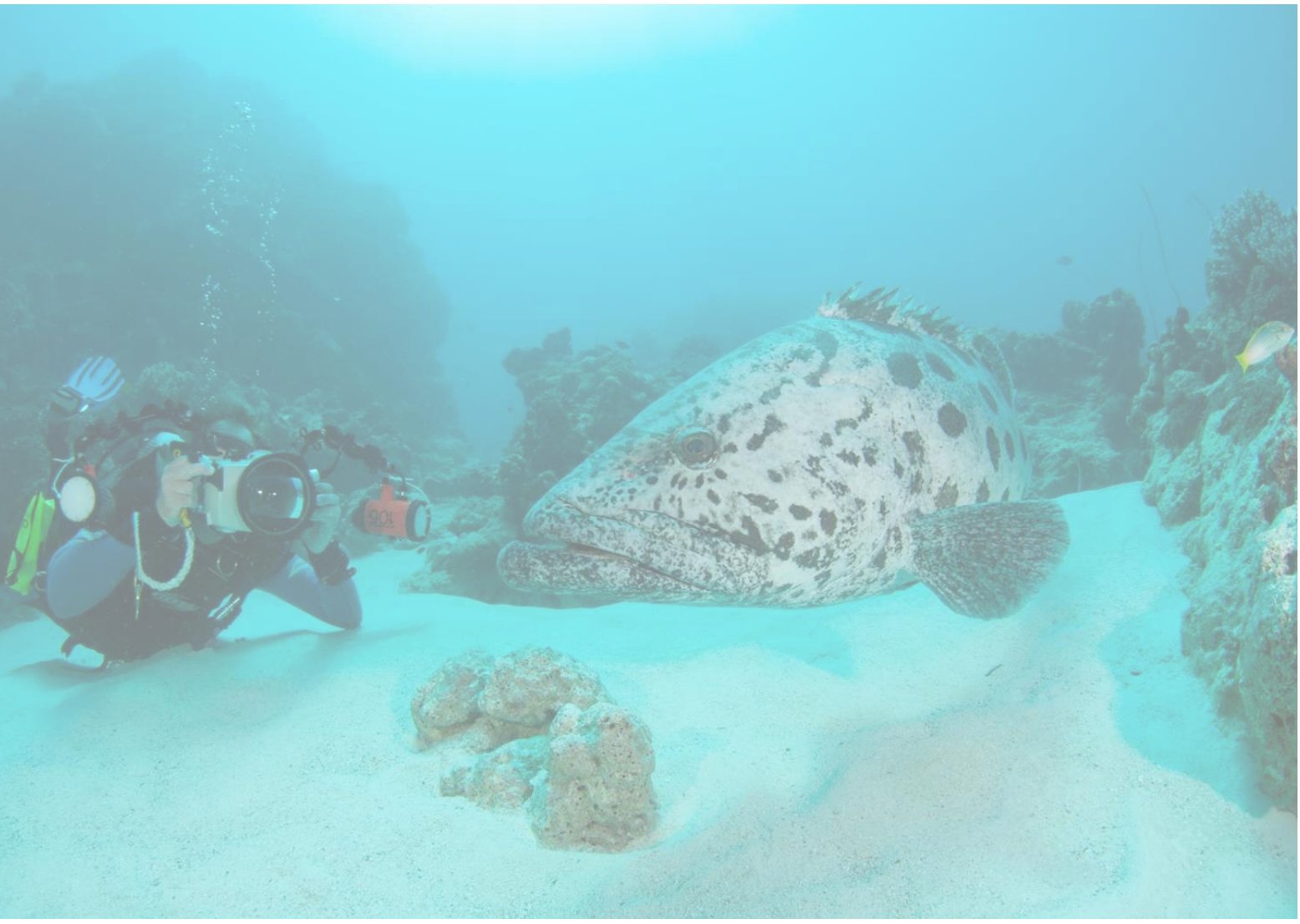
STATEWIDE BIOREGION



STATEWIDE BIOREGION

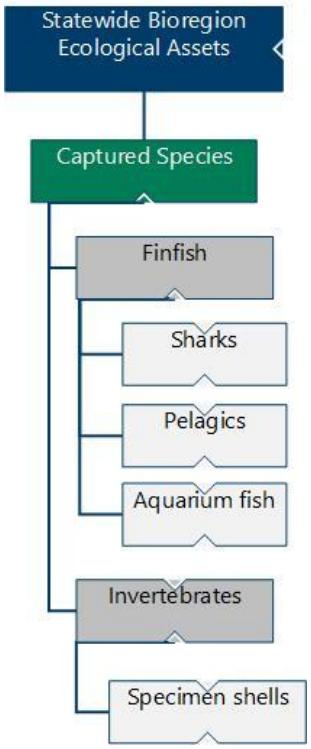
ECOSYSTEM BASED FISHERIES MANAGEMENT

IDENTIFICATION OF STATEWIDE ECOLOGICAL ASSETS USING THE EBFM FRAMEWORK

The bioregional scale of management has been adopted by DPIRD through the implementation of an Ecosystem Based Fisheries Management (EBFM) framework (see How to Use section for more details). However, due to their life histories or broader impacts, a small number of ecological assets need to be considered at either a statewide or at a multiple bioregional level.

RISK ASSESSMENT OF STATEWIDE ECOLOGICAL ASSETS AND EXTERNAL DRIVERS

The EBFM process identifies the ecological assets in a hierarchical manner, such that the assets outlined in Statewide Ecosystem Management Figure 1 are often made up of individual components at species or stock levels.



STATEWIDE ECOSYSTEM MANAGEMENT FIGURE 1
Component tree showing the Statewide ecological assets and external drivers identified and separately assessed.

The risks to each of the individual stocks or lower level components are mostly detailed in the individual fishery reports presented in this document. The following Ecosystem sections provide an overview and cumulative assessment of the current risks to those ecological assets that function at a statewide level. These risk levels are used by DPIRD as a key input into the DPIRD's Risk Register which, combined with an assessment of the economic and social values and risks associated with these assets, are integral for use in the annual planning cycle for assigning priorities for activities across all of DPIRD's fisheries divisions for statewide issues.

Captured Species

FINFISH

Sharks (and other Elasmobranchs)

Captured Species	Aquatic zone	Ecological Risk
Sharks	South and lower west	HIGH
	Mid West – North	LOW

The stock levels of most sharks in the south and lower west regions (some of which migrate seasonally into the north) are now either at acceptable levels or are deemed to be recovering at acceptable rates following management intervention.

The stocks levels of sharks in the Mid-West and North regions are considered to be recovering (i.e. dusky shark) with some more productive species having recovered.

Pelagic

Captured Species	Aquatic zone	Ecological Risk
Finfish	Pelagic	MEDIUM

Large pelagic finfish species are targeted throughout WA. In the North Coast and Gascoyne Coast bioregions, Spanish mackerel, grey mackerel, billfishes and other species are regularly captured by commercial fisheries and recreational fishers. Samsonfish, Spanish mackerel, and a range of other large pelagic species are landed by commercial and recreational fishers in temperate bioregions.

Spanish mackerel are the only large pelagic species heavily targeted, mainly by the Mackerel Managed Fishery (MMF), and recreational fishers. The MMF operates in the North Coast, Gascoyne

Coast, and West Coast bioregions. The current risk level for Spanish mackerel is medium based on available evidence, including trends in catch, effort, catch rates, and a vulnerability assessment (see Statewide Large Pelagic Finfish Chapter). Few other pelagic species are exploited at any significant levels and these stocks are lightly impacted by fishing.

Aquarium Fish

Captured Species	Aquatic zone	Ecological Risk
Aquarium Fish	Marine	MEDIUM

An ecological risk assessment for the Marine Aquarium Fish Resource was conducted in 2021[1]. The majority of the captured species were evaluated as either low or negligible risks. There were four species of coral at medium risk, which were assessed as acceptable under the current monitoring and control measures.

INVERTEBRATES

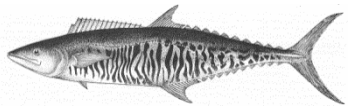
Captured Species	Aquatic zone	Ecological Risk
Specimen Shells	Marine	MEDIUM

The level of capture is low and the management arrangements are such that these species are not considered at risk.

[1] Smith KA, Bissell A, Bruce C. 2022. Ecological Risk Assessment for the Marine Aquarium Fish Resource. Fisheries Research Report No. 323. Department of Primary Industries and Regional Development, Western Australia. 149p.

FISHERIES

STATEWIDE LARGE PELAGIC SCALEFISH RESOURCE STATUS REPORT 2025



P. Lewis and L. Rynvis

OVERVIEW

The Statewide Large Pelagic Scalefish Resource is distributed throughout WA and includes a range of tropical and temperate pelagic species. The three indicator species for the resource are Spanish mackerel (*Scomberomorus commerson*) and grey mackerel (*S. semifasciatus*) representing the tropical suite, and Samson fish (*Seriola hippos*) for the temperate suite (DoF 2011).

Commercially the resource is accessed by the Mackerel Managed Fishery (MMF) in the North Coast bioregion (NCB) and Gascoyne Coast bioregion (GCB) targeting primarily Spanish mackerel. In the West Coast bioregion (WCB) and South Coast bioregion (SCB) the major retained temperate species is Samson fish, mostly as bycatch in several line and net fisheries (see relevant chapters for more details). The recreational fishery for large pelagic fish is dominated by Spanish mackerel, which by weight is one of the highest retained finfish species (Appendix 2), and is also one of the highest retained finfish species by charter/fishing tour operators. For most other large pelagic species, most recreational catches are released (Ryan et al. 2025).

For further details in regard to the Statewide Large Pelagic Finfish Resource see the Ecological Risk Assessment (Smith et al. 2024) and Resource Assessment Report (Lewis 2020).

SUMMARY FEATURES

Asset (Allowable catch)	Outcome	Status
Commercial fishery (Spanish mackerel 430 t, Grey mackerel 180 t)	Total catch 2024: 194 t (Spanish mackerel), 8 t (Grey mackerel)	Acceptable
Recreational fishery	Total catch 2023-24: 24–44 t (Spanish mackerel, boat only), 1–3 t (Grey mackerel, boat only)	Acceptable
EBFM		
Indicator species		
Spanish mackerel	Medium risk; Biomass above threshold (B_{MSY}) L3 age-based assessment 2023	Adequate
Grey mackerel	Low risk, catch only, Biomass above target	Adequate
Samson fish	Low risk, Biomass above target (1.33 B_{MSY}) L3 length-based assessment 2023	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Negligible risk	Adequate
Habitat	Negligible risk	Adequate
Ecosystem	Low risk	Adequate
Economic (GVP Level 2)	Low risk	Acceptable
Social (Moderate/high amenity)	Low risk	Acceptable
Governance	Medium risk	Acceptable
External Drivers – Other	Medium risk	Acceptable
External Drivers – Climate change	Medium risk (Spanish mackerel, Grey mackerel), High risk (Samson fish)	

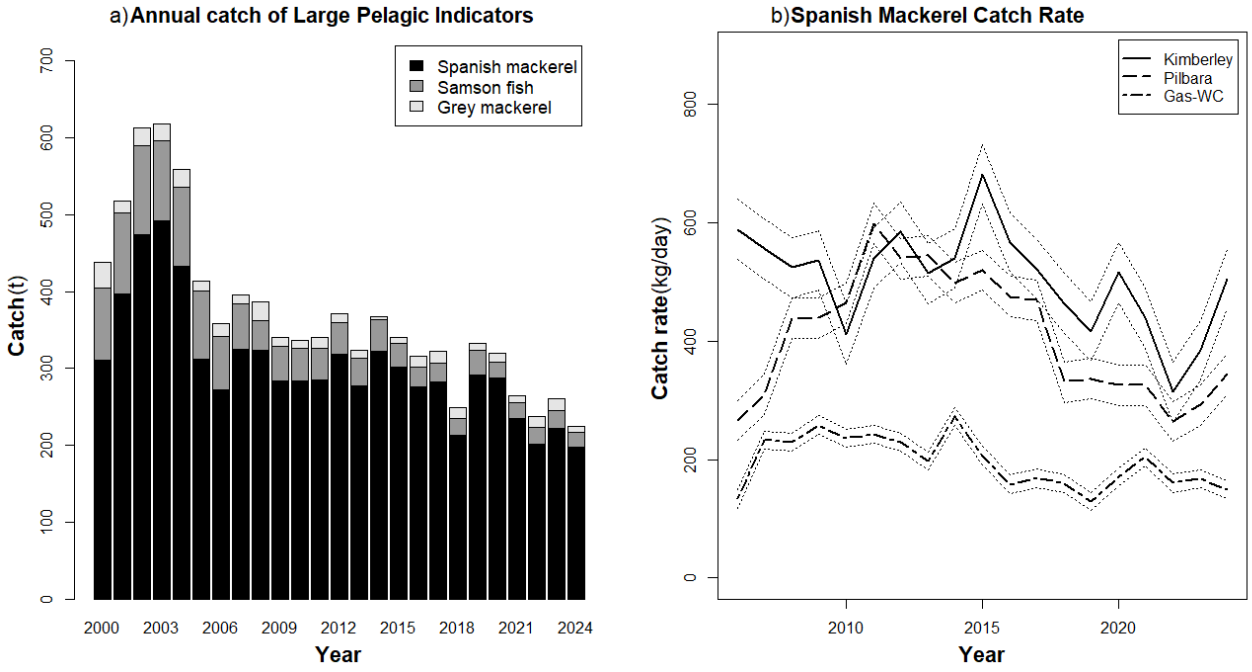
SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Commercial catch (large pelagic)	2023 Total pelagic: 293 t MMF: 242 t Other: 48 t	2024 Total pelagic: 253 t MMF: 203 t Other: 50 t	2024 MMF catch by management area: - Kimberley 133 t. - Pilbara 60 t. - Gascoyne/West Coast 10 t.
Commercial catch (indicators)	2023 Spanish mackerel: 225 t Grey mackerel: 16 t Samson fish: 23 t	2024 Spanish mackerel: 194 t Grey mackerel: 8 t Samson fish: 20 t	
Commercial effort	2023 MMF: 736 days (15 vessels)	2024 MMF: 531 days (13 vessels)	Days fished by MMF in 2024: - Kimberley 278 days (4 vessels). - Pilbara 189 days (6 vessels). - Gascoyne/West Coast 67 days (5 vessels).
Charter catch (large pelagic)	2023 33.8 t	2024 31.3 t	Top 15 pelagic species/groups in WA. Excludes spearfishing while diving.
Charter catch (indicators)	2023 Spanish mackerel: 18 t Grey mackerel: 0.2 t Samson fish: 3.8 t	2024 Spanish mackerel: 18.4 t Grey mackerel: 0.2 t Samson fish: 2.6 t	
Charter effort	Statewide 2023 1,951 trips (95 vessels)	Statewide 2024 1,840 trips (88 vessels)	Trips recording large pelagic finfish catch. Excludes spearfishing while diving.
Recreational catch (large pelagic)	2020-21 111 t (83–140) t	2023-24 101 t (81–121) t	Top 15 large pelagic species in WA (95% CIs). Boat-based fishing only (Ryan et al. 2025).
Recreational catch (indicators)	2020-21 Spanish mackerel: 34–79 t Grey mackerel: 1–3 t Samson fish: 4–10 t	2023-24 Spanish mackerel: 24–44 t Grey mackerel: 1–3 t Samson fish: 5–20 t	Boat-based fishing only, 95% CIs (Ryan et al. 2025).
Recreational effort	2020-21 423,651 (38,433) days	2023-24 314,298 (24,358) days	Days fished in WA (95% CI). Boat-based fishing only (Ryan et al. 2025).
Participation	MMF: 52% entitlement consumed Charter (WA): 1,951 days Recreational (WA): 963,959 hours fished	MMF: 45% entitlement consumed Charter (WA): 1,840 days Recreational (WA): 735,013 hours fished	MMF: below acceptable catch range. Charter: no formal target. Recreational: no formal target.
Beach price	2022-23 Spanish mackerel: $14.80/kg Grey mackerel: $11.06/kg Samson fish: $4.00/kg	2023-24 Spanish mackerel: $13.90/kg Grey mackerel: $10.28/kg Samson fish: $4.63/kg	Domestic market supply and demand.
Bycatch	-	-	Limited data available.
Listed species interactions	2023 Commercial (MMF): 1 sea snake (RA)	2024 Commercial (MMF): None reported	Mandatory reporting by commercial and charter fishers suggests interactions of line fishers with listed species are rare.

Key to table: MMF = Mackerel Managed Fishery, RA = Released Alive



LARGE PELAGIC FINFISH FIGURE 1.
Map showing the boundaries of the Mackerel Managed Fishery.



LARGE PELAGIC FINFISH FIGURE 2.
a) Annual statewide commercial catch (t) for the 3 large pelagic indicator species; and b) Annual nominal catch rate (kg/day) of Spanish mackerel in the MMF by management area, with the dotted line around each representing +/- standard errors.

CATCH AND LANDINGS

The combined commercial landings of all large pelagic fish species in WA, of which the vast majority (72-78%) is Spanish mackerel, generally ranged from 296-430 t from 2006 to 2020 but over the past 4 years has been 255-310 t due mainly to reductions in the Spanish mackerel catch. The combined commercial catch of all other large pelagic species has also steadily declined from 100 t in 2014 to 60 t in 2024. The commercial catch of grey mackerel has been consistently below 20 t since 2006. The commercial landings of other tropical large pelagic species in the NCB and GCB such as amberjack (*Seriola dumerili*), and cobia (*Rachycentron canadum*) were stable, with all remaining species <10 t in 2024. For the temperate large pelagic species, only the combined WCB and SCB catch of Samson fish in 2024 was >10 t.

The fishing tour operator annual retained catches of the main 15 large pelagic species have ranged from 24-34 t (since 2010), apart from 2020 (which is likely at least in part due to COVID-19 restrictions) and was within this range in 2024.

The statewide boat based recreational harvest range (95% CI) for the top 15 pelagic species (representing 96% of the resource kept catch by numbers) was steady at 101 t (95% CI 81–121) in 2023-24 compared with111 t (95% CI 83–140) in 2020-21, 108 t (95% CI 83–132) in 2017-18, 112 t (95% CI 90–135) in 2015-16 and 149 t (95% CI 120–178) in 2013-14, but lower than 180 t (95% CI 149–210) in 2011-12 (Ryan et al. 2025). In each survey a similar or higher amount of large pelagic species were released.

The changes to recreational trip possession limits introduced in July 2021 have not led to higher retained catches from the statewide large pelagic finfish resource.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

The stock status of the indicator species is assessed annually using a weight-of-evidence approach that considers all available information and periodically (~ every 5 years) a higher-level age or length-based assessment is conducted for the main indicator species. Assessments determine the risk to stocks using ISO 31000-based risk assessment methods (e.g. Fletcher, 2015).

Spanish mackerel (Sustainable-Adequate)

Spanish mackerel are fast growing, moderately long lived (to 26 years), grow to a large size (to 40 kg), exhibit high fecundity, and have a young age at sexual maturity (less than 2 years) (Mackie et al. 2003), indicating a moderate resilience to fishing pressure. Spanish mackerel in WA form a complex of meta populations (Buckworth et al. 2007) and are likely a shared biological stock with the Northern Territory.

The 2024 Spanish mackerel commercial catch of 194 t (Large Pelagic Finfish Figure 2a) is a return to the low level of catch reported in 2022, following the relatively stable period of catch by the MMF of 270-320 t from 2006 to 2020, apart from a similar low catch in 2018. The recent lower catch can be partially attributed to changes in the Kimberley management area where effort levels in 2024 were the lowest recorded, as was also the case in the GCB/WCB management areas. The nominal catch rates in the Kimberley and Pilbara management areas have recently increased since a low in 2022 (Large Pelagic Finfish Figure 2b), which is partially due to changes in operators, but may also indicate a decline in the spawning stock following the 2015-16 heatwave. The catch rate in the Southern GCB/WCB area has been stable at lower levels since 2015.

The annual charter boat operators landed catch of Spanish mackerel in WA has been stable since 2001, ranging from 14-20 t, with a further 34-61% released/discarded.

The boat based recreational harvest range of Spanish mackerel was steady in 2023-24 (24-44 t) compared with 2020-21 (34-79 t), 2017-18 (32-64 t) and 2015-16 (30-55 t), but lower than that reported in 2013-14 (55-100 t) and 2011-12 (69-109 t) (Ryan et al. 2025). In each survey a further 35-48% of the Spanish mackerel catch was released. The decline in catch can be partly attributed to the 20–35% decline in recreational effort in the NCB and GCB between surveys, particularly during the months from April-August, when higher catches of the species occur and lower catches in the WCB since 2013-14.

The 2023 assessment of Spanish mackerel age structure estimated the median relative spawning biomass of the WA stock to be above the threshold level (which corresponds to B_{MSY}). However, biomass estimates differed between management areas of the MMF with the GCB/WCB above the target level and Kimberley above the threshold level, but Pilbara possibly below the threshold level. However, there is some uncertainty about the representativeness of the Pilbara commercial samples, with recreational samples containing older fish indicating differing age structures.

On the basis of the available evidence, including a level 3 age-based assessment of mortality and biomass in 2023 (Lewis In prep.), trends in catch, effort, average size, catch rates, and a vulnerability assessment, the biomass is likely to be above the threshold and the current risk level for Spanish mackerel is **medium.** Thus, the breeding stock of Spanish mackerel in WA is considered to be **sustainable-adequate**.

Grey mackerel (Sustainable-Adequate)

Grey mackerel in WA likely constitute a single biological stock (Newman et al. 2010). Grey mackerel are fast growing, relatively short lived (to 12 years), and reach sexual maturity at a young age (less than 2 years; Cameron and Begg, 2002) indicating a relatively high resilience to fishing pressure.

Grey mackerel catches in the MMF since 2000 have been relatively low, ranging from 3.5 to 24 t (Large Pelagic Finfish Figure 2a). In 2024, the WA catch was predominantly taken by four vessels, predominantly in the Pilbara area. This level of catch is well below the TACC (60 t for each of the three management areas) for grey mackerel and negligible when compared to over 1200 t landed annually in Australia (Jesson-Kerr et al. 2024). The low levels of catch are likely to reflect the gear limitations (line only) and limited targeting of the species in the MMF by few vessels.

The annual charter boat operators' catch of grey mackerel in WA has been 1 t or less since 2003. The retained recreational catch of grey mackerel has been estimated at 1–3 t in all surveys, although there are high levels of uncertainty in catch estimates for this species (Ryan et al. 2025).

The available grey mackerel age structure in 2022 indicated fishing mortality to be at a very low level for the WA stock, with fish to the maximum recorded age.

On the basis of the evidence provided above, the current risk level for grey mackerel is **low** and the breeding stock is classified as **sustainable-adequate**.

Samson fish (Sustainable-Adequate)

Samson fish in WA is likely to constitute a shared biological stock with South Australia. The species are moderately long lived (to 29 years), can grow to a large size (40 kg+), mature at four years of age, can undertake large scale movements and are able to withstand capture from deep water (Rowland 2002), indicating resilience to effects of barotrauma.

The statewide commercial catch of Samson fish in 2024 was only 19.8 t, which is the lowest on record and has been 20-23 t since 2020, compared to the historical high catch of 115 t in 2002. The catch was split between the WCB and SCB. Since 2008 catches have been at low levels, <45 t (Large Pelagic Finfish Figure 2a), due primarily to reductions in the WCB resulting from management changes in the West Coast Demersal Scalefish Interim Managed Fishery (WCDSIMF) and Temperate Demersal Gillnet and Demersal Longline Fishery (TDGDLF), see related chapters for details. Over the past 5 years the catches of Samson fish have been stable at 7-11 t in the combined South Coast open access line fishery and recently established South Coast Line and Trap Managed fishery, 3-6 t in the TDGDLF, and 5-9 t in the WCDSIMF.

The annual charter boat operators' total catch (retained and released) of Samson fish in WA has recently increased from a low of 4.2 t in 2020 to 6.0 t in 2024 with 98% taken in the WCB and 60-80% released. Previously the total catch has been up to 48 t (in 2003) but has been <20 t since 2010, with 68-76% released/discarded.

The species is also targeted recreationally with the majority (>70%) released/discarded. The boat based recreational harvest range of Samson fish was steady in 2023-24 (5–20 t) compared with all previous surveys at 2020-21 (4–10 t), 2017-18 (8-18 t), 2015-16 (9–20 t), 2013-14 (13–31 t) and 2011-12 (11–21 t), with similar high release rates of 73-86% (Ryan et al. 2025).

The 2023 length-based assessment of Samson fish using charter logbook data (Crisafulli et al. 2024) estimated the median relative spawning biomass of the WCB stock to be above Target level (which corresponds to 1.2xB_{MSY}).

On the basis of the evidence provided above, the current risk level for Samson fish is **low** and the breeding stock is classified as **sustainable-adequate**.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Bycatch

The non-mackerel bycatch taken by the MMF are predominantly other large pelagic species, which annually contribute a catch of <1 t (2024). Thus, there is **negligible** risk to the breeding stocks of other finfish species, by fishers targeting the statewide large pelagic finfish resource.

Bycatch in fisheries targeting the resource is very low relative to the retained catch. The bycatch is predominantly large pelagic fish that are discarded due to size or possession limits, poor eating quality or a recreational preference for catch-and-release fishing. Some non-pelagic fish and sharks are also caught and released, but in low quantities that are considered to pose a **negligible** risk to the breeding stocks of those species (Smith et al. 2024).

Protected species

Due to the selectivity of the fishing methods used by commercial and recreational fishers targeting large pelagic species, interactions with protected species are low (Smith et al. 2024). No interactions were reported by the MMF in 2024. Thus, fishing is considered a **negligible** risk to protected species.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat

The surface and midwater troll fishing methods used by the MMF, fishing tour operators and recreational fishers when targeting large pelagic fish do not impact on benthic habitats. On longer fishing trips the vessels may anchor but the impacts from anchoring are considered to be minimal, as anchors are set in naturally dynamic environments (Smith et al. 2024). Thus, fishing poses a **negligible** risk to benthic habitats

Ecosystem

The removal of large pelagic fish, in particular Spanish mackerel, from the ecosystem is unlikely to impact food webs as removals are spread over a wide area, mackerel are highly mobile and are generalist carnivores that consume a wide range of fish and invertebrate species from both pelagic and demersal habitats, all of which is expected to diffuse and dilute any trophic impact. There is a possibility of minor trophic effects from discarding of bycatch and fish waste, and depredation of catches (Smith et al. 2024). Thus, the fishery is considered to pose a **low** risk to local food webs.

SOCIAL AND ECONOMIC OUTCOMES

Social

Thirteen boats fished in the MMF during the 2024 season, primarily from May-November, with approximately 30-40 people directly employed in the MMF.

An estimated 753,000 WA residents went recreational fishing in 2023-24 (DPIRD 2024). The recreational fishing participation rate in WA (26%) is higher than the Australian average (21%) (Moore et al. 2023). Statewide boat-based recreational surveys indicate that Spanish mackerel is one of the highest retained finfish species by weight (Appendix 2), with retained catches highest in the NCB and GCB (Ryan et al. 2025). Meanwhile, other iconic large pelagic species are targeted but released/discarded in high numbers, such as Samson fish with 79% released, and billfish species with 86% or more released.

The statewide large pelagic finfish resource provides a **moderate/high** social amenity value to recreational fishing, diving, and consumers via commercial fish supply to markets and restaurants. There is currently a **low** level of risk to these values through external drivers.

Economic

In 2024, the estimated value (to fishers) of the Spanish mackerel annual catch was Level 2, approximately $2.5-3 million, even though the catches have declined. This is due to the beach price of Spanish mackerel increasing from $8.21/kg in 2014-15 (Fletcher et al. 2017) to $13.90 in 2023-24 (Appendix 2). The combined value of the annual catch of grey mackerel, Samson fish, and other large pelagic species is estimated at less than $500,000 but has also been increasing with market prices.

Recreational fishing in WA contributes over 9,000 jobs and over $1.1 billion per year to the economy and supports economic activity in many regional locations (Moore et al. 2023). A significant amount of this value is derived from boat-based fishing for pelagic species along the WA coast.

There is currently a **low** level of risk to this return.

GOVERNANCE SYSTEM

Harvest Strategy

For Spanish mackerel the current method of assessment focuses on the annual analysis of catch and catch rates (Levels 1 and 2), and the periodic analysis of the age structure (Level 3), with previous analyses having been used to determine the Tolerance Levels and TACC.

A preliminary harvest strategy has been developed for the MMF using reference levels for the catch rates of Spanish mackerel, which were derived from data collected over a reference period (2006 to 2011) when fishing was considered sustainable. Daily logbook catch rates are being examined and a periodic age based (level 3) stock assessment was conducted in 2023. These will inform the development of the formal harvest strategy for the Statewide Mackerel Resource.

Annual Catch Tolerance Levels (Acceptable)

The annual catch tolerance levels have not been reviewed since they were implemented with the establishment of the MMF and may not be informative with current fishery dynamics and effort levels. The 2024 catch is below the target commercial catch range for Spanish mackerel in the MMF of 246-430 t. In the Kimberley area the 2024 Spanish mackerel catch of 133 t is within the catch range (110-225 t), while the catches of 55 t in the Pilbara and 9 t in the GCB/WCB are below the respective tolerance ranges of 80-126 t, and 56-79 t. The Pilbara catch is regularly below the tolerance range, and the GCB/WCB catch has been below the tolerance range for almost all years since 2006, due primarily to low effort levels. In 2018, there was a significant change in operators within the MMF, and in 2024 a change in the main Kimberley boats contributed to the lower effort and higher catch rates. Environmental conditions and industry developments across northern Australia, may have also contributed to low catches.

Due to the likely influence of major changes in operators in the MMF, the results of the 2023 stock assessments and possible influence of external factors the catch levels are considered **acceptable**.

Compliance

All boats in the MMF are fitted with an Automatic Location Communicator (ALC), which enables the department to monitor the fleet using a Vessel Monitoring System (VMS). Masters of an authorised boat within the MMF are also required to submit daily logbook records along with catch and disposal records (CDRs). DPIRD also undertakes vessel inspections at sea to ensure fishing is being undertaken in accordance with the governing legislation (e.g. gear requirements, catch reporting).

Consultation

DPIRD undertakes consultation directly with licensees on operational issues. Industry Management Meetings are held annually (where possible) between DPIRD and MMF licensees, in conjunction with the Industry Consultation Unit of the Western Australian Fishing Industry Council (WAFIC), with the latest meeting held in November 2023.

Consultation on recreational fishing regulations or relevant commercial management changes is undertaken through the peak body Recfishwest.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

In August 2015, the MMF received an exemption from the export controls of the EPBC Act for a period of ten years via a LENS (List of Exempt Native Specimens). Approval to export under the EPBC Act will not be sought following expiry in 2025, given there is currently no export from the fishery.

The 2018 Instrument of Exemption issued to all license holders, which provides for operational and economic efficiencies relating to nomination requirements was extended in 2024.

In 2026 an industry working group will be engaged to assist with development of a harvest strategy for the MMF and an associated review of the management plan for the MMF.

EXTERNAL DRIVERS

Environment

Many large pelagic species experience annual variations in recruitment strength and adult movement due to environmental fluctuations. The changing marine environment off the WA coast can temporarily benefit some tropical species in the southern parts of their range, as seen during the 2010-11 marine heatwave off WA when the Spanish mackerel distribution shifted southwards (Pearce et al. 2011). However, such northern events (Benthuysen et al. 2018) can be detrimental to recruitment in parts if it coincides with the spawning season (Welch et al. 2014).

Climate Change

Statewide Large Pelagic Scalefish Resource Table 1 provides a summary of the climate vulnerability risk assessment outcomes for the indicator species of the MMF.

The assessment found that all 3 indicator species at their northern distributional range are likely to be negatively impacted by increasing SSTs and MHW events that could lead to both reduced productivity and/or shift in their distribution southwards. Any decline in nearshore habitats could also further adversely impact juvenile recruitment success of these species.

STATEWIDE LARGE PELAGIC SCALEFISH RESOURCE TABLE 1.
Summary of the climate vulnerability risk assessment output for the indicator species of the Mackerel Managed Fishery.

Indicator species	Sensitivity	Exposure	Climate Change risk
Spanish mackerel	Low	Negative effects are possible	Medium
Grey mackerel	Low	Negative effects are possible	Medium
Samson fish	High	Negative effects are possible	High

Other

Other external factors impacting on the fishery include the petroleum industry restricting access to fishing grounds and the likely detrimental influence of marine seismic surveys on fishery catches, particularly in some parts of the Pilbara area.

Although the MMF records low but increasing levels of depredation, at 2-5% of catch by numbers (Carmody et al. 2021), for the charter and recreational catch, the high proportion of released/discarded large pelagic fish experience an unknown but likely high level of post release mortality (DoF 2016), along with the increasing mortality of hooked and discarded large pelagic species by depredation, particularly in areas with higher effort (Mitchell et al. 2018). Thus, release mortality and depredation are factors affecting the Statewide Large Pelagic Finfish Resource.

The latest Indian Ocean Tuna Commission (IOTC) assessment of the Spanish mackerel catch has determined that there is a 31% likelihood the species is overfished and subject to overfishing with catches since 2012 mostly above the current

MSY estimate of 161,000 t, with a high level of uncertainty (IOTC 2023). However, this assessment does not apply to the WA component of the northern Australian stock, which is distinct from that of other parts of the Indian Ocean.

Overall, these external factors constitute a **medium** risk to WA's Statewide Large Pelagic Finfish Resource, with possible impacts varying among individual species.

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STATEWIDE MARINE AQUARIUM FISH AND HERMIT CRAB RESOURCES STATUS REPORT 2025

L. Strain, C. Bruce, A. Steele

OVERVIEW

The Marine Aquarium Fish Managed Fishery (MAFMF) is permitted to operate in all State waters between the Northern Territory border and South Australian border (Marine Aquarium Fish Figure 1). The fishery is typically more active in waters south of Broome with higher levels of effort around the Capes region, Perth, Geraldton, Exmouth, Karratha, and Broome. However, recent effort has occurred in the waters from Hall Point to Kalumburu in the NCB.

The MAFMF potentially includes more than 1,500 species of marine aquarium fishes, including coral, live rock, algae, seagrass, and invertebrates, under the *Marine Aquarium Fish Managed Fishery Management Plan 2018.*

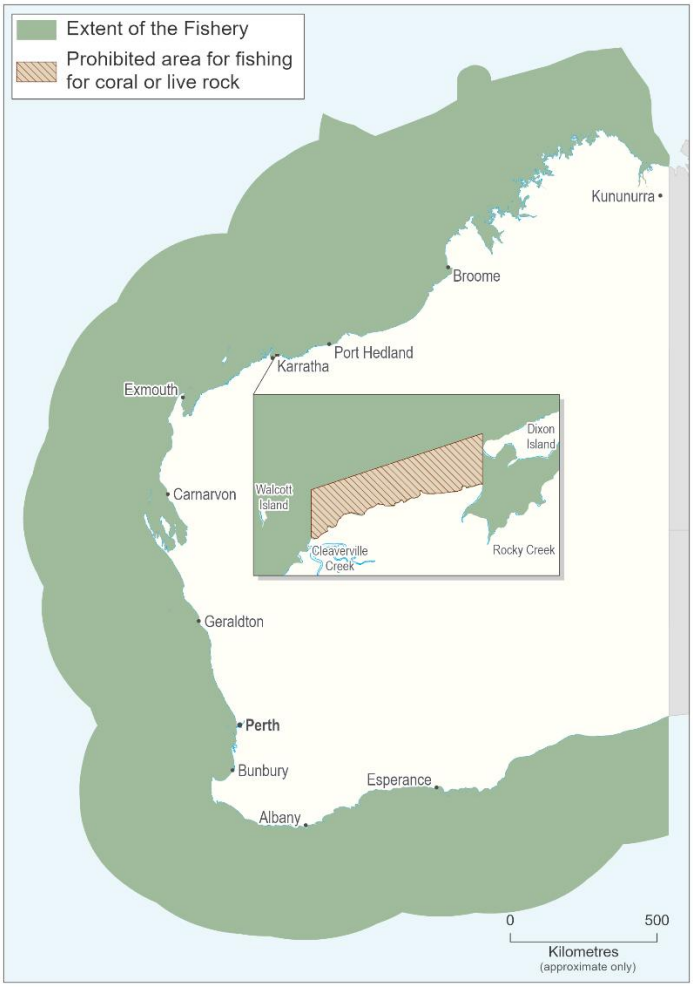
The Hermit Crab Fishery (HCF) specifically targets the Australian land hermit crab (*Coenobita variabilis*) for the domestic and international live pet trade. The fishery operates throughout the year and is one of two land-based commercial fisheries in WA. The HCF operates under Ministerial Exemptions under the FRMA and is currently permitted to fish WA waters north of, and including, Exmouth Gulf (22°30'S, Marine Aquarium Fish Figure 2).

There are no reported recreational or Customary catches for these resources.

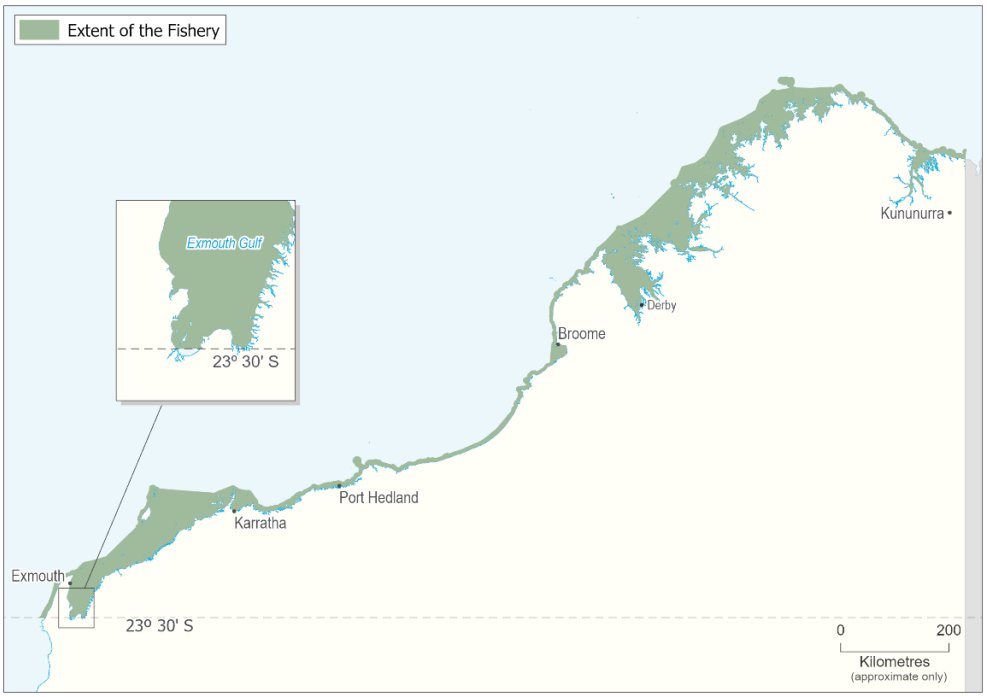
SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery (NA)	Total Catch 2024: Fish (n) – 18,415	Acceptable
Recreational fishery (NA)	Total Catch 2024: NA	Acceptable
EBFM		
Indicator species		
Syngnathid (n) – 57 Invertebrates (n) – 91,873 Hard coral (kg) – 5,675.23 Soft coral (kg) – 3,053.20 Living rock & Living sand (kg) – 5,615.00 Sponges (n) – 669 Algae/Seagrasses/Live Feed (l) – 331	Small numbers of individual species taken annually.	Adequate
Hermit crabs (n) – *;	Catch is within the range of the last 15 years (2010 to 2024).	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Negligible risk	Adequate
Habitat	Low risk	Adequate
Ecosystem	Negligible risk	Adequate
Economic (GVP $1-5 m)	Medium risk	Acceptable
Social (low amenity)	Low risk	Acceptable
Governance	Medium risk	Acceptable
External Drivers – Climate	High sensitivity	
External Drivers – Other	Negligible risk	Acceptable

* The specific data cannot be reported due to confidentiality provisions.



MARINE AQUARIUM FISH FIGURE 1
The extent of the Statewide Marine Aquarium Fish Managed Fishery of WA. This map is indicative only regarding the extent of the fishery, and does not contain prohibited fishing areas, such as marine parks.



MARINE AQUARIUM FISH FIGURE 2
The Hermit Crab Fishery of WA operates in WA waters north of, and including, Exmouth Gulf (22°30'S).

CATCH AND LANDINGS

Ten out of the 12 licences were active in the MAFMF in 2024, and there were 2 active operators in the HCF (out of a total of 5 operators) during 2024. The total catch in the MAFMF in 2024 was 111,014 fishes and invertebrates, 14.3 t of coral, live rock, and living sand, and 331 L of marine plants and live feed. MAFMF fish catches were dominated by Scribbled Angelfish (*Chaetodontoplus duboulayi*) n=2,897, Black-axil Chromis* (*Chromis atripectoralis*), Yellowtail Demoiselle (*Neopomacentrus azysron*) n=1,926, Margined Coralfish (*Chelmon marginalis*) n=1,166, Blue and Yellow Wrasse (*Anampses lennardi*) n=1,111, Spotted Blenny (*Istiblennius meleagris*) n=832, and Blue-green Chromis (*Chromis viridis*) n=494 (Marine Aquarium Table 1), with nearly 250 other fish taxa also reported. In addition, more than 100 invertebrate taxa were also landed in the MAFMF, dominated by gastropods, anemones, and crabs. The main coral species landed in 2024 were the zoanthid anemones of the Order zoantharian, with 1,303 kg taken (Marine Aquarium Fish Table 2).

The total catch in the HCF in 2024 cannot be reported due to confidentiality provisions (less than 3 authorised operators in the fishery in 2024). The catch range of Australian land hermit crabs over the last 15 years (2010-2024) is between ~ 50,000 and 106,000 individuals. The catch in 2024 is within the historical range.

* The specific data cannot be reported due to confidentiality provisions.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Statewide MAFMF and HCF (Sustainable-Adequate)

Due to the large number of species captured in the MAFMF, and the relatively low numbers per species, traditional stock assessments are not undertaken. Catches at the lowest taxonomic level are annually monitored based on fisher returns. An ecological risk assessment was undertaken for the MAFMF in 2021 (Smith et al. 2022). The majority of captured species assessed were evaluated as either **low** or **negligible** risks (39 of 43), which do not require any specific control measures. In addition, there were four coral species considered at **medium** risk, which were assessed as acceptable under the current monitoring and control measures.

The relatively low level of risk is a reflection of all specimens being collected for the live market. Therefore, fishers are restricted in the quantities they can safely handle, and transport (for example, by boat to shore, by vehicle to the holding facility and then on to the retailer) without impacting on the quality of the product. The size of the holding facility and access to regular freight and infrastructure services (such as airports, particularly in the remote northern locations of WA), restricts the levels of effort, and therefore catches that can be expended in the fishery at any given time.

Based on the evidence and analysis provided above, the biomass of individual species in the MAFMF is unlikely to be depleted, and the current levels of fishing mortality (catch) are unlikely to cause any individual species to become recruitment impaired. Thus, the breeding stocks of landed species in the MAFMF are classified as **sustainable-adequate**.

The level of harvest of the Australian land hermit crab in the HCF is low relative to the large area in which this species is distributed in WA. In addition, a Productivity Susceptibility Analysis (PSA) was conducted for the Australian land hermit crab. The derived PSA score based on the known life history attributes (fast growing, early maturation, long life) was 2.18, which suggest a **low** risk of over-exploitation. The above evidence indicates that the biomass of Australian land hermit crab in the HCF is unlikely to be depleted, and that the current level of fishing mortality (catch) is unlikely to cause the Australian land hermit crab to become recruitment impaired. Thus, the breeding stocks of the Australian land hermit crab in the HCF are classified as **sustainable-adequate**.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Bycatch

There is little to no bycatch in either fishery as the primary mode of collection is by hand (with the MAFMF also targeting specific taxa using fishing line). As the likelihood of retaining non-targeted species is very low, there is a **negligible** risk for bycatch interactions.

Protected species

Syngnathids are a target species of the MAFMF, which is permitted to export a small number under a Wildlife Trade Operation (WTO) export approval from the Australian Government. Impacts on these stocks are included under the Indicator Species Assessment and Stock Status Section but are considered to be **negligible**. There is a prohibition on the take of leafy sea dragons (*Phycodurus eques*). Beyond this, the potential for additional listed species interactions is limited. This results in a **negligible** risk for protected species interactions.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat impacts are considered **low** risk. This is due to the small scale of the fisheries and the hand collection methods. While the fisheries can

potentially operate over large areas, catches are relatively low due to the special handling requirements of live fish. Fishing operations are also heavily weather-dependent due to the small vessels used (MAFMF) and beach access (HCF). Trophic effects from these fisheries pose a **negligible** risk to the ecosystem.

SOCIAL AND ECONOMIC OUTCOMES

Social

In 2024, 12 licences were active across the MAFMF and the HCF. Collections by the MAFMF are usually undertaken on SCUBA or surface supplied air (hookah) from small vessels, typically in small teams of two or three people. Operators in the HCF use four-wheel drive vehicles to access remote beaches where collection occurs on foot. There is currently a **low** level of risk to these values.

Economic

The value per individual MAFMF and HCF authorisation is difficult to estimate directly as operators can sell direct to the public, to wholesalers, or they have vertically integrated businesses, including export. It is likely the combined value of both fisheries exceeds several million dollars (value is estimated to be $1-5 million). Recent concern about global coral sustainability has resulted in additional scrutiny from importing countries, resulting in changes to the global operating environment for the MAFMF. Notwithstanding this, there is currently a **medium** level of economic risk to these values.

GOVERNANCE SYSTEM

The current effort level in these fisheries is low and relatively consistent from year-to-year. The potential impact of these fisheries is limited due to the widespread distribution of the numerous species targeted. No other fisheries exploit the majority of the species targeted and therefore there is limited potential for any impact on breeding stocks. Therefore, the current level of fishing activity is considered **adequate**.

There are specific performance measures for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listed species taken by the MAFMF, as part of its WTO conditions. These include species- or genera-specific catch limits for hard corals (see DPIRD 2018). All hard coral are CITES listed, and catches must remain below the threshold levels identified in the WTO to remain compliant with the WTO conditions (Australian Government 2022). In 2024, catches of all hard coral species remained below these levels.

A total limit of 15,000 kg applies for hard and soft coral combined – excluding *Corallimorpharia* and *Zoantharia* species. The hard coral catch for 2024 was 5,675.23 kg and the soft coral landed catch for 2024 was 302.2 kg. As such, the total 2024 combined hard and soft coral catch was 5,977.43 kg. The total *Corallimorpharia* and *Zoantharia* landed catch for 2024 was 2,751 kg.

A total limit of 2,400 tridacnid clams applies across all species; the total catch of tridacnid clams in 2024 was 751 individuals.

A total limit of 2,000 individuals applies across all *Syngnathiformes* species. The total number of seahorses (*Hippocampus* spp.) landed in 2024 was <60 individuals, with a total *Syngnathiformes* (total of all species including pipefishes) catch of only 57 individuals.

Harvest Strategy

The Harvest Strategy for the Marine Aquarium Fish Resource of Western Australia defines threshold levels for a range of species, including 36 individually listed species or genera of hard coral (DPIRD 2018). In 2024, the MAFMF landed 5,675.23 kg of hard coral. These levels of catch are considered acceptable as they are very low relative to the spatial distribution of each species within WA.

In November 2021, an ecological risk assessment (ERA) workshop was held to assess the impact of the MAFMF on the marine aquarium fish resource of WA (Smith et al. 2022). As part of the ERA, several CITES listed species, including hard coral, were specifically considered, with risk ratings ranging from **negligible** to **medium**. None of these risk ratings required a change in the existing management arrangements.

Species within the Marine Aquarium Fish Resource are exported by the MAFMF and aquaculturists. Export of Australian native specimens requires approval via a WTO from the Australian Government. In the case of the export of hard coral, the 2022 WTO includes individual species or genera threshold harvest levels, which differ to those in the Harvest Strategy. These thresholds, along with other requirements of the WTO, have resulted in management changes from the 2023 season onwards, and will be considered for incorporation in the Harvest Strategy when it is next reviewed.

Compliance

In 2018, an online daily reporting system (FishEye) was introduced for the MAFMF and replaced the logbook system. Operators in the HCF are required to complete statutory catch and effort returns on a monthly basis.

DPIRD also undertakes regular compliance inspections at-sea and on land to ensure fishing is being undertaken in accordance with the governing legislation (e.g. catch reporting).

Consultation

DPIRD undertakes consultation directly with licensees on operational issues. Industry management meetings are held between DPIRD and licensees, in conjunction with the Industry Consultation Unit of the Western Australian Fishing Industry Council under a Service Level Agreement with DPIRD.

Consultation with non-fisher stakeholders is undertaken in accordance with DPIRD's Stakeholder Engagement Guidelines.

Management Initiatives

A management plan for the MAFMF was introduced in 2018 that includes formal quota management arrangements for coral, Tridacnid clams, 'live rock', and syngnathiformes.

The 2022 WTO approval for the Marine Aquarium Fish Resource includes several conditions that are required to be met for continued export to be permitted. These conditions include the species and genera thresholds mentioned above, as well as additional reporting related to the number of pieces of hard coral collected and limits on how much coral can be taken from any one area.

These conditions have been reflected in informal management arrangements implemented for 2023 and subsequent seasons, including changes made to FishEye to ensure reporting meets these requirements.

EXTERNAL DRIVERS

Climate

Climate change and climate variability has the potential to impact many fish and coral species in a range of ways. The sensitivity to climate change of many marine aquarium fish species is not known. Some coral species may be adversely affected by warm water events and associated periods of coral bleaching. As such, many marine aquarium fish species are likely to have **high** sensitivity to climate change.

Other

Fishers are typically limited by sea and weather conditions, and access to beaches. Consumer demand and unit prices also influence the target species and numbers landed. The external drivers pose a **negligible** risk to these fisheries.

MARINE AQUARIUM FISH TABLE 1
Summary of the reported catch (number of individuals) of the main fish (excluding Syngnathids) species landed from the Marine Aquarium Fish Managed Fishery for 2024 and catches over the previous four years.

Species	Common Name	2020	2021	2022	2023	2024
Chaetodontoplus duboulayi	Scribbled Angelfish	1,961	1,750	2,299	3,814	2,897
Chromis atripectoralis	Black-axil Chromis*	*	*	*	*	*
Neopomacentrus azysron	Yellowtail Demoiselle*	*	*	*	1,055	1,926
Chelmon marginalis	Margined Coralfish	1,116	1,189	1,099	1,123	1,166
Anampses lennardi	Blue And Yellow Wrasse	1,167	473	857	937	1,111
Istiblennius meleagris	Spotted Blenny*	813	2,095	2,462	*	832
Chromis viridis	Blue-green Chromis*	*	*		*	494
Valenciennea alleni	Allen's Glidergoby*	*	*	*	594	*
Amphiprion clarkii	Clark's Anemonefish	88	149	200	424	384
Valenciennea puellaris	Orange-spotted Glidergoby	*	*	382	*	348

* The specific data cannot be reported due to confidentiality provisions.

MARINE AQUARIUM FISH TABLE 2

Summary of the reported catch (kg) of the main hard and soft coral species landed from the Marine Aquarium Fish Managed Fishery for 2024 and catches over the previous four years.

Species	Common Name	2020	2021	2022	2023	2024
Order Zoantharia - undifferentiated	General Zoanthid Anemones	1,007.0	651.0	307.0	1,013.0	1,303
Corallimorphidae - undifferentiated	Corallimorphidae Coral-like Anemones	2,794.0	2,337.7	1,015.0	858.0	845
Euphyllia glabrescens	Torch Hard Coral	1,209.2	1,044.4	473.3	442.6	550.7
Order Corallimorpharia - undifferentiated	General Coral-like Anemones	374.0	240.0	387.0	78.0	530.0
Trachyphyllia geoffroyi	Trachyphyllia Hard Coral	569.4	542.5	348.5	405.5	349.3
Australophyllia wilsoni[1]	Symphyllia wilsoni Hard Coral	374.7	631.2	505.8	290.3	303
Euphyllia ancora	Hammer Hard Coral	1,942.6	1,073.4	616.5	298.2	298.1
Duncanopsammia axifuga	Duncanops - Whisker Hard Coral	659.8	689.0	509.5	284.8	230.4
*Euphyllia divisa**	Frogspawn Hard Coral*	*	*	*	71.0	201.0
Goniopora spp	Goniopora Hard Corals	997.4	1,089.2	705.4	664.3	189.5
Goniopora columna	Goniopora columna Hard Coral	122.0	268.0	338.0	132.4	175.9
Acropora spp.	Acropora Staghorn Hard Coral	383.5	350.0	316.5	336.4	156.5
Alveopora spp.	Alveopora Hard Corals	344.0	327.0	176.0	252.6	156.1
Montipora capricornis	Montipora capricornis Hard Coral		*	*		155.0
Catalaphyllia jardinei	Catalaphyllia Elegant Hard Coral	308.0	221.8	238.5	278.3	121.9
*Goniopora pendulus**	Goniopora pendulus Hard Coral*	*	175.4	249.5	208.7	113.5
Sarcophyton spp.	Toadstool Soft Corals	255.7	282.0	222.0	79.6	101.6
*Lobophyllia hemprichii**	Lobophyllia hemprichii*	606.0	1,017.9	235.0	127.5	*
Homophyllia australis	Homophyllia australis Hard Coral	160.2	181.9	137.9	195.7	96.9
*Dipsastraea rotumana**	Dipsastraea rotumana Hard Coral*	68	*	*	55.0	94.7
*All other hard coral species ** (only hard coral; doesn't include soft coral species)*	New reporting line 2023 onwards				1,998.1	2,909.8

* The specific data cannot be reported due to confidentiality provisions.

** Individual catch <125 kg per species

[1] Please note Australophyllia wilsoni was previously known as Symphyllia wilsoni.

MARINE AQUARIUM FISH TABLE 3

Summary of the reported catch (kg) of several key species landed from the Marine Aquarium Fish Managed Fishery for 2024, in comparison to the threshold limits imposed under the WTO. Note, for the take of hard corals these thresholds differ to those outlined in the Harvest Strategy.

CITES listed species		WTO Threshold limits	2024
Hard Corals	Catalaphyllia jardinei	600 kg	121.9 kg
	Duncanopsammia axifuga	760 kg	230.4 kg
	Fimbriaphyllia ancora	707 kg	298.2 kg
	Euphyllia glabrescens	600 kg	550.7kg
	Moseleya latistellata	600 kg	44.5kg
	Trachyphyllia geoffroyi	836 kg	349.3
	Fimbriaphyllia paraancora[1]	600 kg	260.7
	Homophyllia cf. australis	600 kg	96.9
	Lobophyllia hemprichii	600 kg	*
	Micromussa lordhowensis	600 kg	105.5
	Australophyllia wilsoni[2]	600 kg	303
Seahorses	Hippocampus angustus	328 ind.	*
	Hippocampus subelongatus	2,000 ind.	*
	Hippocampus tuberculatus	100 ind.	*
	TOTAL	2,428 ind.	<60 Hippocampus spp. In total #
Giant Clams	Tridacna maxima	2,360 ind.	212 ind.
	Tridacna squamosa	578 ind.	39 ind.
	TOTAL	2,938 ind.	251 ind.

*The specific data cannot be reported due to confidentiality provisions.

Does not exceed threshold.

[1] Please note Fimbriaphyllia paraancora was previously known as Euphyllia paraancora.

[2] Please note Australophyllia wilsoni was previously known as Symphyllia wilsoni.

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STATEWIDE SPECIMEN SHELL RESOURCE STATUS REPORT 2025

L. Strain, C. Bruce, B. Leaversuch

OVERVIEW

The Specimen Shell Managed Fishery (SSMF) is based on the collection of individual shells for the purposes of display, collection, cataloguing, classification and sale. About 190 species of specimen shell are collected on average each year, using a variety of methods. The main methods include hand collection by small groups of divers operating from small boats in shallow coastal waters, wading along coastal beaches below the high-water mark, and by use of remotely operated underwater vehicles. While the fishery covers the entire WA coastline (Specimen Shell Figure 1), some concentration of effort occurs in areas adjacent to population centres such as Derby, Broome, Karratha, Exmouth, Carnarvon, Shark Bay, Geraldton, Perth, Mandurah, the Capes region, Albany, and Esperance.

This fishery is managed through input controls in the form of limited entry, gear restrictions and permanent closed areas. There are also operational limitations: depth, time and tide. The fishery has 30 licences with a maximum of 4 divers allowed in the water per licence at any one time, and specimens may only be collected by hand. In 2024, an Exemption for the trial of remotely operated underwater vehicles (limited to 1 per licence) was also in place.

There are a number of closed areas where the SSMF is not permitted to operate. These include within various marine parks and aquatic reserves and other closed waters such as Reef Observation Areas and Fish Habitat Protection Areas. Much of the west side of North-West Cape and the Ningaloo Marine Park are prohibited areas for the SSMF. The exclusion of Marmion Marine Park in the Perth metropolitan area is also important because of its populations of 2 rare cowrie species. There are no reported recreational catches for this resource.

SUMMARY FEATURES

Asset (Allowable catch &/or effort)	Outcome	Status
Commercial fishery (NA)	Total Catch 2024: Shells (n): 4,859	Acceptable
Recreational fishery (NA)	Total Catch 2024: NA	NA
EBFM		
Assessment Indicator		
Catch: 10,000 to 25,000 shells	4,859 shells	Adequate
Catch rate: 10 – 40 shells per day	12 shells per day	Adequate
Ecological		
Bycatch	Negligible risk	Adequate
Listed Species	Negligible risk	Adequate
Habitat	Negligible risk	Adequate
Ecosystem	Negligible risk	Adequate
Economic (Level 1 GVP <$1 million)	Low risk	Acceptable
Social (low amenity)	Low risk	Acceptable
Governance	Low risk	Acceptable
External Drivers –Other	Low risk	Acceptable
External Drivers – Climate	High sensitivity	

SUMMARY STATISTICS

Statistics	Previous season	Current season	Further description
Total Catch	5,807	4,859	Decrease in number of shells collected in 2024.
Commercial Effort (days)	452	415	Decrease in number of days fished.
Participation (vessels)	18	18	Same number of participants.
Beach price ($/kg)	NA	NA	Beach price is not a trend metric for this resource as value per individual specimen shell can be difficult to estimate.
Main (>20%) by-catch species (tonnes)	NA	NA	Targeted hand collection fishery that does not inadvertently harvest bycatch.
Listed Species interactions	0	0	



SPECIMEN SHELL FIGURE 1
Boundaries of the Specimen Shell Managed Fishery in Western Australia.

CATCH AND LANDINGS

In 2024, the total number of specimen shells collected was 4,859 shells distributed over 173 species. This was an increase of 30 species on what was collected in 2023 (143 specimen shell species). In the past 5 years (2020 to 2024) there was an average of ~188 species per year collected by the fishery – the majority in low numbers per individual species.

Mollusc families, cowries, cones, murexes and volutes generally have targeted effort given they are more popular with shell collectors. Cypraeidae (cowries) are noted for their localised variations in both shape and colour, making them attractive to collectors.

Of the 30 licences in the fishery, 18 licence holders fished in 2024. Effort in 2024 was 415 days, which was 37 fishing days less than the number of fishing days reported in 2023 (452 days). Over the past 5 years, there was an annual average of ~408 days fished.

INDICATOR SPECIES ASSESSMENTS AND STOCK STATUS

Statewide SSMF

During the 2024 season, the catch rate was approximately 12 shells per day.

Ponder and Grayson (1998) examined the specimen shell industry on a nationwide basis, rating vulnerability to over-exploitation on the basis of species biology, accessibility to collection, and rarity. Species collected in WA that were identified by Ponder and Grayson (1998) as potentially vulnerable comprised a total of 6 cowries *(Cypraea (Austrocypraea) reevei, Cypraea (Zoila) friendii vercoi, Cypraea (Zoila) marginata (albanyensis), Cypraea (Zoila) marginata (consueta), Cypraea (Zoila) rosselli* and *Cypraea (Zoila) venusta)* and 2 volutes *(Amoria damoni (keatsiana)* and *Amoria damoni (reevei))*.

Shell sighting is the abundance category used to monitor the 8 vulnerable WA species as identified by Ponder and Grayson (1998). Of the 8 vulnerable species, an average of ~49% of the shells sighted were not harvested in 2024. The measure of number of shells sighted is reported correctly in 2024 in about ~99% of cases where one of the vulnerable species is reported. It is anticipated that current sightings are an underestimate of the available populations. Thus, the breeding stocks of landed species are classified as **sustainable-adequate**.

BYCATCH AND PROTECTED SPECIES INTERACTIONS

Bycatch

There is no bycatch in this fishery owing to the highly selective fishing methods This results in a **negligible** risk for bycatch interactions.

Protected species

The fishery reported no interactions with listed protected species during 2024. Reports of interactions with listed protected species are required to be recorded on monthly catch and effort returns. This results in a **negligible** risk for protected species interactions.

HABITAT AND ECOSYSTEM INTERACTIONS

Habitat and ecosystem impacts are considered **negligible**. This is due to the small scale of the fishery and the hand collection method. While the fishery can potentially operate over large areas, catches are relatively low due to the special handling requirements. For example, specimens with slight visual imperfections are often overlooked by collectors, meaning their reproductive potential to the population can still be realised. This results in a **negligible** risk to the overall ecosystem from the fishery.

SOCIAL AND ECONOMIC OUTCOMES

Social

In 2024, 6 licences recorded consistent activity (32 fishing days or more), and 6 licences operated regularly in the fishery (12 fishing days or more). There were an additional six licences that exhibited low levels of activity (7 fishing days or less) in the fishery in 2024. It is expected that a minimum of 22 people are employed regularly in this fishery. There is currently a **low** level of risk to these values.

Economic

The value per individual specimen shell can be relatively high but difficult to estimate as operators can sell direct to the public, to wholesalers or through vertically integrated businesses including export. The estimated annual economic value of this fishery is currently not assessed. There is currently a **low** level of economic risk to these values.

GOVERNANCE SYSTEM

The performance measures for the fishery relate to the maintenance of breeding stocks, as indicated by catch levels and catch rates. In 2024, the catch of 4,859 shells was below the catch range (10,000 – 25,000 shells). The SSMF average annual catch has been 50-80% below the catch range over the last decade due to latent effort. The catch rate of 12 shells/day in 2024 was within the indicator range of 10 – 40 shells/day.

Harvest Strategy

The fishery currently operates under an informal harvest strategy based on a constant exploitation approach. There is no formal harvest strategy for this fishery.

Compliance

DPIRD periodically conducts compliance risk assessments to determine the level of risk in the SSMF. These assessments inform the resourcing levels, and DPIRD undertakes regular compliance inspections at-sea and on land.

Operators in the SSMF are required to complete statutory catch and effort returns on a monthly basis.

Consultation

DPIRD undertakes consultation directly with licensees on operational issues as well as through the Professional Shell Fisherman's Association of WA. Industry Management Meetings are held between DPIRD and licensees, in conjunction with the Industry Consultation Unit of the Western Australian Fishing Industry Council, who also undertake consultation on statutory management plan amendments on behalf of DPIRD under a Service Level Agreement.

Management Initiatives

DPIRD has identified the need to undertake a formal review of the current management arrangements of the SSMF to ensure they meet compliance requirements, and regulatory and sustainability objectives. Preliminary discussions have commenced, but the management review is not yet underway.

EXTERNAL DRIVERS

Climate

Climate change and climate variability has the potential to impact many specimen shell species in a range of ways. The sensitivity to climate change of many specimen shell species is not known. Some species may be adversely affected by warm water events. As such, many specimen shell species are likely to have **high** sensitivity to climate change.

Other

Fishers are typically limited by sea and weather conditions, and access to beaches. Consumer demand and unit prices also influence the target species and numbers landed. The external drivers pose a **low** risk to the SSMF.

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APPENDICES

APPENDIX 1
DPIRD AQUATIC SCIENCE AND ASSESSMENT STAFF PUBLICATIONS 2024-25

Scientific Papers

Afrifa-Yamoah, E., S. M.Taylor, and U. A.Mueller. 2025. Robust trend estimation from temporally irregular recreational fisheries surveys: a panel modeling framework for sparse time series. Fisheries Management and Ecology32, no. 6: 440–455.

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Status of Australian Fish Stocks Reports

The Status of Australian Fish Stocks (SAFS) Reports brings together available biological, catch, and effort information to determine the status of Australia's key wild catch fish stocks. Since 2018, SAFS summary information has been used to inform Australia's progress against UN Sustainable Development Goal 14.4.1, proportion of fish stocks within biologically sustainable levels. The United Nations Sustainability Goals are the blueprint to achieve a better and more sustainable future for all.

Aquatic Science and Assessment staff contributed to 92 individual species status reports for the 2024 version of SAFS.

The full citation for the overall report is below – but individual species chapters have a number of different authors.

Roelofs, A., Piddocke, T., Ashby, C., Conron, S., Hartmann, K., Hesp, A., Hone, P., Jacobsen, I., Jesson-Kerr, M., Mayfield, S., Stewart, J., Usher, M., Woodhams, J. and Wright, D. (eds). 2024. Status of Australian Fish Stocks Reports 2024. Fisheries Research and Development Corporation, Canberra.

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APPENDIX 2

The following tables contain data reported for commercial catches; recreational and charter catches; aquaculture production; reported bycatch of protected and listed species from commercial fisheries; and fish prices reported from land-based processors. The reporting period is dependent on the most recent data available.

Table of catches from commercial fishers' statutory returns for 2023-24

This table contains the estimated live weight[1] of species recorded in the compulsory catch and fishing effort returns provided by commercial fishers each month. These data include the catch taken as by-product as well as the targeted catch.

These catch data may differ slightly from some of the catch estimates presented for specific fisheries as the latter may include additional data from other sources, such as research logbooks and processors. The figures may also differ slightly from previously reported figures, as additional data may have been received by DPIRD. The table represents the latest year for which a complete set of data is available.

While scientific names have been included wherever possible, it should be noted that many fish recorded under a common name cannot be identified as belonging to a particular single species and therefore must be reported as being part of a commercial grouping of several species. For example, the common name 'Redfish' may be used for several species of the genus *Centroberyx*.

Data for species with live weight catches of less than 500 kg have been combined into the general or 'other' category within each class. Data for the Marine Aquarium fish Fishery, Specimen Shell Fishery and Hermit Crab Fishery are presented in the next table. Data for the Indian Ocean Territories Fishery have not been included.

Category Family	Common Name	Scientific Name	Live Weight (tonnes)
FISH			
SCALEFISH			
Acropomatidae, Percichthyidae, Serranidae, Polyprionidae, Moronidae, Callanthiidae, Centrogeniidae, Ostracoberycidae	Temperate Basses & Rockcods	Percichthyidae, Serranidae - undifferentiated	64
Ariidae	Forktail Catfishes	Ariidae - undifferentiated	19
Arripidae	Australian Herring	*Arripis georgianus*	137
Arripidae	Western Australian Salmon	*Arripis truttaceus*	211
Atherinidae	Hardyheads & Tusked Silversides	Atherinidae, Dentatherinidae - undifferentiated	4
Balistidae, Monacanthidae	Triggerfishes & Leatherjackets	Balistidae, Monacanthidae - undifferentiated	23
Berycidae	Bight Redfish	*Centroberyx gerrardi*	77
Carangidae	Amberjack	*Seriola dumerili*	18
Carangidae	Black Pomfret	*Parastromateus niger*	2
Carangidae	Golden Trevally	*Gnathanodon speciosus*	48
Carangidae	Samsonfish	*Seriola hippos*	23
Carangidae	Silver Trevally	*Pseudocaranx georgianus* spp. complex	4
Carangidae	Trevallies	Carangidae - undifferentiated	177
Carangidae	Yellowtail Kingfish	*Seriola lalandi*	2
Carangidae	Yellowtail Scad	*Trachurus novaezelandiae*	12
Centrolophidae	Blue-Eye Trevalla	*Hyperoglyphe antarctica*	7
Cheilodactylidae	Blue Morwong	*Nemadactylus valenciennesi*	30
Clupeidae	Australian Sardine	*Sardinops sagax*	2,081
Clupeidae	Blue Sprat	*Spratelloides robustus*	2
Clupeidae	Perth Herring	*Nematalosa vlaminghi*	2

Category Family	Common Name	Scientific Name	Live Weight (tonnes)
Clupeidae	Sandy Sprat	*Hyperlophus vittatus*	4
Clupeidae	Scaly Mackerel	*Sardinella lemuru*	159
Elopidae	Hawaiian Giant Herring	*Elops hawaiensis*	1
Fishes (multi-family groups)	Flounders	*Bothidae, Psettodidae & Pleuronectidae*	2
Glaucosomatidae	Northern Pearl Perch	*Glaucosoma buergeri*	27
Glaucosomatidae	West Australian Dhufish	*Glaucosoma hebraicum*	53
Haemulidae	Grunter Breams	Haemulidae - undifferentiated	3
Haemulidae	Javelinfishes	*Pomadasys* spp.	32
Haemulidae	Painted Sweetlips	*Diagramma labiosum*	51
Hemiramphidae	Garfishes	Hemiramphidae - undifferentiated	15
Hemiramphidae	Southern Garfish	*Hyporhamphus melanochir*	2
Kyphosidae	Western Buffalo Bream	*Kyphosus cornelii*	2
Labridae	Baldchin Groper	*Choerodon rubescens*	8
Labridae	Foxfish	*Bodianus frenchii*	2
Labridae	Pigfishes	*Bodianus* spp.	1
Labridae	Tuskfishes	*Choerodon* spp.	8
Labridae	Western Blue Groper	*Achoerodus gouldii*	22
Latidae	Barramundi	*Lates calcarifer*	51
Lethrinidae	Bluespotted Emperor	*Lethrinus punctulatus*	378
Lethrinidae	Drab Emperor	*Lethrinus ravus*	5
Lethrinidae	Grass Emperor	*Lethrinus laticaudis*	4
Lethrinidae	Longnose Emperor	*Lethrinus olivaceus*	36
Lethrinidae	Mozambique Seabream	*Wattsia mossambica*	12
Lethrinidae	Redspot Emperor	*Lethrinus lentjan*	56
Lethrinidae	Redthroat Emperor	*Lethrinus miniatus*	13
Lethrinidae	Robinson's Seabream	*Gymnocranius grandoculis*	61
Lethrinidae	Spangled Emperor	*Lethrinus nebulosus*	79
Lethrinidae	Yellowtail Emperor	*Lethrinus atkinsoni*	10
Lutjanidae	Brownstripe Snapper	*Lutjanus vitta*	191
Lutjanidae	Chinamanfish	*Symphorus nematophorus*	8
Lutjanidae	Crimson Snapper	*Lutjanus erythropterus*	256
Lutjanidae	Darktail Snapper	*Lutjanus lemniscatus*	24
Lutjanidae	Fiveline Snapper	*Lutjanus quinquelineatus*	1
Lutjanidae	Goldband Snapper	*Pristipomoides multidens*	656
Lutjanidae	Indonesian Snapper	*Lutjanus bitaeniatus*	13
Lutjanidae	Mangrove Jack	*Lutjanus argentimaculatus*	14
Lutjanidae	Moses' Snapper	*Lutjanus russellii*	63
Lutjanidae	Red Emperor	*Lutjanus sebae*	300
Lutjanidae	Rosy Snapper	*Pristipomoides filamentosus*	10
Lutjanidae	Ruby Snapper	*Etelis carbunculus*	24
Lutjanidae	Saddletail Snapper	*Lutjanus malabaricus*	353

Category Family	Common Name	Scientific Name	Live Weight (tonnes)
Lutjanidae	Sharptooth Snapper	*Pristipomoides typus*	63
Lutjanidae	Stripey Snapper	*Lutjanus carponotatus*	1
Lutjanidae	Tang's Snapper	*Lipocheilus carnolabrum*	1
Monacanthidae	Ocean Jacket	*Nelusetta ayraud*	5
Mugilidae	Sea Mullet	*Mugil cephalus*	207
Mugilidae	Yelloweye Mullet	*Aldrichetta forsteri*	8
Mullidae	Goatfishes	Mullidae - undifferentiated	58
Nemipteridae	Rainbow Monocle Bream	*Scolopsis monogramma*	9
Nemipteridae	Threadfin Breams	Nemipteridae - undifferentiated	216
Oplegnathidae	Knifejaw	*Oplegnathus woodwardi*	1
Pentacerotidae	Boarfishes	Pentacerotidae - undifferentiated	4
Platycephalidae	Flatheads	Platycephalidae - undifferentiated	12
Plotosidae	Estuary Cobbler	*Cnidoglanis macrocephalus*	23
Polynemidae	Blue Threadfin	*Eleutheronema tetradactylum*	3
Polynemidae	King Threadfin	*Polydactylus macrochir*	24
Polyprionidae	Bass Groper	*Polyprion americanus*	1
Polyprionidae	Hapuku	*Polyprion oxygeneios*	18
Pomatomidae	Tailor	*Pomatomus saltatrix*	14
Pricanthidae	Bigeyes	Priacanthidae - undifferentiated	61
Psettodidae	Australian Halibut	*Psettodes erumei*	1
Rachycentridae	Cobia	*Rachycentron canadum*	12
Scaridae	Parrotfishes	Scaridae - undifferentiated	5
Sciaenidae	Black Jewfish	*Protonibea diacanthus*	2
Sciaenidae	Mulloway	*Argyrosomus japonicus*	5
Scombridae	Grey Mackerel	*Scomberomorus semifasciatus*	16
Scombridae	Spanish Mackerel	*Scomberomorus commerson*	238
Serranidae	Banded Grouper	*Epinephelus amblycephalus*	15
Serranidae	Barcheek Coral Trout	*Plectropomus maculatus*	24
Serranidae	Barramundi Cod	*Chromileptes altivelis*	1
Serranidae	Blackspotted Rockcod	*Epinephelus malabaricus*	43
Serranidae	Breaksea Cod	*Epinephelides armatus*	4
Serranidae	Comet Grouper	*Epinephelus morrhua*	2
Serranidae	Duskytail Grouper	*Epinephelus bleekeri*	45
Serranidae	Flowery Rockcod	*Epinephelus fuscoguttatus*	2
Serranidae	Goldspotted Rockcod	*Epinephelus coioides*	44
Serranidae	Grey banded Rockcod	*Hyporthodus griseofasciatus*	14
Serranidae	Radiant Rockcod	*Epinephelus radiatus*	3
Serranidae	Radiant Rockcod/Comet Grouper	*Epinephelus Radiatus/Morrhua*	1
Serranidae	Rankin Cod	*Epinephelus multinotatus*	247
Serranidae	Spotted Cod	*Epinephelus Microdon/Areolatus/Bilobatus*	30
Serranidae	Tomato Rockcod	*Cephalopholis sonnerati*	2

Category Family	Common Name	Scientific Name	Live Weight (tonnes)
Serranidae	Yellowspotted Rockcod	*Epinephelus areolatus*	34
Sillaginidae	King George Whiting	*Sillaginodes punctatus*	11
Sillaginidae	Whitings	Sillaginidae - undifferentiated	21
Sillaginidae	Yellowfin Whiting	Sillago schomburgkii	105
Sparidae	Black Bream	*Acanthopagrus butcheri*	57
Sparidae	Frypan Bream	*Argyrops spinifer*	55
Sparidae	Pink Snapper	*Chrysophrys auratus*	229
Sparidae	Tarwhine	*Rhabdosargus sarba*	14
Sparidae	Western Yellowfin Bream	*Acanthopagrus morrisoni*	7
Sparidae	Yellowback Bream	*Dentex spariformis*	1
Sphyraenidae	Pikes	Sphyraenidae - undifferentiated	9
Sphyraenidae	Snook	*Sphyraena novaehollandiae*	1
Terapontidae	Striped Grunters	Terapontidae - undifferentiated	1
TOTAL SCALEFISH			7,983
SHARKS & RAYS			
Carcharhinidae	Bronze Whaler	*Carcharhinus brachyurus*	59
Carcharhinidae	Dusky Whaler	*Carcharhinus obscurus*	134
Carcharhinidae	Sandbar Shark	*Carcharhinus plumbeus*	33
Carcharhinidae	Spinner Shark	*Carcharhinus brevipinna*	22
Carcharhinidae	Tiger Shark	*Galeocerdo cuvier*	4
Lamnidae	Shortfin Mako	*Isurus oxyrinchus*	2
Myliobatidae	Southern Eagle Ray	*Myliobatis australis*	12
Orectolobidae	Wobbegong	Orectolobidae - undifferentiated	26
Pristiophoridae	Common Sawshark	*Pristiophorus cirratus*	3
Rajidae	Skates	Rajidae, Arhynchobatidae - undifferentiated	14
Sphyrnidae	Scalloped Hammerhead	*Sphyrna lewini*	2
Sphyrnidae	Smooth Hammerhead	*Sphyrna zygaena*	44
Triakidae	Gummy Shark	*Mustelus antarcticus*	287
Triakidae	School Shark	*Galeorhinus galeus*	26
Triakidae	Whiskery Shark	*Furgaleus macki*	160
TOTAL SHARKS & RAYS			828
OTHER FISH	Other Fish		128
TOTAL FISH			8,939
INVERTEBRATES			
CRABS			
Geryonidae	Crystal Crab	*Chaceon bicolor*	115
Hypothalassiidae	Champagne Crab	*Hypothalassia* spp.	2
Menippidae	Giant Crab	*Pseudocarcinus gigas*	6
Portunidae	Blue Swimmer Crab	*Portunus armatus*	489
TOTAL CRABS			612
LOBSTERS			
Palinuridae	Southern Rock Lobster	*Jasus edwardsii*	20

Category Family	Common Name	Scientific Name	Live Weight (tonnes)
Palinuridae	Western Rock Lobster	*Panulirus cygnus*	7,410
Scyllaridae	Moreton Bay Bug	*Thenus* spp.	8
TOTAL LOBSTERS			7,438
MOLLUSCS			
Cephalopoda	Squid	Order Teuthoidea - undifferentiated	19
Haliotidae	Brownlip Abalone	*Haliotis conicopora*	10
Haliotidae	Greenlip Abalone	*Haliotis laevigata*	20
Haliotidae	Roe's Abalone	*Haliotis roei*	29
Loliginidae	Southern Calamari	*Sepioteuthis australis*	12
Octopodidae	Octopuses	Octopodidae - undifferentiated	769
Pteriidae	Silverlip Pearl Oyster	*Pinctada maxima*	381
Sepiidae	Cuttlefish	*Sepia spp.*	70
Veneridae	Ballot's Saucer Scallop	*Ylistrum balloti*	2,132
TOTAL MOLLUSCS			3,442
PRAWNS			
Penaeidae	Banana Prawn	*Penaeus merguiensis*	100
Penaeidae	Blue Endeavour Prawn	*Metapenaeus endeavouri*	159
Penaeidae	Brown Tiger Prawn	*Penaeus esculentus*	488
Penaeidae	Velvet Prawn	*Metapenaeopsis spp.*	73
Penaeidae	Western King Prawn	*Melicertus latisulcatus*	587
Stomatopoda	Mantis Shrimps	Order Stomatopoda - undifferentiated	7
TOTAL PRAWNS			1,414
SEA CUCUMBERS			
Holothuriidae	Deepwater Redfish (Sea Cucumber)	*Actinopyga echinites*	256
OTHER INVERTEBRATES	Other Invertebrates		14
TOTAL INVERTEBRATES			13,176
GRAND TOTAL			22,115

1. Live weight: refers to the landings converted to a live weight basis. This is often referred to as the 'live weight equivalent of the landings', shortened to the 'live weight'. Although live weight may be the preferred unit it is rarely obtained as a direct measure. Live weight has to be derived, and this is usually done by applying a conversion factor to the landed weight. Landed weight refers to the mass (or weight) of a product at the time of landing, regardless of the state in which it is landed. That is, the fish may be whole, gutted or filleted etc. This unit is of limited use for further analysis except where it is known that the product is very homogenous in nature. Where more detailed analysis of the data is required the landed weight is generally converted to a more meaningful measure, the most frequently used being termed live or whole weight or 'nominal catch'.
2. Weight figures are round off to the nearest tonnage.
3. Common names are from the CAAB – Codes for Australian Biota database.

More information may be obtained from the 'CWP Handbook of Fishery Statistical Standards' at the website http://www.fao.org/fishery/cwp/handbook/B/en .

Table of catches from marine aquarium fish, specimen shell and hermit crab commercial fishers' statutory returns for 2023-24

Common Name	Quantity (numbers)	Weight (kg)	Volume (litres)
MARINE AQUARIUM FISH FISHERY			
Fish	19,967		
Syngnathidae (not included in Fish)	128		
Invertebrates (not including Corals)	97,403		

Hard Coral		5,697.28	
Soft Coral *		3,344.30	
Living Rock & Living Sand		5,413.50	
Sponges	1,109		
Algae/Seagrasses			324
Live Feed			**
SPECIMEN SHELL FISHERY			
Specimen Shells - Mollusca	5,648		
HERMIT CRAB FISHERY			
Land Hermit Crabs only - Coenobita variabilis	**		

* The 'Soft coral' category for the Marine Aquarium Fish Fishery includes 3,120 kg of coral like anemone groups such as corallimorphs and zoanthids in the Class Anthozoa. These are not part of the annual coral TAC.

** Industry figures have not been included to protect the confidentiality of individual authorisation holders, as there are less than three active authorisation holders.

Table of catches from charter returns for 2023-24

This table contains the number[1] and estimated weight[2] of species retained in the charter returns for 2023-24 financial year. The table represents the latest year for which a complete set of data is available.

Category / Family	Common Name	Scientific Name	Charter Kept Catch (number)	Charter Estimated Kept Catch (tonnes)
FISH				
SCALEFISH				
Acropomatidae, Percichthyidae, Serranidae, Polyprionidae, Moronidae, Callanthiidae, Centrogeniidae, Ostracoberycidae	Temperate Basses & Rockcods	Percichthyidae, Serranidae - undifferentiated	95	< 0.5
Apistidae, Neosebastidae, Pteroidae, Scorpaenidae, Sebastidae, Setarchidae, Synanceiidae, Tetrarogidae	Scorpionfishes	Apistidae, Neosebastidae, Pteroidae, Scorpaenidae, Sebastidae, Setarchidae, Synanceiidae & Tetrarogidae - undifferentiated	23	N/A
Ariidae	Forktail Catfishes	Ariidae - undifferentiated	43	N/A
Ariidae	Silver Cobbler	*Neoarius midgleyi*	Confidential	Confidential
Arripidae	Australian Herring	*Arripis georgianus*	60	Neg
Arripidae	Western Australian Salmon	*Arripis truttaceus*	Confidential	Confidential
Aulopidae	Sergeant Baker	*Latropiscis purpurissatus*	21	Neg
Balistidae, Monacanthidae	Triggerfishes & Leatherjackets	*Balistidae, Monacanthidae - undifferentiated*	43	Neg
Berycidae	Bight Redfish	*Centroberyx gerrardi*	1,562	2
Berycidae	Swallowtail	*Centroberyx lineatus*	454	< 0.5
Berycidae	Yelloweye Redfish	*Centroberyx australis*	Confidential	Confidential
Caesiondae, Lutjanidae, Symphysanodontidae	Fusiliers, Tropical Snappers & Slopefishes	Caesionidae, Lutjanidae, Symphysanodontidae - undifferentiated	34	N/A
Caesionidae	Yellowtail Fusilier	*Caesio cuning*	Confidential	Confidential
Carangidae	Amberjack	*Seriola dumerili*	120	< 1
Carangidae	Bludger Trevally	*Carangoides gymnostethus*	11	Neg
Carangidae	Bluefin Trevally	*Caranx melampygus*	Confidential	Confidential
Carangidae	Bluespotted Trevally	*Caranx bucculentus*	137	N/A
Carangidae	Brassy Trevally	*Caranx papuensis*	66	N/A
Carangidae	Diamond Trevally	*Alectis indica*	Confidential	Confidential
Carangidae	Giant Queenfish	*Scomberoides commersonnianus*	13	N/A
Carangidae	Giant Trevally	*Caranx ignobilis*	47	< 0.5
Carangidae	Golden Trevally	*Gnathanodon speciosus*	313	2
Carangidae	Longnose Trevally	*Carangoides chrysophrys*	33	N/A
Carangidae	Onion Trevally	*Carangoides caeruleopinnatus*	Confidential	Confidential

Category / Family	Common Name	Scientific Name	Charter Kept Catch (number)	Charter Estimated Kept Catch (tonnes)
Carangidae	Pennantfish	*Alectis ciliaris*	Confidential	Confidential
Carangidae	Queenfish	*Scomberoides spp.*	214	N/A
Carangidae	Rainbow Runner	*Elagatis bipinnulata*	Confidential	Confidential
Carangidae	Samsonfish	*Seriola hippos*	514	4
Carangidae	Silver Trevally	*Pseudocaranx georgianus spp. complex*	597	< 1
Carangidae	Trevallies	*Carangidae - undifferentiated*	172	< 0.5
Carangidae	Turrum	*Carangoides fulvoguttatus*	59	< 0.5
Carangidae	Yellowtail Kingfish	*Seriola lalandi*	139	< 1
Carangidae	Yellowtail Scad	*Trachurus novaezelandiae*	Confidential	Confidential
Centrolophidae	Blue-Eye Trevalla	*Hyperoglyphe antarctica*	Confidential	Confidential
Cheilodactylidae	Blue Morwong	*Nemadactylus valenciennesi*	248	< 1
Coryphaenidae	Mahi Mahis	*Coryphaena spp.*	77	< 0.5
Emmelichthyidae	Japanese Rubyfish	*Erythrocles schlegelii*	Confidential	Confidential
Ephippidae, Drepaneidae	Batfishes & Spotted Batfishes	*Ephippidae, Drepaneidae - undifferentiated*	Confidential	Confidential
Fishes (multi-family groups)	Flounders	*Bothidae, Psettodidae & Pleuronectidae*	Confidential	Confidential
Glaucosomatidae	Northern Pearl Perch	*Glaucosoma buergeri*	1,570	3
Glaucosomatidae	West Australian Dhufish	*Glaucosoma hebraicum*	936	5
Haemulidae	Barred Javelin	*Pomadasys kaakan*	Confidential	Confidential
Haemulidae	Blotched Javelin	*Pomadasys maculatus*	Confidential	Confidential
Haemulidae	Goldspotted Sweetlips	*Plectorhinchus flavomaculatus*	Confidential	Confidential
Haemulidae	Grunter Breams	*Haemulidae - undifferentiated*	Confidential	Confidential
Haemulidae	Javelinfishes	*Pomadasys spp.*	108	N/A
Haemulidae	Painted Sweetlips	*Diagramma labiosum*	84	< 0.5
Hemiramphidae	Southern Garfish	*Hyporhamphus melanochir*	Confidential	Confidential
Holocentridae	Squirrelfishes	*Holocentridae - undifferentiated*	Confidential	Confidential
Istiophoridae	Black Marlin	*Makaira indica*	4	N/A
Istiophoridae	Blue Marlin	*Makaira nigricans*	Confidential	Confidential
Istiophoridae	Sailfish	*Istiophorus platypterus*	Confidential	Confidential
Kyphosidae	Western Rock Blackfish	*Girella tephraeops*	Confidential	Confidential
Labridae	Baldchin Groper	*Choerodon rubescens*	1,741	5
Labridae	Blackspot Tuskfish	*Choerodon schoenleinii*	273	< 1
Labridae	Blue Tuskfish	*Choerodon cyanodus*	Confidential	Confidential
Labridae	Bluespotted Tuskfish	*Choerodon cauteroma*	12	N/A
Labridae	Brownspotted Wrasse	*Notolabrus parilus*	78	Neg

Category / Family	Common Name	Scientific Name	Charter Kept Catch (number)	Charter Estimated Kept Catch (tonnes)
Labridae	Foxfish	*Bodianus frenchii*	88	Neg
Labridae	Pigfishes	*Bodianus spp.*	62	Neg
Labridae	Purple Tuskfish	*Choerodon cephalotes*	Confidential	Confidential
Labridae	Redspot Wrasse	*Stethojulis bandanensis*	Confidential	Confidential
Labridae	Southern Maori Wrasse	*Ophthalmolepis lineolatus*	Confidential	Confidential
Labridae	Tuskfishes	*Choerodon spp.*	54	N/A
Labridae	Western Blue Groper	*Achoerodus gouldii*	Confidential	Confidential
Labridae	Western King Wrasse	*Coris auricularis*	79	Neg
Labridae	Wrasses	*Labridae - undifferentiated*	Confidential	Confidential
Labrinae	Sunburnt Pigfish	*Bodianus solatus*	263	N/A
Latidae	Barramundi	*Lates calcarifer*	1,235	5
Lethrinidae	Bluespotted Emperor	*Lethrinus punctulatus*	2,086	1
Lethrinidae	Emperors	*Lethrinidae - undifferentiated*	Confidential	Confidential
Lethrinidae	Grass Emperor	*Lethrinus laticaudis*	1,787	2
Lethrinidae	Longnose Emperor	*Lethrinus olivaceus*	1,521	N/A
Lethrinidae	Mozambique Seabream	*Wattsia mossambica*	Confidential	Confidential
Lethrinidae	Orangespotted Emperor	*Lethrinus erythracanthus*	Confidential	Confidential
Lethrinidae	Redspot Emperor	*Lethrinus lentjan*	4	N/A
Lethrinidae	Redthroat Emperor	*Lethrinus miniatus*	2,864	3
Lethrinidae	Robinson's Seabream	*Gymnocranius grandoculis*	1,382	4
Lethrinidae	Seabreams	*Gymnocranius spp.*	Confidential	Confidential
Lethrinidae	Spangled Emperor	*Lethrinus nebulosus*	4,549	11
Lethrinidae	Spotcheek Emperor	*Lethrinus rubrioperculatus*	19	Neg
Lethrinidae	Yellowlip Emperor	*Lethrinus xanthochilus*	Confidential	Confidential
Lethrinidae	Yellowtail Emperor	*Lethrinus atkinsoni*	14	Neg
Lobotidae	Tripletail	*Lobotes surinamensis*	10	N/A
Lutjanidae	Brownstripe Snapper	*Lutjanus vitta*	43	Neg
Lutjanidae	Chinamanfish	*Symphorus nematophorus*	327	2
Lutjanidae	Crimson Snapper	*Lutjanus erythropterus*	1,044	2
Lutjanidae	Darktail Snapper	*Lutjanus lemniscatus*	337	< 1
Lutjanidae	False Fusilier	*Paracaesio xanthura*	22	N/A
Lutjanidae	Flame Snapper	*Etelis coruscans*	6	N/A
Lutjanidae	Goldband Snapper	*Pristipomoides multidens*	5,424	19
Lutjanidae	Golden Snapper	*Lutjanus johnii*	3,745	5
Lutjanidae	Green Jobfish	*Aprion virescens*	67	N/A
Lutjanidae	Indonesian Snapper	*Lutjanus bitaeniatus*	Confidential	Confidential
Lutjanidae	King Snappers	*Pristipomoides spp.*	Confidential	Confidential
Lutjanidae	Mangrove Jack	*Lutjanus argentimaculatus*	2,409	2

Category / Family	Common Name	Scientific Name	Charter Kept Catch (number)	Charter Estimated Kept Catch (tonnes)
Lutjanidae	Maori Snapper	*Lutjanus rivulatus*	28	N/A
Lutjanidae	Midnight Snapper	*Macolor macularis*	Confidential	Confidential
Lutjanidae	Moses' Snapper	*Lutjanus russellii*	2,123	N/A
Lutjanidae	Red Bass	*Lutjanus bohar*	3	N/A
Lutjanidae	Red Emperor	*Lutjanus sebae*	2,614	9
Lutjanidae	Rosy Snapper	*Pristipomoides filamentosus*	1,399	3
Lutjanidae	Ruby Snapper	*Etelis carbunculus*	147	< 1
Lutjanidae	Rusty Jobfish	*Aphareus rutilans*	Confidential	Confidential
Lutjanidae	Saddletail Snapper	*Lutjanus malabaricus*	1,818	4
Lutjanidae	Sharptooth Snapper	*Pristipomoides typus*	1,532	3
Lutjanidae	Stripey Snapper	*Lutjanus carponotatus*	1,653	1
Lutjanidae	Tang's Snapper	*Lipocheilus carnolabrum*	Confidential	Confidential
Mugilidae	Sea Mullet	*Mugil cephalus*	Confidential	Confidential
Mullidae	Goatfishes	*Mullidae - undifferentiated*	17	N/A
Nemipteridae	Rosy Threadfin Bream	*Nemipterus furcosus*	Confidential	Confidential
Nemipteridae	Threadfin Breams	*Nemipteridae - undifferentiated*	Confidential	Confidential
Nemipteridae	Western Butterfish	*Pentapodus vitta*	Confidential	Confidential
Oplegnathidae	Knifejaw	*Oplegnathus woodwardi*	Confidential	Confidential
Paralichthyidae	Smalltooth Flounder	*Pseudorhombus jenynsii*	Confidential	Confidential
Platycephalidae	Flatheads	*Platycephalidae - undifferentiated*	86	N/A
Platycephalidae	Fringe-Eye Flathead	*Cymbacephalus nematophthalmus*	Confidential	Confidential
Platycephalidae	Rock Flathead	*Platycephalus laevigatus*	Confidential	Confidential
Platycephalidae	Southern Bluespotted Flathead	*Platycephalus speculator*	171	< 0.5
Plesiopidae	Southern Blue Devil	*Paraplesiops meleagris*	51	Neg
Polynemidae	Blue Threadfin	*Eleutheronema tetradactylum*	472	1
Polynemidae	King Threadfin	*Polydactylus macrochir*	86	< 0.5
Polynemidae	Threadfin Salmons	*Polynemidae - undifferentiated*	86	N/A
Polyprionidae	Bass Groper	*Polyprion americanus*	Confidential	Confidential
Pomacentridae	Scalyfin	*Parma victoriae*	Confidential	Confidential
Pomatomidae	Tailor	*Pomatomus saltatrix*	Confidential	Confidential
Rachycentridae	Cobia	*Rachycentron canadum*	457	3
Scaridae	Parrotfishes	*Scaridae - undifferentiated*	18	N/A
Sciaenidae	Black Jewfish	*Protonibea diacanthus*	56	< 0.5
Sciaenidae	Mulloway	*Argyrosomus japonicus*	193	< 1
Scombridae	Albacore	*Thunnus alalunga*	Confidential	Confidential
Scombridae	Bigeye Tuna	*Thunnus obesus*	17	N/A

Category / Family	Common Name	Scientific Name	Charter Kept Catch (number)	Charter Estimated Kept Catch (tonnes)
Scombridae	Bonitos	*Sarda australis & Cybiosarda elegans*	17	N/A
Scombridae	Dogtooth Tuna	*Gymnosarda unicolor*	57	< 1
Scombridae	Grey Mackerel	*Scomberomorus semifasciatus*	35	< 0.5
Scombridae	Longtail Tuna	*Thunnus tonggol*	135	< 1
Scombridae	Mackerel Tuna	*Euthynnus affinis*	101	< 0.5
Scombridae	Mackerels	*Scombridae - undifferentiated*	6	N/A
Scombridae	Oriental Bonito	*Sarda orientalis*	Confidential	Confidential
Scombridae	School Mackerel	*Scomberomorus queenslandicus*	175	< 0.5
Scombridae	Shark Mackerel	*Grammatorcynus bicarinatus*	116	< 1
Scombridae	Skipjack Tuna	*Katsuwonus pelamis*	25	< 0.5
Scombridae	Southern Bluefin Tuna	*Thunnus maccoyii*	464	2
Scombridae	Spanish Mackerel	*Scomberomorus commerson*	2,118	19
Scombridae	Spotted Mackerel	*Scomberomorus munroi*	36	Neg
Scombridae	Wahoo	*Acanthocybium solandri*	113	1
Scombridae	Yellowfin Tuna	*Thunnus albacares*	164	2
Scorpaenidae	Western Red Scorpionfish	*Scorpaena sumptuosa*	135	N/A
Scorpididae	Banded Sweep	*Scorpis georgiana*	Confidential	Confidential
Scorpididae	Footballer Sweep	*Neatypus obliquus*	Confidential	Confidential
Scorpididae	Sea Sweep	*Scorpis aequipinnis*	154	< 0.5
Serranidae	Banded Grouper	*Epinephelus amblycephalus*	35	N/A
Serranidae	Barcheek Coral Trout	*Plectropomus maculatus*	1,690	5
Serranidae	Barramundi Cod	*Chromileptes altivelis*	25	N/A
Serranidae	Birdwire Rockcod	*Epinephelus merra*	1,054	N/A
Serranidae	Blackspotted Rockcod	*Epinephelus malabaricus*	145	< 1
Serranidae	Blacktip Rockcod	*Epinephelus fasciatus*	Confidential	Confidential
Serranidae	Bluespotted Coral Trout	*Plectropomus laevis*	Confidential	Confidential
Serranidae	Breaksea Cod	*Epinephelides armatus*	1,000	1
Serranidae	Camouflage Grouper	*Epinephelus polyphekadion*	Confidential	Confidential
Serranidae	Chinaman Rockcod	*Epinephelus rivulatus*	459	< 0.5
Serranidae	Comet Grouper	*Epinephelus morrhua*	Confidential	Confidential
Serranidae	Common Coral Trout	*Plectropomus leopardus*	405	1
Serranidae	Coral Rockcod	*Cephalopholis miniata*	110	N/A
Serranidae	Duskytail Grouper	*Epinephelus bleekeri*	40	N/A

Category / Family	Common Name	Scientific Name	Charter Kept Catch (number)	Charter Estimated Kept Catch (tonnes)
Serranidae	Flowery Rockcod	*Epinephelus fuscoguttatus*	64	N/A
Serranidae	Frostback Rockcod	*Epinephelus bilobatus*	15	N/A
Serranidae	Goldspotted Rockcod	*Epinephelus coioides*	651	3
Serranidae	Grey banded Rockcod	*Hyporthodus griseofasciatus*	75	< 0.5
Serranidae	Harlequin Fish	*Othos dentex*	117	< 0.5
Serranidae	Passionfruit Coral Trout	*Plectropomus areolatus*	Confidential	Confidential
Serranidae	Peacock Rockcod	*Cephalopholis argus*	Confidential	Confidential
Serranidae	Radiant Rockcod	*Epinephelus radiatus*	26	N/A
Serranidae	Rankin Cod	*Epinephelus multinotatus*	3,349	14
Serranidae	Tomato Rockcod	*Cephalopholis sonnerati*	761	1
Serranidae	Vermicular Cod	*Plectropomus oligacanthus*	Confidential	Confidential
Serranidae	Western Wirrah	*Acanthistius serratus*	Confidential	Confidential
Serranidae	Wirrah	*Acanthistius spp.*	Confidential	Confidential
Serranidae	Yellowedge Coronation Trout	*Variola louti*	72	< 0.5
Serranidae	Yellowspotted Rockcod	*Epinephelus areolatus*	61	N/A
Sillaginidae	King George Whiting	*Sillaginodes punctatus*	541	< 0.5
Sillaginidae	Whitings	*Sillaginidae - undifferentiated*	54	Neg
Sillaginidae	Yellowfin Whiting	*Sillago schomburgkii*	Confidential	Confidential
Sparidae	Black Bream	*Acanthopagrus butcheri*	Confidential	Confidential
Sparidae	Frypan Bream	*Argyrops spinifer*	790	< 1
Sparidae	Northwest Black Bream	*Acanthopagrus palmaris*	83	N/A
Sparidae	Pink Snapper	*Chrysophrys auratus*	11,543	29
Sparidae	Tarwhine	*Rhabdosargus sarba*	38	Neg
Sphyraenidae	Pikes	*Sphyraenidae - undifferentiated*	9	N/A
Sphyraenidae	Snook	*Sphyraena novaehollandiae*	28	Neg
Terapontidae	Western Sooty Grunter	*Hephaestus jenkinsi*	Confidential	Confidential
Terapontidae (Striped Grunters	Spangled Perch	*Leiopotherapon unicolor*	Confidential	Confidential
Triglidae	Searobins & Armour Gurnards	*Triglidae & Peristediidae - undifferentiated*	Confidential	Confidential
Xiphiidae	Swordfish	*Xiphias gladius*	Confidential	Confidential
SHARKS & RAYS				
Brachaeluridae, Ginglymostomatidae, Hemiscylliidae, Orectolobidae, Parascylliidae, Stegastomatidae	Blind, Nurse, Carpet & Zebra Sharks	*Brachaeluridae & related families - undifferentiated*	Confidential	Confidential

Category / Family	Common Name	Scientific Name	Charter Kept Catch (number)	Charter Estimated Kept Catch (tonnes)
Carcharhinidae	Blacktip Reef Shark	*Carcharhinus melanopterus*	Confidential	Confidential
Carcharhinidae, Hemigaleidae	Whaler & Weasel Sharks	*Carcharhinidae, Hemigaleidae - undifferentiated*	64	N/A
Orectolobidae	Wobbegong	*Orectolobidae - undifferentiated*	3	Neg
Squalidae	Dogfishes	*Squalidae - undifferentiated*	Confidential	Confidential
Triakidae	Gummy Shark	*Mustelus antarcticus*	Confidential	Confidential
Triakidae	Whiskery Shark	*Furgaleus macki*	Confidential	Confidential
INVERTEBRATES				
CRABS				
Portunidae	Blue Swimmer Crab	*Portunus armatus*	Confidential	Confidential
Portunidae	Brown Mud Crab	*Scylla olivacea*	1,653	< 1
Portunidae	Green Mud Crab	*Scylla serrata*	44	Neg
Portunidae	Mud Crab	*Scylla spp.*	128	N/A
LOBSTERS				
Palinuridae	Ornate Rock Lobster	*Panulirus ornatus*	Confidential	Confidential
Palinuridae	Painted Rock Lobster	*Panulirus versicolor*	14	N/A
Palinuridae	Tropical Rock Lobster	*Panulirus spp. except P. cygnus*	Confidential	Confidential
Palinuridae	Western Rock Lobster	*Panulirus cygnus*	37,163	20
MOLLUSCS				
Cephalopoda	Squid	*Order Teuthoidea - undifferentiated*	388	< 0.5
Haliotidae	Abalones	*Haliotidae - undifferentiated*	Confidential	Confidential
Octopodidae	Octopuses	*Octopodidae - undifferentiated*	31	Neg
Ostreidae	Oysters	*Ostreidae - undifferentiated*	952	N/A
Sepiidae	Cuttlefish	*Sepia spp.*	26	N/A

Kept catch (number): refers to the reported number of retained fish in the Tour Operator Returns (Charter Logbooks). "Confidential" indicates insufficient data where <3 Tour Operator licensees.

Kept catch (tonnes): refers to the kept catch (number) converted to a weight from estimates of average weight based on the Tour Operator Returns. Weight estimates are round off to the nearest tonnage. N/A indicates estimate of average weight is unavailable. "Neg" indicates negligible catch (< 0.1 tonnes).

Common names are from the CAAB – Codes for Australian Biota database.

Table of catches from boat-based recreational fishers for 2023-24

This table contains the estimated number[1] and weight[2] of species retained in the state-wide survey of boat-based recreational fishers for 2023-24 (1 September 2023 – 31 August 2024). These estimates include catch from targeted and non-targeted recreational fishing. Estimates are reported at species level where adequate sample size and precision were obtained, otherwise species were grouped to general or 'other' categories within each class. Uncertainty around estimates from the state-wide survey is not included in this table (refer to Ryan *et al*. 2025 for this information). Estimates of shore-based recreational catches are not available. The table represents the latest year for which a complete set of data is available.

Category / Family	Common Name	Scientific Name	Estimated Kept Catch (number)	Estimated Kept Catch (tonnes)
FISH				
SCALEFISH				
Ariidae	Forktail Catfishes	Ariidae - undifferentiated	id	id
	Giant Sea Catfish	*Netuma thalassina*	id	id
	Silver Cobbler	*Neoarius midgleyi*	id	id
Arripidae	Australian Herring	*Arripis georgianus*	102,429	15
	Western Australian Salmon	*Arripis truttaceus*	id	id
Aulopidae	Sergeant Baker	*Latropiscis purpurissatus*	1,555	1
Bathysauridae, Synodontidae	Lizardfishes & Deepsea Lizardfishes	Bathysauridae, Synodontidae - undifferentiated	id	id
Belonidae	Longtoms	Belonidae - undifferentiated	id	id
Berycidae	Bight Redfish	*Centroberyx gerrardi*	13,416	17
	Swallowtail	*Centroberyx lineatus*	936	< 0.5
	Yelloweye Redfish	*Centroberyx australis*	id	id
Carangidae	Amberjack	*Seriola dumerili*	id	id
	Bludger Trevally	*Carangoides gymnostethus*	id	id
	Giant Trevally	*Caranx ignobilis*	id	id
	Golden Trevally	*Gnathanodon speciosus*	969	2
	Queenfish	*Scomberoides* spp.	id	id
	Rainbow Runner	*Elagatis bipinnulata*	id	id
	Samsonfish	*Seriola hippos*	1,767	12
	Silver Trevally	*Pseudocaranx georgianus* spp. complex	17,399	9
	Trevallies	Carangidae - undifferentiated	id	id
	Yellowtail Kingfish	*Seriola lalandi*	570	3
	Yellowtail Scad	*Trachurus novaezelandiae*	id	id
Centrolophidae	Blue-Eye Trevalla	*Hyperoglyphe antarctica*	id	id
Cheilodactylidae	Blue Morwong	*Nemadactylus valenciennesi*	4,209	12
	Morwongs	Cheilodactylidae - undifferentiated	id	id
Clupeidae	Australian Sardine	*Sardinops sagax*	id	id
Clupeidae & Pristigasteridae	Herrings & Ilishas	Clupeidae, Pristigasteridae - undifferentiated	id	id
Coryphaenidae	Mahi Mahis	*Coryphaena* spp.	1,028	2
Fishes (multi-family groups)	Flounders	Bothidae, Psettodidae & Pleuronectidae	id	id
Gempylidae	Barracouta	*Thyrsites atun*	id	id
Glaucosomatidae	Northern Pearl Perch	*Glaucosoma buergeri*	966	2
	West Australian Dhufish	*Glaucosoma hebraicum*	23,130	94
Haemulidae	Barred Javelin	*Pomadasys kaakan*	id	id
	Blotched Javelin	*Pomadasys maculatus*	id	id
	Grunter Breams	Haemulidae - undifferentiated	id	id
	Painted Sweetlips	*Diagramma labiosum*	582	1

Category / Family	Common Name	Scientific Name	Estimated Kept Catch (number)	Estimated Kept Catch (tonnes)
Hemiramphidae	Garfishes	Hemiramphidae - undifferentiated	id	id
	Southern Garfish	*Hyporhamphus melanochir*	id	id
	Three-By-Two Garfish	*Hemiramphus robustus*	id	id
Istiophoridae	Black Marlin	*Makaira indica*	id	id
	Blue Marlin	*Makaira nigricans*	id	id
	Sailfish	*Istiophorus platypterus*	id	id
Kyphosidae	Silver Drummer	*Kyphosus sydneyanus*	id	id
Labridae	Baldchin Groper	*Choerodon rubescens*	13,133	28
	Blackspot Tuskfish	*Choerodon schoenleinii*	4,746	13
	Blue Tuskfish	*Choerodon cyanodus*	1,226	3
	Bluespotted Tuskfish	*Choerodon cauteroma*	id	id
	Brownspotted Wrasse	*Notolabrus parilus*	1,771	<1
	Foxfish	*Bodianus frenchii*	855	<1
	Sunburnt Pigfish	*Bodianus solatus*	id	id
	Purple Tuskfish	*Choerodon cephalotes*	id	id
	Southern Maori Wrasse	*Ophthalmolepis lineolatus*	id	id
	Tuskfishes	*Choerodon* spp.	id	id
	Western Blue Groper	*Achoerodus gouldii*	526	6
	Western King Wrasse	*Coris auricularis*	5,631	2
	Wrasses	Labridae - undifferentiated	id	id
Latidae	Barramundi	*Lates calcarifer*	1,525	6
	Sand Bass	*Psammoperca waigiensis*	id	id
Lethrinidae	Bluespotted Emperor	*Lethrinus punctulatus*	id	id
	Emperors	Lethrinidae - undifferentiated	id	id
	Grass Emperor	*Lethrinus laticaudis*	17,717	23
	Longnose Emperor	*Lethrinus olivaceus*	id	id
	Redspot Emperor	*Lethrinus lentjan*	id	id
	Redthroat Emperor	*Lethrinus miniatus*	id	id
	Robinson's Seabream	*Gymnocranius grandoculis*	1,002	2
	Spangled Emperor	*Lethrinus nebulosus*	4,747	9
	Yellowtail Emperor	*Lethrinus atkinsoni*	id	id
Lobotidae	Tripletail	*Lobotes surinamensis*	id	id
Lutjanidae	Brownstripe Snapper	*Lutjanus vitta*	id	id
	Chinamanfish	*Symphorus nematophorus*	id	id
	Crimson Snapper	*Lutjanus erythropterus*	id	id
	Darktail Snapper	*Lutjanus lemniscatus*	id	id
	Flame Snapper	*Etelis coruscans*	id	id
	Goldband Snapper	*Pristipomoides multidens*	4,851	10
	Golden Snapper	*Lutjanus johnii*	2,276	3
	Mangrove Jack	*Lutjanus argentimaculatus*	2,149	2
	Maori Snapper	*Lutjanus rivulatus*	id	id
	Moses' Snapper	*Lutjanus russellii*	id	id
	Red Emperor	*Lutjanus sebae*	4,646	15
	Rosy Snapper	*Pristipomoides filamentosus*	id	id
	Ruby Snapper	*Etelis boweni*	id	id

Category / Family	Common Name	Scientific Name	Estimated Kept Catch (number)	Estimated Kept Catch (tonnes)
	Saddletail Snapper	*Lutjanus malabaricus*	1,047	2
	Sharptooth Snapper	*Pristipomoides typus*	id	id
	Stripey Snapper	*Lutjanus carponotatus*	5,296	3
	Tropical Snappers	*Lutjanus* spp.	id	id
Megalopidae	Oxeye Herring	*Megalops cyprinoides*	id	id
Monacanthidae	Horseshoe Leatherjacket	*Meuschenia hippocrepis*	id	id
	Leatherjackets	Monacanthidae - undifferentiated	id	id
	Sixspine Leatherjacket	*Meuschenia freycineti*	id	id
Moridae	Morid Cods	Moridae - undifferentiated	id	id
Mugilidae	Bluetail Mullet	*Valamugil buchanani*	id	id
	Mullets	Mugilidae - undifferentiated	id	id
	Sea Mullet	*Mugil cephalus*	id	id
	Yelloweye Mullet	*Aldrichetta forsteri*	id	id
Mullidae	Bluespotted Goatfish	*Upeneichthys vlamingii*	id	id
Nemipteridae	Rosy Threadfin Bream	*Nemipterus furcosus*	id	id
	Western Butterfish	*Pentapodus vitta*	id	id
Neosebastidae	Bighead Gurnard Perch	*Neosebastes pandus*	id	id
	Gurnard Perches	Neosebastidae - undifferentiated	id	id
Oplegnathidae	Knifejaw	*Oplegnathus woodwardi*	id	id
Paralichthyidae	Smalltooth Flounder	*Pseudorhombus jenynsii*	id	id
Pentacerotidae	Boarfishes	Pentacerotidae - undifferentiated	id	id
Percidae	Redfin	*Perca fluviatilis*	id	id
Platycephalidae	Flatheads	Platycephalidae - undifferentiated	2,834	2
	Northern Sand Flathead	*Platycephalus endrachtensis*	id	id
	Southern Bluespotted Flathead	*Platycephalus speculator*	1,913	1
	Yellowtail Flathead	*Platycephalus westraliae*	id	id
Plesiopidae	Western Blue Devil	*Paraplesiops sinclairi*	id	id
Plotosidae	Eeltail Catfishes	Plotosidae - undifferentiated	id	id
Polynemidae	Blue Threadfin	*Eleutheronema tetradactylum*	id	id
	King Threadfin	*Polydactylus macrochir*	1,203	6
Polyprionidae	Bass Groper	*Polyprion americanus*	id	id
	Hapuku	*Polyprion oxygeneios*	id	id
Pomatomidae	Tailor	*Pomatomus saltatrix*	6,719	4
Rachycentridae	Cobia	*Rachycentron canadum*	1,190	8
Scaridae	Bluebarred Parrotfish	*Scarus ghobban* spp. complex	id	id
	Parrotfishes	Scaridae - undifferentiated	id	id
Sciaenidae	Black Jewfish	*Protonibea diacanthus*	id	id
	Mulloway	*Argyrosomus japonicus*	id	id
Scombridae	Blue Mackerel	*Scomber australasicus*	id	id
	Bonitos	*Sarda australis* & *Cybiosarda elegans*	id	id
	Dogtooth Tuna	*Gymnosarda unicolor*	id	id
	Grey Mackerel	*Scomberomorus semifasciatus*	id	id
	Longtail Tuna	*Thunnus tonggol*	id	id
	Mackerel Tuna	*Euthynnus affinis*	id	id

Category / Family	Common Name	Scientific Name	Estimated Kept Catch (number)	Estimated Kept Catch (tonnes)
	Mackerels	Scombridae spp. (tribes Scomberomorini & Scombrini)	id	id
	Oriental Bonito	*Sarda orientalis*	id	id
	School Mackerel	*Scomberomorus queenslandicus*	1,308	3
	Shark Mackerel	*Grammatorcynus bicarinatus*	id	id
	Skipjack Tuna	*Katsuwonus pelamis*	1,179	7
	Southern Bluefin Tuna	*Thunnus maccoyii*	2,910	10
	Spanish Mackerel	*Scomberomorus commerson*	3,794	34
	Spotted Mackerel	*Scomberomorus munroi*	id	id
	Tunas	Scombridae spp. (tribes Sardini & Thunnini)	id	id
	Wahoo	*Acanthocybium solandri*	id	id
	Yellowfin Tuna	*Thunnus albacares*	780	8
Scorpididae	Banded Sweep	*Scorpis georgiana*	id	id
	Sea Sweep	*Scorpis aequipinnis*	1,352	2
Serranidae	Barcheek Coral Trout	*Plectropomus maculatus*	3,129	7
	Barramundi Cod	*Chromileptes altivelis*	id	id
	Blackspotted Rockcod	*Epinephelus malabaricus*	1,151	5
	Blacktip Rockcod	*Epinephelus fasciatus*	id	id
	Breaksea Cod	*Epinephelides armatus*	12,927	13
	Chinaman Rockcod	*Epinephelus rivulatus*	id	id
	Common Coral Trout	*Plectropomus leopardus*	4,550	12
	Greybanded grouper	*Hyporthodus griseofasciatus*	id	id
	Frostback Rockcod	*Epinephelus bilobatus*	id	id
	Goldspotted Rockcod	*Epinephelus coioides*	2,973	10
	Harlequin Fish	*Othos dentex*	1,618	2
	Queensland Groper	*Epinephelus lanceolatus*	id	id
	Rankin Cod	*Epinephelus multinotatus*	4,321	17
	Tomato Rockcod	*Cephalopholis sonnerati*	id	id
	Yellowedge Coronation Trout	*Variola louti*	id	id
	Yellowspotted Rockcod	*Epinephelus areolatus*	id	id
Sillaginidae	Goldenline Whiting	*Sillago analis*	id	id
	King George Whiting	*Sillaginodes punctatus*	53,233	14
	Southern School Whiting	*Sillago bassensis*	68,531	7
	Western School Whiting	*Sillago vittata*	69,019	7
	Western Trumpeter Whiting	*Sillago burrus*	id	id
	Whitings	Sillaginidae - undifferentiated	id	id
	Yellowfin Whiting	*Sillago schomburgkii*	68,128	12
Sparidae	Black Bream	*Acanthopagrus butcheri*	id	id
	Breams	Sparidae - undifferentiated	id	id
	Frypan Bream	*Argyrops notialis*	id	id
	Northwest Black Bream	*Acanthopagrus palmaris*	id	id
	Pink Snapper	*Chrysophrys auratus*	27,422	79
	Tarwhine	*Rhabdosargus sarba*	id	id
	Western Yellowfin Bream	*Acanthopagrus morrisoni*	id	id
Sphyraenidae	Great Barracuda	*Sphyraena barracuda*	id	id
	Pikes	Sphyraenidae - undifferentiated	id	id

Category / Family	Common Name	Scientific Name	Estimated Kept Catch (number)	Estimated Kept Catch (tonnes)
	Snook	*Sphyraena novaehollandiae*	id	id
	Yellowtail Barracuda	*Sphyraena obtusata*	id	id
Stromateidae	Butterfishes & Pomfrets	Stromateidae - undifferentiated	id	id
Terapontidae	Sea Trumpeter	*Pelsartia humeralis*	id	id
	Striped Grunters	Terapontidae - undifferentiated	id	id
	Western Sooty Grunter	*Hephaestus jenkinsi*	id	id
	Western Striped Grunter	*Pelates octolineatus*	id	id
Toxotidae	Archerfishes	Toxotidae - undifferentiated	id	id
SHARKS & RAYS				
Carcharhinidae	Blacktip Reef Shark	*Carcharhinus melanopterus*	id	id
	Bronze Whaler	*Carcharhinus brachyurus*	id	id
	Dusky Whaler	*Carcharhinus obscurus*	id	id
	Sandbar Shark	*Carcharhinus plumbeus*	id	id
	Whitetip Reef Shark	*Triaenodon obesus*	id	id
Carcharhinidae, Hemigaleidae	Whaler & Weasel Sharks	Carcharhinidae, Hemigaleidae - undifferentiated	id	id
Heterodontidae	Port Jackson Shark	*Heterodontus portusjacksoni*	id	id
Odontaspididae	Greynurse Shark	*Carcharias taurus*	id	id
Orectolobidae	Wobbegong	Orectolobidae - undifferentiated	id	id
Pristiophoridae	SawShark	*Pristiophorus* spp.	id	id
Rhinobatidae	Western Shovelnose Ray	*Aptychotrema vincentiana*	id	id
Sphyrnidae	Hammerhead Sharks	Sphyrnidae - undifferentiated	id	id
Triakidae	Gummy Shark	*Mustelus antarcticus*	905	8
	Western Spotted Gummy Shark	*Mustelus stevensi*	id	id
	Whiskery Shark	*Furgaleus macki*	id	id
NULL	Other Sharks	Sharks - undifferentiated	id	id
INVERTEBRATES				
CRABS				
Portunidae	Blue Swimmer Crab	*Portunus armatus*	122,532	31
	Brown Mud Crab	*Scylla olivacea*	1,879	1
	Green Mud Crab	*Scylla serrata*	2,169	2
	Sand Crab	*Ovalipes* spp.	id	id
FRESHWATER CRUSTACEANS				
Parastacidae	Marron	*Cherax cainii*	id	id
LOBSTERS				
Palinuridae	Ornate Rock Lobster	*Panulirus ornatus*	id	id
	Painted Rock Lobster	*Panulirus versicolor*	id	id
	Southern Rock Lobster	*Jasus edwardsii*	id	id
	Western Rock Lobster	*Panulirus cygnus*	257,532	188
MOLLUSCS				
Cephalopoda	Squid	Order Teuthoidea - undifferentiated	82,543	56
Haliotidae	Brownlip Abalone	*Haliotis conicopora*	id	id
	Roe's Abalone	*Haliotis roei*	id	id
Octopodidae	Octopuses	Octopodidae - undifferentiated	1,223	<1
Sepiidae	Cuttlefish	*Sepia* spp.	1,639	3

Kept catch (number): refers to the number of fish retained in the state-wide survey of boat-based recreational fishing (Ryan et al. 2025), "id" indicates insufficient data where relative standard error > 40% and < 30 diarists recorded catches of the species in the state-wide survey.

Kept catch (tonnes): refers to the kept catch (number) converted to weight (rounded to the nearest tonnage) using average weight of recreationally caught fish from state-wide biological surveys or the Tour Operator Returns.

Common names are from the CAAB – Codes for Australian Biota database.

Table of growout production for the WA aquaculture industry in 2023-24

This table contains the data collected on annual production returns received from all WA aquaculture licence holders. Some species produced in WA aquaculture have been grouped together as they are produced by less than 3 contributing licences, so making the data confidential.

Common name	Productive licences	Quantity	Units*	Average price/ kg or individual	Value
Other Finfish	3	1,037	Tonnes	n/a	$12,858,627
Other Mollusc	4	656	Tonnes	n/a	$11,212,396
Marron	159	50	Tonnes	$46.21	$2,316,938
Algae	3	125	Tonnes	n/a	$1,409,695
Ornamental Finfish	7	47,022	No.	n/a	$283,667
Silver Perch	4	7	Tonnes	$28.32	$205,997
Yabbies	7	6	Tonnes	$31.28	$175,153
Ornamental Coral/Algae/Rock	3	3,113	No.	n/a	$83,168
Ornamental Other	3	7,130	No.	n/a	$20,150
Total (not including pearls)					$28,565,791

* Tonnes refer to whole weight

Table of reported bycatch of protected and listed species from commercial, aquaculture and charter fisheries for 2024

This table contains the numbers of accidental captures and fate of protected and listed animals by commercial and charter fishers, as reported in statutory fishing returns, Catch Disposal Records and Annual Reports during calendar year 2024[1]. To the extent possible, other types of recorded interactions (primarily sightings) with protected and listed species have been excluded. For the purpose of this report, protected and listed species (or taxa) are defined as those listed as: Totally Protected Fish[2] under the WA *Fish Resources Management Act 1994* (FRMA); Specially Protected Fauna under the *Biodiversity Conservation Act 2016* (BCA); cetaceans and other species that are listed under the Australian *Environment Protection and Biodiversity Conservation Act 1999* (EPBC). As other reports may include records that do not meet these definitions, these data may differ from other accounts.

Class	Common Name	Scientific Name	Release Condition (number)		
			ALIVE	DEAD	UNKNOWN
					COMMERCIAL
Birds	Cormorants (Unspecified)	*Phalacrocoracidae*	3	6	0
	Ducks Geese and Swans	*Anatidae*	2	0	0
	Flesh-footed Shearwater	*Ardenna carneipes*	86	14	0
Fish	Green Sawfish	*Pristis zijsron*	10	16	0
	Narrow Sawfish	*Anoxypristis cuspidata*	4	4	0
	Dwarf Sawfish	*Pristis clavata*	6	0	0
	Sawfishes (Unspecified)	*Pristidae*	60	14	65
	Syngnathids (Unspecified)	*Syngnathidae*	42	24	6
	Potato Rockcod	*Epinephelus tukula*	0	0	4
	Greynurse Shark	Carcharias taurus	13	0	3
	White Shark	Carcharodon carcharias	20	2	2
Mammals	Dolphins (Unspecified)	Delphinidae	2	6	1
	Humpback Whale	Megaptera novaeangliae	11	0	7

Class	Common Name	Scientific Name	Release Condition (number)		
			ALIVE	DEAD	UNKNOWN
Reptiles	Crocodiles (Unspecified)	*Crocodylus spp.*	134	26	23
	Freshwater Crocodile	*Crocodylus johnstoni*	2	11	0
	Green Turtle	Chelonia mydas	17	0	0
	Loggerhead Turtle	*Caretta caretta*	7	0	0
	Flatback Turtle	*Natator depressus*	1	0	0
	Sea Turtles (Unspecified)	*Cheloniidae*	38	0	0
	Freshwater Turtles (Unspecified)	*Chelidae*	6	12	0
	Olive Sea Snake	Aipysurus laevis	60	3	205
	Olive-headed Sea Snake	Hydrophis major	34	2	0
	Reef Shallows Sea Snake	Aipysurus duboisii	27	1	0
	Elegant Sea Snake	Hydrophis elegans	79	1	0
	Spotted Sea Snake	Hydrophis ocellatus	2	0	0
	Mosaic sea Snake	Aipysurus mosaicus	9	0	0
	Short-nosed Sea Snake	Aipysurus apraefrontalis	29	1	0
	Stokes' Sea Snake	Hydrophis stokesii	44	1	0
	Sea Snakes (Unspecified)	Hydrophiinae	2,614	262	41
					CHARTER
Fish	Green Sawfish	Pristis zijsron	1	0	0
	Sawfishes (Unspecified)	Pristidae	2	0	0
	Humphead Maori Wrasse	Cheilinus undulatus	35	0	0
	Potato Rockcod	Epinephelus tukula	3	0	0
	Queensland Groper	Epinephelus lanceolatus	13	0	0

1. Reports by other sources (e.g. members of public and Government officials) of whale entanglements in fishing gear, dead seabirds that have washed ashore, etc. are usually not attributable to particular fishers, fisheries, dates or locations. Although these ancillary interaction records are reported in Annual Reports to Parliament and elsewhere, they are inconsistent with the more-detailed information from statutory fishing records and are therefore not included here.

2. Except those listed as Totally Protected Fish in reference to their sex, size, weight, reproductive cycle, area from which they are taken or specific period of time.

Table of Fish Prices for 2023-24

This table contains the average price per kilogram paid for each marine species caught in WA in 2023-24. The prices are based on prices reported by WA land-based processors; the average prices reported are weighted and are based on whole weight. Where prices aren't available for a financial year a default price, based on the average of prices reported in previous years, is used. The prices have been adjusted to reflect the beach price paid; the beach price is the price paid per kilogram to commercial fishers for their catch when they first land and excludes any marketing, transport or handling costs.

Category / Family	Common Name	Scientific Name	Price per Kilogram
FISH			
SCALEFISH			
Acropomatidae, Percichthyidae, Serranidae, Polyprionidae, Moronidae, Callanthiidae, Centrogeniidae, Ostracoberycidae	Temperate Basses & Rockcods	Percichthyidae, Serranidae - undifferentiated	$8.19
Albulidae	Pacific Bonefish	*Albula argentea*	$6.43
Apistidae, Neosebastidae, Pteroidae, Scorpaenidae, Sebastidae, Setarchidae, Synanceiidae, Tetrarogidae	Scorpionfishes	Apistidae, Neosebastidae, Pteroidae, Scorpaenidae, Sebastidae, Setarchidae, Synanceiidae & Tetrarogidae - undifferentiated	$9.09
Apogonidae	Western Gobbleguts	*Ostorhinchus rueppellii*	$4.69

Category / Family	Common Name	Scientific Name	Price per Kilogram
Apogonidae, Dinolestidae	Cardinalfishes & Longfin Pikes	Apogonidae, Dinolestidae - undifferentiated	$5.10
Ariidae	Forktail Catfishes	Ariidae - undifferentiated	$3.52
Ariidae	Silver Cobbler	*Neoarius midgleyi*	$5.27
Arripidae	Australian Herring	*Arripis georgianus*	$1.84
Arripidae	Western Australian Salmon	*Arripis truttaceus*	$0.88
Atherinidae	Hardyheads & Tusked Silversides	Atherinidae, Dentatherinidae - undifferentiated	$4.69
Aulopidae	Sergeant Baker	*Latropiscis purpurissatus*	$0.82
Balistidae, Monacanthidae	Triggerfishes & Leatherjackets	Balistidae, Monacanthidae - undifferentiated	$5.58
Belonidae	Longtoms	Belonidae - undifferentiated	$5.49
Berycidae	Bight Redfish	*Centroberyx gerrardi*	$10.46
Berycidae	Redfishes	Berycidae - undifferentiated	$10.46
Berycidae	Swallowtail	*Centroberyx lineatus*	$10.46
Berycidae	Yelloweye Redfish	*Centroberyx australis*	$7.56
Caesiondae, Lutjanidae, Symphysanodontidae	Fusiliers, Tropical Snappers & Slopefishes	Caesionidae, Lutjanidae, Symphysanodontidae - undifferentiated	$15.71
Caesionidae	Yellowtail Fusilier	*Caesio cuning*	$15.71
Carangidae	Amberjack	*Seriola dumerili*	$5.19
Carangidae	Black Pomfret	*Parastromateus niger*	$13.11
Carangidae	Common Dart	*Trachinotus botla*	$6.89
Carangidae	Diamond Trevally	*Alectis indica*	$5.13
Carangidae	Giant Queenfish	*Scomberoides commersonnianus*	$5.83
Carangidae	Golden Trevally	*Gnathanodon speciosus*	$2.79
Carangidae	Queenfish	*Scomberoides* spp.	$5.83
Carangidae	Rainbow Runner	*Elagatis bipinnulata*	$8.46
Carangidae	Samsonfish	*Seriola hippos*	$4.64
Carangidae	Silver Trevally	*Pseudocaranx georgianus* spp. complex	$4.37
Carangidae	Skipjack Trevally	*Pseudocaranx wrighti*	$12.00
Carangidae	Tille Trevally	*Caranx tille*	$5.13
Carangidae	Trevallies	Carangidae - undifferentiated	$5.13
Carangidae	Yellowtail Kingfish	*Seriola lalandi*	$8.87
Carangidae	Yellowtail Scad	*Trachurus novaezelandiae*	$6.66
Centrolophidae	Blue-Eye Trevalla	*Hyperoglyphe antarctica*	$10.26
Cheilodactylidae	Blue Morwong	*Nemadactylus valenciennesi*	$5.15
Cheilodactylidae	Dusky Morwong	*Dactylophora nigricans*	$2.58
Cheilodactylidae	Jackass Morwong	*Nemadactylus macropterus*	$5.78
Cheilodactylidae	Magpie Perch	*Cheilodactylus nigripes*	$2.58
Cheilodactylidae	Morwongs	Cheilodactylidae - undifferentiated	$2.58
Cheilodactylidae	Redlip Morwong	*Cheilodactylus rubrolabiatus*	$3.84
Clupeidae	Australian Sardine	*Sardinops sagax*	$1.23
Clupeidae	Blue Sprat	*Spratelloides robustus*	$4.69
Clupeidae	Maray	*Etrumeus teres*	$4.69
Clupeidae	Perth Herring	*Nematalosa vlaminghi*	$5.49
Clupeidae	Sandy Sprat	*Hyperlophus vittatus*	$5.76
Clupeidae	Scaly Mackerel	*Sardinella lemuru*	$1.59
Coryphaenidae	Mahi Mahis	*Coryphaena* spp.	$8.19

Category / Family	Common Name	Scientific Name	Price per Kilogram
Elopidae	Hawaiian Giant Herring	*Elops hawaiensis*	$7.74
Fishes (multi-family groups)	Flounders	Bothidae, Psettodidae & Pleuronectidae	$14.60
Gempylidae	Gemfish	*Rexea solandri*	$3.70
Glaucosomatidae	Northern Pearl Perch	*Glaucosoma buergeri*	$10.00
Glaucosomatidae	West Australian Dhufish	*Glaucosoma hebraicum*	$19.27
Haemulidae	Barred Javelin	*Pomadasys kaakan*	$6.11
Haemulidae	Goldspotted Sweetlips	*Plectorhinchus flavomaculatus*	$6.50
Haemulidae	Grunter Breams	Haemulidae - undifferentiated	$6.50
Haemulidae	Javelinfishes	*Pomadasys* spp.	$5.48
Haemulidae	Lined Javelinfish	*Hapalogenys dampieriensis*	$2.08
Haemulidae	Painted Sweetlips	*Diagramma labiosum*	$6.50
Hemiramphidae	Garfishes	Hemiramphidae - undifferentiated	$6.64
Hemiramphidae	Southern Garfish	*Hyporhamphus melanochir*	$6.64
Kyphosidae	Silver Drummer	*Kyphosus sydneyanus*	$1.92
Kyphosidae	Western Buffalo Bream	*Kyphosus cornelii*	$4.69
Kyphosidae	Western Rock Blackfish	*Girella tephraeops*	$0.73
Kyphosidae	Zebrafish	*Girella zebra*	$0.38
Kyphosidae, Scorpididae	Drummers & Sweeps	Kyphosidae, Scorpididae - undifferentiated	$1.92
Labridae	Baldchin Groper	*Choerodon rubescens*	$15.83
Labridae	Blackspot Tuskfish	*Choerodon schoenleinii*	$7.85
Labridae	Brownspotted Wrasse	*Notolabrus parilus*	$1.61
Labridae	Foxfish	*Bodianus frenchii*	$8.74
Labridae	Pigfishes	*Bodianus* spp.	$8.99
Labridae	Southern Maori Wrasse	*Ophthalmolepis lineolatus*	$2.41
Labridae	Tuskfishes	*Choerodon* spp.	$8.21
Labridae	Western Blue Groper	*Achoerodus gouldii*	$5.09
Labridae	Western King Wrasse	*Coris auricularis*	$5.81
Labridae	Wrasses	Labridae - undifferentiated	$2.16
Labrinae	Sunburnt Pigfish	*Bodianus solatus*	$8.99
Latidae	Barramundi	*Lates calcarifer*	$12.24
Latidae	Sand Bass	*Psammoperca waigiensis*	$8.19
Lethrinidae	Bluespotted Emperor	*Lethrinus punctulatus*	$5.99
Lethrinidae	Drab Emperor	*Lethrinus ravus*	$5.55
Lethrinidae	Emperors	Lethrinidae - undifferentiated	$9.64
Lethrinidae	Grass Emperor	*Lethrinus laticaudis*	$8.28
Lethrinidae	Longnose Emperor	*Lethrinus olivaceus*	$7.71
Lethrinidae	Mozambique Seabream	*Wattsia mossambica*	$8.88
Lethrinidae	Paddletail Seabream	*Gymnocranius euanus*	$7.45
Lethrinidae	Redspot Emperor	*Lethrinus lentjan*	$6.21
Lethrinidae	Redthroat Emperor	*Lethrinus miniatus*	$9.64
Lethrinidae	Robinson's Seabream	*Gymnocranius grandoculis*	$8.51
Lethrinidae	Spangled Emperor	*Lethrinus nebulosus*	$7.03
Lethrinidae	Spotcheek Emperor	*Lethrinus rubrioperculatus*	$5.93
Lethrinidae	Yellowtail Emperor	*Lethrinus atkinsoni*	$6.30
Lobotidae	Tripletail	*Lobotes surinamensis*	$4.69
Lutjanidae	Brownstripe Snapper	*Lutjanus vitta*	$5.46

Category / Family	Common Name	Scientific Name	Price per Kilogram
Lutjanidae	Chinamanfish	*Symphorus nematophorus*	$7.18
Lutjanidae	Crimson Snapper	*Lutjanus erythropterus*	$6.31
Lutjanidae	Darktail Snapper	*Lutjanus lemniscatus*	$7.12
Lutjanidae	Fiveline Snapper	*Lutjanus quinquelineatus*	$1.55
Lutjanidae	Flame Snapper	*Etelis coruscans*	$9.18
Lutjanidae	Goldband Snapper	*Pristipomoides multidens*	$11.43
Lutjanidae	Golden Snapper	*Lutjanus johnii*	$8.71
Lutjanidae	Green Jobfish	*Aprion virescens*	$2.53
Lutjanidae	Indonesian Snapper	*Lutjanus bitaeniatus*	$5.95
Lutjanidae	Mangrove Jack	*Lutjanus argentimaculatus*	$7.42
Lutjanidae	Maori Snapper	*Lutjanus rivulatus*	$5.69
Lutjanidae	Moses' Snapper	*Lutjanus russellii*	$6.34
Lutjanidae	Red Bass	*Lutjanus bohar*	$15.71
Lutjanidae	Red Emperor	*Lutjanus sebae*	$13.44
Lutjanidae	Rosy Snapper	*Pristipomoides filamentosus*	$11.15
Lutjanidae	Ruby Snapper	*Etelis carbunculus*	$9.17
Lutjanidae	Saddletail Snapper	*Lutjanus malabaricus*	$6.50
Lutjanidae	Sharptooth Snapper	*Pristipomoides typus*	$10.96
Lutjanidae	Stripey Snapper	*Lutjanus carponotatus*	$4.95
Lutjanidae	Tang's Snapper	*Lipocheilus carnolabrum*	$8.70
Lutjanidae	Tropical Snappers	*Lutjanus* spp.	$5.29
Monacanthidae	Ocean Jacket	*Nelusetta ayraud*	$3.76
Monacanthidae	Sixspine Leatherjacket	*Meuschenia freycineti*	$5.58
Moridae	Ribaldo	*Mora mora*	$3.62
Mugilidae	Mullets	Mugilidae - undifferentiated	$1.74
Mugilidae	Sea Mullet	*Mugil cephalus*	$3.07
Mugilidae	Yelloweye Mullet	*Aldrichetta forsteri*	$1.73
Mullidae	Bluespotted Goatfish	*Upeneichthys vlamingii*	$5.42
Mullidae	Bluestriped Goatfish	*Upeneichthys lineatus*	$5.42
Mullidae	Goatfishes	Mullidae - undifferentiated	$5.42
Mullidae	Rosy Goatfish	*Parupeneus chrysopleuron*	$5.42
Nemipteridae	Rainbow Monocle Bream	*Scolopsis monogramma*	$1.99
Nemipteridae	Rosy Threadfin Bream	*Nemipterus furcosus*	$5.33
Nemipteridae	Threadfin Breams	Nemipteridae - undifferentiated	$5.33
Neosebastidae	Bighead Gurnard Perch	*Neosebastes pandus*	$3.42
Odacidae	Blue Weed Whiting	*Haletta semifasciata*	$1.44
Ophidiidae	Pink Ling	*Genypterus blacodes*	$8.49
Oplegnathidae	Knifejaw	*Oplegnathus woodwardi*	$3.56
Order Anguilliformes - undifferentiated	Eels	Order Anguilliformes - undifferentiated	$4.15
Pentacerotidae	Boarfishes	Pentacerotidae - undifferentiated	$5.31
Platycephalidae	Flatheads	Platycephalidae - undifferentiated	$5.85
Platycephalidae	Rock Flathead	*Platycephalus laevigatus*	$8.77
Plesiopidae	Western Blue Devil	*Paraplesiops sinclairi*	$2.01
Plotosidae	Estuary Cobbler	*Cnidoglanis macrocephalus*	$3.80
Polynemidae	Australian Threadfin	*Polydactylus multiradiatus*	$5.33
Polynemidae	Blue Threadfin	*Eleutheronema tetradactylum*	$5.33

Category / Family	Common Name	Scientific Name	Price per Kilogram
Polynemidae	King Threadfin	*Polydactylus macrochir*	$15.26
Polyprionidae	Bass Groper	*Polyprion americanus*	$9.48
Polyprionidae	Hapuku	*Polyprion oxygeneios*	$10.62
Pomatomidae	Tailor	*Pomatomus saltatrix*	$5.83
Priacanthidae	Longfin Bigeye	*Cookeolus japonicus*	$3.13
Priacanthidae	Lunartail Bigeye	*Priacanthus hamrur*	$3.13
Pricanthidae	Bigeyes	Priacanthidae - undifferentiated	$3.13
Psettodidae	Australian Halibut	*Psettodes erumei*	$5.50
Rachycentridae	Cobia	*Rachycentron canadum*	$7.08
Scaridae	Parrotfishes	Scaridae - undifferentiated	$9.99
Sciaenidae	Bearded Jewfish	*Johnius amblycephalus*	$4.69
Sciaenidae	Black Jewfish	*Protonibea diacanthus*	$4.69
Sciaenidae	Mulloway	*Argyrosomus japonicus*	$7.00
Scombridae	Blue Mackerel	*Scomber australasicus*	$12.19
Scombridae	Bonitos	*Sarda australis* & *Cybiosarda elegans*	$17.62
Scombridae	Grey Mackerel	*Scomberomorus semifasciatus*	$10.28
Scombridae	Longtail Tuna	*Thunnus tonggol*	$12.26
Scombridae	Mackerel Tuna	*Euthynnus affinis*	$11.47
Scombridae	Oriental Bonito	*Sarda orientalis*	$17.62
Scombridae	School Mackerel	*Scomberomorus queenslandicus*	$17.54
Scombridae	Shark Mackerel	*Grammatorcynus bicarinatus*	$5.19
Scombridae	Skipjack Tuna	*Katsuwonus pelamis*	$8.19
Scombridae	Spanish Mackerel	*Scomberomorus commerson*	$13.90
Scombridae	Spotted Mackerel	*Scomberomorus munroi*	$17.61
Scombridae	Tunas	*Scombridae* spp. (tribes Sardini & Thunnini)	$11.87
Scombridae	Wahoo	*Acanthocybium solandri*	$5.52
Scombridae	Yellowfin Tuna	*Thunnus albacares*	$12.31
Scorpaenidae	Western Red Scorpionfish	*Scorpaena sumptuosa*	$9.09
Scorpididae	Moonlighter	*Tilodon sexfasciatus*	$1.20
Scorpididae	Sea Sweep	*Scorpis aequipinnis*	$3.96
Sebastidae	Bigeye Ocean Perch	*Helicolenus barathri*	$3.40
Serranidae	Banded Grouper	*Epinephelus amblycephalus*	$8.98
Serranidae	Barcheek Coral Trout	*Plectropomus maculatus*	$18.30
Serranidae	Barramundi Cod	*Chromileptes altivelis*	$27.87
Serranidae	Birdwire Rockcod	*Epinephelus merra*	$9.55
Serranidae	Blackspotted Rockcod	*Epinephelus malabaricus*	$9.29
Serranidae	Breaksea Cod	*Epinephelides armatus*	$13.11
Serranidae	Camouflage Grouper	*Epinephelus polyphekadion*	$8.19
Serranidae	Chinaman Rockcod	*Epinephelus rivulatus*	$15.51
Serranidae	Comet Grouper	*Epinephelus morrhua*	$13.04
Serranidae	Common Coral Trout	*Plectropomus leopardus*	$18.53
Serranidae	Coral Rockcod	*Cephalopholis miniata*	$30.14
Serranidae	Coral Trout	*Plectropomus* spp. & *Variola* spp.	$18.53
Serranidae	Dotted Grouper	*Epinephelus epistictus*	$10.22
Serranidae	Duskytail Grouper	*Epinephelus bleekeri*	$7.59
Serranidae	Eightbar Grouper	*Hyporthodus octofasciatus*	$8.19

Category / Family	Common Name	Scientific Name	Price per Kilogram
Serranidae	Flowery Rockcod	*Epinephelus fuscoguttatus*	$9.96
Serranidae	Frostback Rockcod	*Epinephelus bilobatus*	$6.91
Serranidae	Goldspotted Rockcod	*Epinephelus coioides*	$9.28
Serranidae	Grey banded Rockcod	*Hyporthodus griseofasciatus*	$11.48
Serranidae	Harlequin Fish	*Othos dentex*	$15.50
Serranidae	Radiant Rockcod	*Epinephelus radiatus*	$9.79
Serranidae	Radiant Rockcod/Comet Grouper	*Epinephelus radiatus/morrhua*	$10.11
Serranidae	Rankin Cod	*Epinephelus multinotatus*	$9.90
Serranidae	Spotted Cod	*Epinephelus microdon/areolatus/bilobatus*	$7.30
Serranidae	Tomato Rockcod	*Cephalopholis sonnerati*	$9.67
Serranidae	Western Wirrah	*Acanthistius serratus*	$13.03
Serranidae	Wirrah	*Acanthistius* spp.	$13.03
Serranidae	Yellowedge Coronation Trout	*Variola louti*	$25.61
Serranidae	Yellowspotted Rockcod	*Epinephelus areolatus*	$6.93
Siganidae	Rabbitfish	*Siganus* spp.	$5.06
Sillaginidae	King George Whiting	*Sillaginodes punctatus*	$14.81
Sillaginidae	Southern School Whiting	*Sillago bassensis*	$5.72
Sillaginidae	Western School Whiting	*Sillago vittata*	$5.72
Sillaginidae	Whitings	Sillaginidae - undifferentiated	$5.72
Sillaginidae	Yellowfin Whiting	*Sillago schomburgkii*	$5.82
Sparidae	Black Bream	*Acanthopagrus butcheri*	$5.32
Sparidae	Frypan Bream	*Argyrops spinifer*	$6.62
Sparidae	Pink Snapper	*Chrysophrys auratus*	$11.16
Sparidae	Tarwhine	*Rhabdosargus sarba*	$4.33
Sparidae	Western Yellowfin Bream	*Acanthopagrus morrisoni*	$6.86
Sparidae	Yellowback Bream	*Dentex spariformis*	$7.36
Sphyraenidae	Pikes	Sphyraenidae - undifferentiated	$3.21
Sphyraenidae	Snook	*Sphyraena novaehollandiae*	$3.88
Stromateidae	Butterfishes & Pomfrets	Stromateidae - undifferentiated	$5.31
Terapontidae	Sea Trumpeter	*Pelsartia humeralis*	$1.55
Terapontidae	Striped Grunters	Terapontidae - undifferentiated	$1.55
Terapontidae	Western Sooty Grunter	*Hephaestus jenkinsi*	$1.55
Triglidae	Butterfly Gurnard	*Lepidotrigla vanessa*	$3.42
Triglidae	Red Gurnard	*Chelidonichthys kumu*	$3.42
Triglidae	Searobins & Armour Gurnards	Triglidae & Peristediidae - undifferentiated	$3.42
Uranoscopidae	Stargazers	Uranoscopidae - undifferentiated	$2.35
Zeidae	John Dory	*Zeus faber*	$12.97
SHARKS & RAYS			
Carcharhinidae	Bronze Whaler	*Carcharhinus brachyurus*	$3.96
Carcharhinidae	Dusky Whaler	*Carcharhinus obscurus*	$5.05
Carcharhinidae	Sandbar Shark	*Carcharhinus plumbeus*	$4.48
Carcharhinidae	Spinner Shark	*Carcharhinus brevipinna*	$1.75
Carcharhinidae	Tiger Shark	*Galeocerdo cuvier*	$0.62
Centrophoridae, Dalatiidae, Squalidae, Somniosidae & Etmopteridae	Gulper sharks, Sleeper Sharks & Dogfishes	Centrophoridae, Dalatiidae, Squalidae, Somniosidae & Etmopteridae - undifferentiated	$2.22
Fishes (multi-family groups)	Rays & Skates	Order Rajiformes - undifferentiated	$3.78

Category / Family	Common Name	Scientific Name	Price per Kilogram
Hexanchidae	Sevengill Sharks	*Heptranchias* spp.	$4.36
Lamnidae	Shortfin Mako	*Isurus oxyrinchus*	$1.46
Myliobatidae	Southern Eagle Ray	*Myliobatis australis*	$2.08
Orectolobidae	Wobbegong	Orectolobidae - undifferentiated	$1.76
Pristiophoridae	Common Sawshark	*Pristiophorus cirratus*	$0.92
Rajidae	Skates	Rajidae, Arhynchobatidae - undifferentiated	$3.78
Rhinobatidae	Guitarfishes	Rhinobatidae - undifferentiated	$0.34
Sphyrnidae	Great Hammerhead	*Sphyrna mokarran*	$1.50
Sphyrnidae	Scalloped Hammerhead	*Sphyrna lewini*	$1.50
Sphyrnidae	Smooth Hammerhead	*Sphyrna zygaena*	$1.50
Squatinidae	Angel Shark	*Squatina* spp.	$1.31
Triakidae	Gummy Shark	*Mustelus antarcticus*	$5.13
Triakidae	Pencil Shark	*Hypogaleus hyugaensis*	$1.34
Triakidae	School Shark	*Galeorhinus galeus*	$4.64
Triakidae	Whiskery Shark	*Furgaleus macki*	$4.90
Urolophidae & Plesiobatidae	Stingarees & Giant Stingarees	Urolophidae, Plesiobatidae - undifferentiated	$3.78
	Shark Fins		$15.06
	Other Sharks	Sharks - undifferentiated	$3.55
OTHER FISH			
	Unspecified Demersal Fish		$4.69
	Other Fish		$4.69
INVERTEBRATES			
CRABS			
Geryonidae	Crystal Crab	*Chaceon bicolor*	$56.54
Hypothalassiidae	Champagne Crab	*Hypothalassia* spp.	$23.42
Menippidae	Giant Crab	*Pseudocarcinus gigas*	$88.98
Portunidae	Blue Swimmer Crab	*Portunus armatus*	$10.84
Portunidae	Brown Mud Crab	*Scylla olivacea*	$30.00
Portunidae	Coral Crab	*Charybdis feriata*	$9.79
Portunidae	Sand Crab	*Ovalipes* spp.	$1.67
Portunidae	Swimming Crabs	Portunidae - undifferentiated	$1.67
Portunidae	Three-Spotted Crab	*Portunus sanguinolentus*	$1.67
LOBSTERS			
Palinuridae	Southern Rock Lobster	*Jasus edwardsii*	$38.46
Palinuridae	Western Rock Lobster	*Panulirus cygnus*	$38.46
Scyllaridae	Balmain Bug	*Ibacus* spp.	$20.00
Scyllaridae	Moreton Bay Bug	*Thenus* spp.	$20.00
MOLLUSCS			
Cephalopoda	Squid	Order Teuthoidea - undifferentiated	$21.59
Haliotidae	Brownlip Abalone	*Haliotis conicopora*	$50.24
Haliotidae	Greenlip Abalone	*Haliotis laevigata*	$61.87
Haliotidae	Roe's Abalone	*Haliotis roei*	$23.59
Loliginidae	Northern Calamari	*Sepioteuthis lessoniana*	$21.59
Loliginidae	Southern Calamari	*Sepioteuthis australis*	$21.59
Octopodidae	Octopuses	Octopodidae - undifferentiated	$12.38
Ommastrephidae	Gould's Squid	*Nototodarus gouldi*	$21.59

Category / Family	Common Name	Scientific Name	Price per Kilogram
Pinnidae	Razor Clams	Pinnidae - undifferentiated	$6.88
Sepiidae	Cuttlefish	*Sepia* spp.	$7.71
Veneridae	Ballot's Saucer Scallop	*Ylistrum balloti*	$8.98
PRAWNS			
Penaeidae	Banana Prawn	*Penaeus merguiensis*	$9.77
Penaeidae	Black Tiger Prawn	*Penaeus monodon*	$15.00
Penaeidae	Blue Endeavour Prawn	*Metapenaeus endeavouri*	$8.69
Penaeidae	Brown Tiger Prawn	*Penaeus esculentus*	$16.14
Penaeidae	Velvet Prawn	*Metapenaeopsis* spp.	$4.19
Penaeidae	Western King Prawn	*Melicertus latisulcatus*	$13.45
Stomatopoda	Mantis Shrimps	Order Stomatopoda - undifferentiated	$3.00
SEA CUCUMBERS			
Holothuriidae	Black Teatfish (Sea Cucumber)	*Holothuria whitmaei*	$7.23
Holothuriidae	Deepwater Redfish (Sea Cucumber)	*Actinopyga echinites*	$3.30
Holothuriidae	Sandfish (Sea Cucumber)	*Holothuria scabra*	$5.10

APPENDIX 3
ANNUAL PERFORMANCE FOR COMMERCIAL FISHERIES SUBJECT TO EXPORT APPROVAL UNDER THE AUSTRALIAN GOVERNMENT'S *ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999*

The following table provides a summary of the issues, performance measures and any conditions for fisheries subject to the above Act and their annual performance. The period assessed in each case is the most recent season for which complete data are available. As a result of the duration required for data collection and analysis, the years being assessed in this volume are the 2023-24 season or the calendar year 2024 for fisheries data, but up to June 2025 for relevant research or management actions.

In addition to this summary, more detailed information on the annual performance of each fishery is provided in the relevant status reports presented throughout this volume. Within the individual status reports, each performance measure assessed is shown in a highlighted box to assist the reader.

Fishery details	Issue/species	Performance measure/Condition	Current performance in 2023-24 or 2024	Comment
Fishery: Abalone *Approval type:* List of Exempt Native Species Initial accreditation: August 2004 Current accreditation: August 2015 *Expiry date:* August 2025	Greenlip/Brownlip abalone Areas 2/3 (spawning stock)	Effort range 907–1,339 diver days; minimum meat weight 140 g greenlip, 160 g brownlip	Inadequate	Performance indicator for Greenlip abalone below threshold in Area 2. Area 3 closed to Greenlip abalone fishing in 2023. Performance indicator for Brownlip abalone below limit in Area 2..
	Roe's abalone Area 1 (spawning stock)	Effort range 14–43 diver days; total catch 5 t	Acceptable	Exploratory quota.
	Roe's abalone Area 2 (spawning stock)	Effort range 80–106 diver days; total catch 16.2 t	Acceptable	
	Roe's abalone Area 5 (spawning stock)	Effort range 100–140 diver days; total catch 18 t	Acceptable	Total catch indicator not met in regional areas. This is due to poor economic and weather conditions.
	Roe's abalone Area 6 (spawning stock)	Effort range 50-80 diver days; total catch 7.5 t	Acceptable	
	Roe's abalone Area 7 (spawning stock)	Effort range 230–270 diver days; total catch 24 t	Acceptable	Total catch indicator set annually by stock prediction model. Catch indicator not met due to economic impacts of COVID-19.
	Roe's abalone Area 8 (spawning stock)	Effort range 0 diver days; total catch 0 t	Inadequate due to environmental conditions	Closed since 2012 due to environmentally induced mortality.

Fishery details	Issue/species	Performance measure/Condition	Current performance in 2023-24 or 2024	Comment
Fishery: Abrolhos Islands and Mid West Trawl *Approval* type: List of Exempt Native Species Initial accreditation: March 2005 Current accreditation: August 2015 *Expiry date:* August 2025	Scallops (spawning stock)	The survey stock abundance index determines a predicted catch that sets the length of the next season, and the fishing season ceases at a catch rate threshold level,	Acceptable	Catch within acceptable range.
Fishery: Beche-de-mer *Approval type:* Wildlife Trade Operation Exemption Initial accreditation: December 2004 Current accreditation: August 2017 Expiry date: May 2025	Beche-de-mer species (spawning stock)	Sandfish acceptable catch range: 20-100 t. Catch rate above 25 kg/hr. Redfish acceptable catch range: 40-100 t. Catch rate above 60 kg/hr.	Acceptable	Fishery is MSC certified. Harvest strategy under review
Fishery: Broome Prawn *Approval type:* List of Exempt Native Species Initial accreditation: August 2004 Current accreditation: August 2015 *Expiry date:* August 2025	Western king prawn (spawning stock)	Annual exploitation rate of king prawns to not exceed 60% in any one year	Acceptable	Minimal fishing occurred in 2024. Very low effort and catch since 2007.
	Coral prawns (spawning stock)	Total catch within acceptable range of 20–90 t (7-year catch range)	Acceptable	As above.
Fishery: Exmouth Gulf Prawn *Approval Type:* List of Exempt Native Species Initial accreditation: March 2003 Current accreditation: August 2015 *Expiry date:* August 2025	Tiger prawn (spawning stock)	Catch rate above 25 kg/hr (6 fathom quad gear) revised from original 8–10 kg/hr (7.5 fathom twin gear)	Acceptable	Catch rate above threshold level.
	King prawn (spawning stock)	Catch rate above 25 kg/hr (6 fathom quad gear). Total catch within acceptable revised (2017) range of 100–450 t	Acceptable	Catch rate above threshold level. Catch within revised range.
	Endeavour prawn (spawning stock)	Catch rate above 9 kg/hr (6 fathom quad gear). Total catch within acceptable range of 120–300 t	Acceptable	Catch rate above threshold level. Catch within range.
	Banana prawn (spawning stock)	Total catch within acceptable range of 10–60 t for years with significant rainfall and 0–2 t for years with low rainfall	Acceptable	<1t in 2024.
	Coral prawns (spawning stock)	Total catch within acceptable range of 20-100 t	Acceptable	Catch below range due to marketing reasons.
	Non-retained species	The major species of bycatch are found in significant numbers outside of the trawled areas	Acceptable	

Fishery details	Issue/species	Performance measure/Condition	Current performance in 2023-24 or 2024	Comment
	Impact to mud/shell (habitat)	<40% of mud/shell habitat in Exmouth Gulf trawled	Acceptable	
Fishery: Gascoyne Demersal Scalefish Managed Fishery *Approval type:* List of Exempt Native Species Initial accreditation: June 2004 Current accreditation: August 2015 *Expiry date:* August 2025	Pink snapper (spawning stock)	Spawning biomass >30% of unexploited spawning biomass	Acceptable	Reductions in quota and spatial closures were implemented in 2018 under a Recovery Plan. A 2024 assessment showed spawning biomass above the threshold refence point. While not yet fully recovered to sustainable levels, the stock is assessed as recovering.
Fishery: Kimberley Prawn *Approval Type:* List of Exempt Native Species Initial accreditation: November 2004 Current accreditation: August 2015 *Expiry date:* August 2025	Banana prawn (spawning stock)	Total catch within acceptable range of 200–450 t	Acceptable	Catch was below the acceptable range in 2024 due to low levels of effort.
	Brown tiger prawn (spawning stock)	Total catch within acceptable range of 15–60 t	Acceptable	As above.
	Endeavour prawn (spawning stock)	Total catch within acceptable range of 7–80 t	Acceptable	As above.
	Coral prawns (spawning stock)	Total catch within acceptable range of 0–6 t (10-year catch range)	Acceptable	As above.
	Black tiger prawn (spawning stock)	Total catch within acceptable range of 0–1 t	Acceptable	Negligible reported landings.
	Squid (spawning stock)	Total catch within acceptable range of 1–50 t	Acceptable	Negligible reported landings.
Fishery: Mackerel *Approval type:* List of Exempt Native Species Initial accreditation: November 2004 Current accreditation: August 2015 *Expiry date:* August 2025	Spanish mackerel (spawning stock)	Total catch within acceptable range of 246-410 t: acceptable regional catch ranges: Kimberley 110–205 t: Pilbara 80–126 t: Gascoyne/West Coast 56–79 t	Acceptable	Total catch below acceptable range in 2024 due to low levels of effort. An ERA was completed in 2023 with all issues low to medium risks. Spanish mackerel assessed as Medium risk in the 2023 stock assessment. Harvest strategy under review.
Fishery: Marine Aquarium Managed Fishery *Approval type*: Wildlife Trade Operation Exemption Initial accreditation: October 2005 Current accreditation: October 2022 *Expiry date*: October 2025	There are specific performance measures for CITES species taken by the MAFMF, these include hard corals, tridacnid clams, seahorses and syngnathids (total).	The MAFMF is operating in accordance with the 2018-2022 MAFMF Harvest Strategy. In 2021, the defined threshold limits in the harvest strategy were only marginally exceeded by one species (*Euphyllia glabrescens*, by 35kg).	Acceptable	An ecological risk assessment (ERA) was completed in 2021 for the MAFMF. As part of the ERA, several CITES listed species, including hard coral, were specifically considered, with risk ratings ranging from negligible to medium. Harvest Strategy under review.

Fishery details	Issue/species	Performance measure/Condition	Current performance in 2023-24 or 2024	Comment
Fishery: Northern Demersal Scalefish *Approval type:* List of Exempt Native Species Initial accreditation: November 2004 Current accreditation: August 2015 *Expiry date:* August 2025	Indicator species spawning stock (red emperor and goldband snapper)	The NDSMF is operating in accordance with the North Coast demersal scalefish resource harvest strategy 2017 – 2021.	Unacceptable	Red emperor below threshold reference level in 2025 assessment. An ERA for the fishery completed in 2025 found low or negligible risks to protected species, other (non-protected) bycatch species and to benthic habitats..
Fishery: Onslow and Nickol Bay Prawn *Approval Type:* List of Exempt Native Species Initial accreditation: November 2004 Current accreditation: August 2015 *Expiry date:* August 2025	Banana prawns (spawning stock)	Nickol Bay: total catch in high rainfall years within acceptable range of 150–220 t: in low rainfall years within acceptable range of 0–40 t. Onslow: total catch within acceptable range of 2–90 t	Acceptable Acceptable	Banana prawns within the catch tolerance range.
	Brown tiger prawn (spawning stock)	Acceptable catch ranges of Nickol Bay 2–40 t and Onslow 10–120 t	Acceptable	Catches for Nickol Bay were within the range while Onslow was below the catch range due to low effort levels.
	Western king prawn (spawning stock)	Acceptable catch ranges of Nickol Bay 20–70 t and Onslow 10–55 t	Acceptable	Catches were below the respective ranges in both fisheries, with limited targeting of this species and overall effort.
	Endeavour prawn (spawning stock)	Total catch within acceptable ranges. Nickol Bay 1-10 t and Onslow 5-20 t.	Acceptable	As above.
	Coral prawns (spawning stock)	Total catch within acceptable range of Nickol Bay 1–15 t (10-year catch range) and Onslow 4–20 t	Acceptable	As above.
	Black tiger prawn (spawning stock)	Total catch within acceptable range of 0–2 t	Acceptable	Negligible reported landings.
Fishery: Octopus *Approval type:* List of Exempt Native Species Initial accreditation: September 2011 Current accreditation: August 2017 *Expiry date:* August 2025	Octopus (Octopus djinda)	Formal harvest strategy with biological reference points (Target, Threshold, and Limit). These based on standardised catch rate per unit effort (kg per potlift)	Acceptable	Catch rates are above the target level.

Fishery details	Issue/species	Performance measure/Condition	Current performance in 2023-24 or 2024	Comment
Fishery: Pearl Oyster *Approval type:* List of Exempt Native Species Initial accreditation: September 2003 Current accreditation: August 2015 *Expiry date:* August 2025	Silver-lipped (gold-lipped) pearl oyster (spawning stock)	Fished area should be < 60% of species distribution; catch rates should not decrease by > 50% from historical averages of 29.5 oysters/hr (Zone 2) and 34.8 oysters/hr (Zone 3); > 30% of Zone 1 catch should be > 150 mm shell length	Acceptable	Catch rates are above the target performance indicators.
Fishery: Pilbara Trap *Approval type:* Wildlife Trade Operation Initial accreditation: December 2004 (Expired December 2007). Current accreditation: December 2023 Expiry date: January 2027	Indicator species spawning stock (red emperor, rankin cod, bluespotted emperor)	The Pilbara Trap Fishery is operating in accordance with the North Coast demersal scalefish resource harvest strategy 2017 – 2021.	Unacceptable	Red emperor below limiit and goldband snapper below threshold reference levels in 2023 assessments. An ERA for the fishery completed in 2025 found low or negligible risks to protected species, other (non-protected) bycatch species and to benthic habitats
Fishery: Pilbara Trawl *Approval type:* Wildlife Trade Operation Exemption Initial accreditation: November 2004 Current accreditation: August 2024 *Expiry date:* August 2027	Indicator species spawning stock (red emperor, rankin cod, bluespotted emperor)	The Pilbara Fish Trawl Fishery is operating in accordance with the North Coast demersal scalefish resource harvest strategy 2017 – 2021.	Unacceptable	Red emperor below limiit and goldband snapper below threshold reference levels in 2023 assessments.
	Bycatch of listed species	All skippers to maintain records of the time, date, shot duration, location and status upon release of each incidental capture to species level. Address any significant risks raised by the ERA. Review the resilience of sawfish and dolphin populations. Develop a policy to support the electronic monitoring program.	Unacceptable	An ERA for the fishery completed in 2025 found a high risk to common bottlenose dolphins, but low or negligible risks to other protected species including sawfish, sea snakes and turtles. The fishery posed low or negligible risks to other (non-protected) bycatch species and to benthic habitats.
Fishery: Salmon *Approval type:* List of Exempt Native Species Initial accreditation: November 2004 Current accreditation: August 2015 Expiry date: May 2025	Western Australian salmon (spawning stock)	Expected catch range under the current management regime is 0-1,200 t	Acceptable	Catches continue to be low relative to historic levels, due to low effort in response to limited market demand. Stock level is acceptable, based on age-based assessment completed in 2023.

Fishery details	Issue/species	Performance measure/Condition	Current performance in 2023-24 or 2024	Comment
Fishery: Shark Bay Crab Managed Fishery *Approval type:* Wildlife Trade Operation Exemption Initial accreditation: November 2004 Current accreditation: August 2015 *Expiry date:* August 2025	Blue swimmer crab (breeding stock)	CPUE to remain above 1 kg/trap lift Annual standardised index of peak spawning stock biomass limit is 200 kg/nm^2	Acceptable	Catch rates (CPUE) and spawning stock biomass were both above their respective threshold levels.
	Tiger prawn (spawning stock)	Quantity of spawning stock present based on fishery independent surveys during the spawning season at a target of ≥25 kg/hr (5.5 fathom quad gear).	Acceptable	The spawning stock index was well above the target.
Fishery: Shark Bay Prawn *Approval type:* List of Exempt Native Species Initial accreditation: February 2003 Current accreditation: August 2015 *Expiry date:* August 2025	Western king prawn (spawning stock)	Level of spawning stock present based on fishery independent surveys during the spawning season at a target of ≥25 kg/hr (5.5 fathom quad gear).	Acceptable	The spawning stock index was well above the target.
	Coral and endeavour prawns (spawning stock)	Total catch within historical acceptable ranges: coral 80–280 t, endeavour 1–30 t	Acceptable	Coral prawn catches slightly below range due to effort reductions in 2024. Endeavour prawn catches within range.
	Loggerhead turtles (captures)	90% of turtles captured from non-BRD nets returned alive	Acceptable	BRDs are mandatory in all main nets, so this performance measure is no longer valid. For the 2024 season, all loggerhead turtles were returned to the sea alive.
	Discarded fish (abundance)		Acceptable	Majority of bycatch species are found in relatively significant numbers outside of trawled areas.
	Impact to sand/shell (habitat)	< 40% of sand/shell habitat in Shark Bay trawled	Acceptable	
	Impact to coral/sponge (habitat)	<20% of the remaining coral/sponge habitat in Shark Bay contained within the legally trawled area	Acceptable	

Fishery details	Issue/species	Performance measure/Condition	Current performance in 2023-24 or 2024	Comment
	Discarding fish (provisioning)		Acceptable	There has been a reduction in the amount of discards, and in the ratio of discards to target catch compared to pre-catch reduction device (e.g. FEDS) levels. The water hopper system also increases survival of some bycatch species.
Fishery: Shark Bay Scallop *Approval type:* List of Exempt Native Species Initial accreditation: February 2003 Current accreditation: August 2015 *Expiry date:* August 2025	Scallop (spawning stock)	Monitoring of recruit/ residual stock in northern Shark Bay and Denham Sound against target of >130 and >160 scallops/nm respectively to ensure an appropriate TACC is set so that there is adequate level of breeding stock present when spawning commences. There is no retention of scallops during the key spawning period.	Acceptable	The indices for both northern Shark Bay and Denham Sound were in their respective target regions. Initial TACC of 45 t and 120 t were set before mid-season adjustments to 100 t and 74.25 t for northern Shark Bay and Denham Sound, respectively.
	Loggerhead turtles (captures)	90% of turtles captured from non-BRD nets returned alive	Acceptable	As for Shark Bay prawn.
Fishery: South Coast Crustacean *Approval type:* List of Exempt Native Species Initial accreditation: January 2024 Current accreditation: January 2024 Expiry date: January 2029	Southern rock lobster & crystal crab biomass	Biomass of southern rock lobster and crystal crab above threshold levels and/or risk levels are adequate	Acceptable	Current biomass levels in all management areas are above their respective threshold levels, and all risk levels are adequate.
Fishery: Specimen Shell *Approval type:* List of Exempt Native Species Initial accreditation: 25 May 2005 Current accreditation: August 2015 Expiry date: May 2025	Specimen shell species (spawning stock)	Preliminary acceptable catch range is from 10,000–25,000 shells; acceptable catch rate 10–40 shells per day	Acceptable	Both catch and catch rate within acceptable ranges.
Fishery: Temperate Demersal Gillnet and Demersal Longline (Shark) Fisheries	Dusky and sandbar sharks	Continue to review and report outcomes of actions taken to rebuild stocks	On-going	Weight of evidence assessment completed in 2024. Dusky shark remains as a recovering stock and sandbar shark is a sustainable stock.

Fishery details	Issue/species	Performance measure/Condition	Current performance in 2023-24 or 2024	Comment
Approval type: Wildlife Trade Operation Exemption Initial accreditation: February 2006 Current accreditation: August 2024 *Expiry date:* August 2027	Australian sea lions	Continue monitoring fishing effort around Australian sea lion colonies following implementation of gillnet exclusion zones and investigate potential management measures to further reduce the risk of interactions to support recovery of the species. These management measures could include independent validation of interaction rates.	Underway and ongoing	A network of Gillnet Exclusion Zones was established on 29 June 2018 to protect Australian sea lion breeding colonies, covering a total of 17,300 square kilometres along the Western Australian coast. In February 2023 a new Australian Government funded project, 'Prioritising on-ground actions for the Endangered Australian Sea Lion' commenced. DPIRD attended 2 workshops and joined a new national working group to support the project and future work towards the long-term recovery of ASL populations as part of the national Recovery Plan. DPIRD is developing an independent monitoring and data validation program for the fishery..
	Western rock lobster (spawning stock)	Spawning biomass at Abrolhos Islands and coastal regions to remain above respective levels during the early 1980s with 75% certainty	Acceptable	Current spawning stock levels in all 4 breeding stock management areas are well above their respective threshold levels.
Fishery: West Coast Rock Lobster *Approval Type:* Wildlife Trade Operation Exemption Initial accreditation: August 2002 Current accreditation: May 2018 Expiry date: May 2025	Octopus (spawning stock)	Catch rate (cpue) not to drop outside of historic range by > 10%	Acceptable	The total 2024 catch of 716 t is likely to be no more than 20% of the total conservative biomass estimate.
	Sea lion (captures)	No increase in rate of capture	Acceptable	No sea lion captures were reported.
	Leatherback turtle (entanglements)	No increase in rate of interactions	Acceptable	No entanglements were reported.

Fishery details	Issue/species	Performance measure/Condition	Current performance in 2023-24 or 2024	Comment
	Whales and dolphins (entanglements)	No increase in rate of interactions	Unacceptable	There were 2 confirmed whale entanglements in WRL gear during the 2023 humpback whale migration season (April – October).
Fishery: West Coast Deep Sea Crustacean Managed Fishery *Approval type:* List of Exempt Native Species Initial accreditation: March 2004 Current accreditation: August 2015 *Expiry date:* August 2025	Champagne and Giant crab biomass	Unitisation of the fishery has permitted a maximum of 20.02 t of Champagne crab and 0.98 t of Giant crab to be taken in a season	Acceptable	
	Crystal Crab biomass	The fishery is quota based with catches limited to 12 3.2 t of crystal crab per season	Acceptable	The standardised catch rate is above the threshold level.
Fishery: West Coast Purse Seine Managed Fishery and Developmental Zones. *Approval type:* Wildlife Trade Operation Exemption Initial accreditation: March 2023 *Expiry date:* February 2026	Implementation of program to validate accuracy of reported catch, effort and protected species interactions.	On board observers	Acceptable	
Fishery: South Coast G-trap – Australian Herring. *Approval type:* Wildlife Trade Operation Exemption Initial accreditation: March 2024 Expiry date: March 2027	Australian herring biomass	Annual statewide catch under 300 t, G-trap catch under 70 t.	Acceptable	Catch within acceptable range and well below estimated MSY.
Fishery: South Coast Purse Seine Managed Fishery. *Approval type:* Wildlife Trade Operation Exemption Initial accreditation: July 2023 Expiry date: July 2026	Fishery-independent monitoring of protected species interactions	On board observers	Acceptable	New nets trialled under DCCEEW funded program

APPENDIX 4
DPIRD AQUATIC SCIENCE AND ASSESSMENT STAFF ADJUNCT POSITIONS AND SUPERVISION OF STUDENTS

Staff Member	Position
Matias Braccini	Post-doc supervision, Curtin University, supervises Agustin De Wysiecki, 'Advancing conservation and management of Australian sharks and rays through species distribution modelling and the identification of important areas'.
	PhD co-supervision, Murdoch University, supervises Robiul Hasan, 'On the consumption of shark products: stock sustainability, trade mislabelling, human health and fishing slavery'.
	PhD advisor, University of Western Australia, advises Jessica Pearce, 'Developing novel environmental DNA (eDNA) and other genomic methodologies for the conservation of marine megafauna'.
	Associate Researcher, School of Molecular and Life Sciences, Curtin University
	Associate Researcher, Centre for Fish and Fisheries Research, Murdoch University
Simon de Lestang	Masters co-supervision, University of Western Australia, Georgina Lazuardi, 'Life history dynamics of the lemon shark, Negaprion acutidens, from Western Australia'
	Masters co-supervision, University of Western Australia, Fern Elizabeth Nicholson, 'Life history dynamics of the tiger shark, Galeocerdo Cuvier, from Western Australia'
	Adjunct Research Scientist, University of Western Australia
	Masters Supervisor, University of Western Australia, 'Movement of deep sea crabs along the west coast of Australia'.
	Scientific advisor, AFMA Tropical Lobster Resource Assessment Group
David Fairclough	Adjunct Senior Lecturer. Department of Environment and Agriculture, Faculty of Science and Engineering. Curtin University.
	PhD co-supervision, Edith Cowan University, supervises Brett Crisafulli, 'Modelling the impacts of recreational catch-and-release variability on fish stock dynamics'.
Alastair Harry	Honorary Research Fellow, Centre for Sustainable Aquatic Ecosystems, Harry Butler Institute, Murdoch University.
	Adjunct Senior Research Fellow, Faculty of Science and Engineering, Curtin University.
	PhD co-supervision, Murdoch University, supervises Tegan Lee, 'Investigating the environmental drivers of growth, habitat use and diet on two euryhaline elasmobranchs via vertebral chemistry'
	PhD co-supervision, Murdoch University, supervises Marie Windstein, 'Spatial ecology of elasmobranchs in the nearshore environment of Karajarri Sea Country, Kimberley, Western Australia, Kimberley, Western Australia'
	PhD co-supervision, Curtin University, supervises Sasha Ayton. 'Diversity, abundance, distribution and spatial ecology of teleosts and elasmobranchs on Kimberley Sea Country'
	PhD co-supervision, Murdoch University, supervises Kiesha Wear, 'Culturally significant fish ecology in the Buccaneer Archipelago across three co-designed marine parks and three Traditional Owner groups'
	PhD co-supervision, Murdoch University, supervises Manning Hope, 'Fish and fisheries ecology of culturally important Saltwater resources of Yawuru Nagulagun.'
	Masters co-supervision, University of Western Australia, Georgina Lazuardi, 'Life history dynamics of the lemon shark, Negaprion acutidens, from Western Australia'
	Masters co-supervision, University of Western Australia, Fern Elizabeth Nicholson, 'Life history dynamics of the tiger shark, Galeocerdo Cuvier, from Western Australia'
Jason How	Adjunct Research Fellow, University of Western Australia
Eva Lai	MSc co-supervision, University of Western Australia, supervises Man-Lin Ku, 'Assessing Recreational Fishers' Perceptions and Spatial Use of Artificial Structures in Geographe Bay, WA'
Gary Jackson	MSc co-supervision, University of Western Australia, supervises Victoria Guthrie, 'Shore-based recreational shark fishing in Western Australia'

Staff Member	Position
	Adjunct Professor, Centre for Marine Ecosystems Research, Edith Cowan University
Stephen Newman	Adjunct Professor, Department of Environment and Agriculture, Faculty of Science and Engineering, Curtin University.
Karina Ryan	PhD co-supervision, Edith Cowan University, supervises Brett Crisafulli, 'Modelling the impacts of recreational catch-and-release variability on fish stock dynamics.
Claire Smallwood	PhD co-supervision, Edith Cowan University, supervises Malik Asim, 'Artificial Intelligence for enhanced monitoring of maritime activities through remote cameras'. PhD co-supervision, University of Tasmania, supervises Alissa Tate, 'Closing knowledge gaps: integrating novel analyses to improve stock assessments and sustainable management of data-poor fisheries'
Lachlan Strain	Adjunct Research Fellow, Faculty of Science and Engineering, Department of Environment and Agriculture, Curtin University of Technology. PhD co-supervision, Curtin University of Technology, supervises Aisling Fontanini, 'Impacts of marine climate change on two commercially and recreationally important Western Australian species: *Pagrus auratus* and *Haliotis roei*'.
Arani Chandrapavan	PhD co-supervision, Edith Cowan University, supervises Yaw Kwaafo Awuah-Mensah, 'Predictive modelling of marine heatwave effects on Western Australian Fisheries: A multi-model framework for adaptive management'.
Alex Hesp	Honours co-supervision. University of Western Australia. Supervises Dillon Ng, 'Density-dependent growth in two tropical demersal fish species' PhD co-supervision. Murdoch University. Supervises Rachel Marks, 'Key factors influencing the population dynamics of economically important short-lived invertebrate species in Western Australia'

APPENDIX 5
CLIMATE VULNERABILITY ASSESSMENT OF WA'S FISH STOCKS

Common Name	Fishery Resource	Area	Sensitivity	Exposure	Climate Change Risk
Australian Anchovy	West Coast Small Pelagic Scalefish	West Coast	Low	Negative effects are unlikely	LOW
Australian Blacktip Shark	Northern Shark	North Coast	Low	Negative effects are unlikely	LOW
Australian Herring	West Coast Nearshore and Estuarine Scalefish	South West	Medium	Negative effects are possible	HIGH
Australian Sardine	West Coast Small Pelagic Scalefish	West Coast	Medium	Negative effects are possible	HIGH
Australian Sardine	West Coast Small Pelagic Scalefish	South Coast	Medium	Negative effects are possible	HIGH
Baldchin Groper	West Coast Demersal Scalefish	West Coast	Medium	Remote or potentially positive effect	LOW
Banana Prawn	Pilbara Prawn	Exmouth Gulf	Medium	Remote or potentially positive effect	LOW
Banana Prawn	Pilbara Prawn	Nickol Bay	Medium	Remote or potentially positive effect	LOW
Banana Prawn	Kimberley Prawn	Kimberley	Medium	Negative effects are unlikely	MEDIUM
Barramundi	North Coast Nearshore and Estuarine	Kimberley	Medium	Negative effects are possible	HIGH
Barred Javelin	North Coast Demersal	North Coast	Medium	Negative effects are possible	HIGH
Bass Groper	West Coast Demersal Scalefish	West Coast	Medium	Negative effects are possible	HIGH
Bight Redfish	West Coast Demersal Scalefish	West Coast	Medium	Negative effects are possible	HIGH
Bight Redfish	South Coast Demersal Scalefish	South Coast	High	Negative effects are possible	HIGH
Black Bream	West Coast Nearshore and Estuarine Scalefish	West Coast	High	Demonstrable negative effects evident	SEVERE
Black Bream	South Coast Estuarine and Nearshore Scalefish and Invertebrate	South Coast	High	Demonstrable negative effects evident	SEVERE
Black Jewfish	North Coast Nearshore and Estuarine	North Coast	Medium	Negative effects are possible	HIGH
Blue Morwong	South Coast Demersal Scalefish	South Coast	Medium	Negative effects are possible	HIGH
Blue Swimmer Crab	West Coast Blue Swimmer Crab	Peel-Harvey Estuary	Medium	Demonstrable positive effects are evident	LOW
Blue Swimmer Crab	South Coast Estuarine, Nearshore Scalefish and Invertebrate	South Coast	Medium	Demonstrable positive effects are evident	LOW
Blue Swimmer Crab	West Coast Blue Swimmer Crab	Cockburn Sound	Medium	Remote or potentially positive effect	LOW
Blue Swimmer Crab	North Coast Crab	Pilbara	Low	Negative effects are possible	MEDIUM
Blue Swimmer Crab	Shark Bay Invertebrate	Shark Bay	Medium	Demonstrable negative effects evident	HIGH
Blue Threadfin	North Coast Nearshore and Estuarine	North Coast	Medium	Negative effects are possible	HIGH
Blue-eye Trevella	West Coast Demersal Scalefish	West Coast	Low	Negative effects are possible	MEDIUM
Bluespotted Emperor	North Coast Demersal	Kimberley	Low	Negative effects are possible	MEDIUM
Bluespotted Emperor	North Coast Demersal	Pilbara	Low	Negative effects are possible	MEDIUM
Brown Mud Crab	North Coast Crab	Kimberley	Medium	Negative effects are possible	HIGH
Brownlip Abalone	South Coast Greenlip/Brownlip Abalone	Area 2	High	Demonstrable negative effects evident	SEVERE
Brownlip Abalone	South Coast Greenlip/Brownlip Abalone	Area 3	High	Demonstrable negative effects evident	SEVERE
Brownstripe Snapper	Northern Demersal Scalefish	North Coast	Low	Negative effects are unlikely	LOW
Calamari	Statewide Cephalopod	West Coast	Medium	Negative effects are possible	HIGH

Common Name	Fishery Resource	Area	Sensitivity	Exposure	Climate Change Risk
Calamari	Statewide Cephalopod	Gascoyne Coast	Medium	Negative effects are possible	LOW
Champagne Crab	West Coast Deep Sea Crustacean	West Coast	Medium	Negative effects are possible	HIGH
Cobia	Northern Demersal Scalefish	North Coast	Low	Negative effects are unlikely	LOW
Common Blacktip Shark	Northern Shark	North Coast	Low	Negative effects are unlikely	LOW
Coral Trout	North Coast Demersal	North Coast	Medium	Negative effects are possible	HIGH
Crimson Snapper	Northern Demersal Scalefish	North Coast	Low	Negative effects are unlikely	LOW
Crystal Crab	West Coast Deep Sea Crustacean	West Coast	Medium	Negative effects are possible	HIGH
Dhufish	West Coast Demersal Scalefish	West Coast	Medium	Negative effects are possible	HIGH
Dusky Whaler	Temperate Demersal Gillnet and Demersal Longline	South West	Medium	Negative effects are unlikely	MEDIUM
Endeavour Prawn	Shark Bay Invertebrate	Shark Bay	Medium	Remote or potentially positive effect	LOW
Endeavour Prawn	Pilbara Prawn	Exmouth Gulf	Medium	Remote or potentially positive effect	LOW
Endeavour Prawn	Pilbara Prawn	Onslow	Medium	Remote or potentially positive effect	LOW
Estuary Cobbler	South Coast Estuarine and Nearshore Scalefish and Invertebrate	South Coast	High	Negative effects are possible	HIGH
Estuary Cobbler	West Coast Nearshore and Estuarine Scalefish	West Coast	High	Demonstrable negative effects evident	SEVERE
Garfish	West Coast Nearshore and Estuarine Scalefish	West Coast	Medium	Demonstrable negative effects evident	HIGH
Giant Crab	West Coast Deep Sea Crustacean	West Coast	Medium	Negative effects are possible	HIGH
Goldband Snapper	Gascoyne Demersal Scalefish	Gascoyne Coast	Low	Remote or potentially positive effect	LOW
Goldband Snapper	Northern Demersal Scalefish	Kimberley	Low	Negative effects are unlikely	LOW
Goldband Snapper	Northern Demersal Scalefish	Pilbara	Low	Negative effects are unlikely	LOW
Golden Snapper	North Coast Demersal	North Coast	Low	Negative effects are possible	MEDIUM
Grass Emperor	Gascoyne Demersal Scalefish	Shark Bay	Medium	Remote or potentially positive effect	LOW
Green Mud Crab	North Coast Crab	Kimberley	Medium	Negative effects are possible	HIGH
Greenlip Abalone	South Coast Greenlip/Brownlip Abalone	Area 2	High	Demonstrable negative effects evident	SEVERE
Greenlip Abalone	South Coast Greenlip/Brownlip Abalone	Area 3	High	Demonstrable negative effects evident	SEVERE
Grey Mackerel	Statewide Large Pelagic Scalefish	North Coast	Low	Negative effects are possible	MEDIUM
Gummy Shark	Temperate Demersal Gillnet and Demersal Longline	South West	Medium	Negative effects are unlikely	MEDIUM
Hapuku	South Coast Demersal Scalefish	South Coast	Medium	Negative effects are unlikely	MEDIUM
Hapuku	West Coast Demersal Scalefish	West Coast	Medium	Negative effects are possible	HIGH
King George Whiting	South Coast Estuarine and Nearshore Scalefish and Invertebrate	South Coast	Medium	Demonstrable negative effects evident	HIGH
King Prawn	Shark Bay Invertebrate	Shark Bay	Medium	Negative effects are possible	HIGH
King Prawn	Pilbara Prawn	Exmouth Gulf	Medium	Demonstrable negative effects evident	HIGH
King Prawn	Kimberley Prawn	Broome	Medium	Demonstrable negative effects evident	HIGH
King Threadfin	North Coast Nearshore and Estuarine	North Coast	Medium	Negative effects are possible	HIGH
Mangrove Jack	North Coast Demersal	North Coast	Medium	Negative effects are possible	HIGH

Common Name	Fishery Resource	Area	Sensitivity	Exposure	Climate Change Risk
Maray	West Coast Small Pelagic Scalefish	West Coast	Medium	Negative effects are unlikely	MEDIUM
Mulloway	West Coast Demersal Scalefish	West Coast	Medium	Negative effects are possible	HIGH
Mulloway	Gascoyne Demersal Scalefish	Gascoyne Coast	Medium	Negative effects are possible	HIGH
Ocean Sand Crab	South Coast Estuarine and Nearshore Scalefish and Invertebrate	South Coast	Medium	Negative effects are possible	HIGH
Painted Sweetlips	Northern Demersal Scalefish	North Coast	Low	Negative effects are unlikely	LOW
Perth Herring	West Coast Nearshore and Estuarine Scalefish	Peel-Harvey Estuary	High	Negative effects are possible	HIGH
Perth Herring	West Coast Nearshore and Estuarine Scalefish	Swan River	High	Negative effects are possible	HIGH
Pink Snapper	West Coast Demersal Scalefish	West Coast - North	Medium	Negative effects are possible	HIGH
Pink Snapper	West Coast Demersal Scalefish	West Coast - South	Medium	Negative effects are possible	HIGH
Pink Snapper	Gascoyne Demersal Scalefish	Shark Bay - Denham Sound	Medium	Negative effects are possible	HIGH
Pink Snapper	Gascoyne Demersal Scalefish	Shark Bay - Eastern Gulf	Medium	Negative effects are possible	HIGH
Pink Snapper	Gascoyne Demersal Scalefish	Shark Bay - Freycinet	Medium	Negative effects are possible	HIGH
Pink Snapper	South Coast Demersal Scalefish	South Coast	Medium	Negative effects are possible	HIGH
Pink Snapper	Gascoyne Demersal Scalefish	Shark Bay - Oceanic	Medium	Demonstrable negative effects evident	HIGH
Rankin Cod	Northern Demersal Scalefish	Kimberley	Low	Negative effects are unlikely	LOW
Rankin Cod	Northern Demersal Scalefish	Pilbara	Medium	Negative effects are unlikely	MEDIUM
Red Emperor	Gascoyne Demersal Scalefish	Gascoyne Coast	Medium	Remote or potentially positive effect	LOW
Red Emperor	Northern Demersal Scalefish	Kimberley	Medium	Negative effects are unlikely	MEDIUM
Red Emperor	Northern Demersal Scalefish	Pilbara	Low	Negative effects are unlikely	LOW
Redfish	Sea Cucumber	Pilbara	Medium	Negative effects are unlikely	MEDIUM
Redfish	Sea Cucumber	Shark Bay	Medium	Negative effects are unlikely	MEDIUM
Redspot Emperor	Northern Demersal Scalefish	North Coast	Low	Negative effects are unlikely	LOW
Redthroat Emperor	West Coast Demersal Scalefish	West Coast	Medium	Remote or potentially positive effect	LOW
Rock Octopus	West Coast octopus	South West	Low	Demonstrable positive effects are evident	NEGLIGIBLE
Roe Abalone	West Coast Roes Abalone	Area 8	High	Demonstrable negative effects evident	SEVERE
Roe Abalone	West Coast Roes Abalone	Area 2	High	Demonstrable negative effects evident	SEVERE
Roe Abalone	West Coast Roes Abalone	Area 5	High	Demonstrable negative effects evident	SEVERE
Roe Abalone	West Coast Roes Abalone	Area 6	High	Demonstrable negative effects evident	SEVERE
Roe Abalone	West Coast Roes Abalone	Area 7	High	Demonstrable negative effects evident	SEVERE
Ruby Snapper	Northern Demersal Scalefish	North Coast	Medium	Negative effects are unlikely	MEDIUM
Saddletail Snapper	Northern Demersal Scalefish	North Coast	Low	Negative effects are unlikely	LOW
Salmon	South Coast Estuarine and Nearshore Scalefish and Invertebrate	South Coast	Medium	Negative effects are unlikely	MEDIUM
Samsonfish	Statewide Large Pelagic Scalefish	North Coast	Medium	Negative effects are possible	HIGH
Sandbar Shark	South Coast Demersal Scalefish	South Coast	Medium	Remote or potentially positive effect	LOW

Common Name	Fishery Resource	Area	Sensitivity	Exposure	Climate Change Risk
Sandfish	Sea Cucumber	Pilbara	Medium	Negative effects are unlikely	MEDIUM
Sandfish	Sea Cucumber	Kimberley	Medium	Negative effects are unlikely	MEDIUM
Saucer Scallop	Southern Saucer Scallop	South Coast	Medium	Demonstrable positive effects are evident	LOW
Saucer Scallop	Southern Saucer Scallop	South West	High	Remote or potentially positive effect	MEDIUM
Saucer Scallop	Mid-west Scallop	Abrolhos Islands	Medium	Demonstrable negative effects evident	HIGH
Saucer Scallop	Shark Bay Invertebrate	Shark Bay	Medium	Demonstrable negative effects evident	HIGH
Sawshark	Temperate Demersal Gillnet and Demersal Longline	South West	Medium	Negative effects are unlikely	MEDIUM
Scalloped Hammerhead Shark	South Coast Demersal Scalefish	South Coast	Low	Remote or potentially positive effect	LOW
Scaly mackerel	West Coast Small Pelagic Scalefish	West Coast	Low	Demonstrable positive effects are evident	NEGLIGIBLE
Scaly Mackerel	West Coast Small Pelagic Scalefish	South Coast	Low	Remote or potentially positive effect	LOW
School Mackerel	Statewide Large Pelagic Scalefish	North Coast	Low	Negative effects are possible	MEDIUM
School Shark	Temperate Demersal Gillnet and Demersal Longline	South West	Medium	Negative effects are unlikely	MEDIUM
Sea mullet	West Coast Nearshore and Estuarine Scalefish	West Coast	Medium	Negative effects are possible	HIGH
Sea mullet	Gascoyne Inner Shark Bay Scalefish	Shark Bay	Medium	Negative effects are possible	HIGH
Sea Sweep	South Coast Estuarine and Nearshore Scalefish and Invertebrate	South Coast	Medium	Negative effects are unlikely	MEDIUM
Silver Trevallies	West Coast Demersal Scalefish	West Coast	Medium	Negative effects are unlikely	MEDIUM
Silver Trevallies	South Coast Demersal Scalefish	South Coast	Medium	Negative effects are unlikely	MEDIUM
Silverlip Pearl Oyster	Pearl Oyster	Statewide	Medium	Demonstrable positive effects are evident	LOW
Southern Garfish	South Coast Estuarine and Nearshore Scalefish and Invertebrate	South Coast	Medium	Negative effects are possible	HIGH
Southern Rock Lobster	South Coast Crustacean	South Coast	High	Negative effects are possible	HIGH
Southern School Whiting	South Coast Estuarine and Nearshore Scalefish and Invertebrate	South Coast	Medium	Negative effects are unlikely	MEDIUM
Spangled Emperor	West Coast Demersal Scalefish	West Coast	Medium	Remote or potentially positive effect	LOW
Spangled Emperor	Gascoyne Demersal Scalefish	Gascoyne Coast	Medium	Remote or potentially positive effect	LOW
Spangled Emperor	North Coast Demersal	Kimberley	Medium	Negative effects are possible	HIGH
Spangled Emperor	North Coast Demersal	Pilbara	Medium	Negative effects are possible	HIGH
Spanish Mackerel	Statewide Large Pelagic Scalefish	North Coast	Low	Negative effects are possible	MEDIUM
Spot-tail Shark	Northern Shark	North Coast	Low	Negative effects are unlikely	LOW
Spotted Mackerel	Statewide Large Pelagic Scalefish	North Coast	Low	Negative effects are possible	MEDIUM
Stripy Snapper	North Coast Demersal	North Coast	Low	Negative effects are possible	MEDIUM
Tailor	West Coast Nearshore and Estuarine Scalefish	West Coast	Medium	Remote or potentially positive effect	LOW
Tailor	Gascoyne Inner Shark Bay Scalefish	Shark Bay	Medium	Negative effects are possible	HIGH
Tiger Prawn	Shark Bay Invertebrate	Shark Bay	High	Negative effects are unlikely	HIGH
Tiger Prawn	Pilbara Prawn	Exmouth Gulf	High	Negative effects are unlikely	HIGH
Tiger Prawn	Pilbara Prawn	Onslow	Medium	Negative effects are unlikely	MEDIUM

Common Name	Fishery Resource	Area	Sensitivity	Exposure	Climate Change Risk
WA Salmon	West Coast Nearshore and Estuarine Scalefish	South West	Medium	Negative effects are possible	HIGH
Western Blue Groper	South Coast Demersal Scalefish	South Coast	Medium	Negative effects are possible	HIGH
Western Rock Lobster	Western Rock Lobster	West Coast	High	Demonstrable negative effects evident	SEVERE
Whiskery Shark	South Coast Demersal Scalefish	South Coast	Medium	Remote or potentially positive effect	LOW
Whitebait	West Coast Nearshore and Estuarine Scalefish	West Coast	Medium	Demonstrable negative effects evident	HIGH
Yelloweye mullet	West Coast Nearshore and Estuarine Scalefish	West Coast	Medium	Demonstrable negative effects evident	HIGH
Yellowfin Bream	Gascoyne Inner Shark Bay Scalefish	Gascoyne Coast	Medium	Remote or potentially positive effect	LOW
Yellowfin Whiting	West Coast Nearshore and Estuarine Scalefish	South West	Medium	Demonstrable positive effects are evident	LOW
Yellowfin whiting	Gascoyne Inner Shark Bay Scalefish	Shark Bay	Low	Negative effects are unlikely	LOW
Yellowtail Kingfish	Statewide Large Pelagic Scalefish	North Coast	Medium	Negative effects are possible	HIGH
Yellowtail Scad	West Coast Small Pelagic Scalefish	West Coast	Medium	Negative effects are possible	HIGH

GLOSSARY OF ACRONYMS

AIAWA	Abalone Industry Association of Western Australia
AIMS	Australian Institute of Marine Science
AIMWTMF	Abrolhos Islands and Mid-West Trawl Managed Fishery
ALC	Automatic Location Communicator
ASL	Australian sea lion
BPMF	Broome Prawn Managed Fishery
BRD	Bycatch Reduction Device
BSC	Blue Swimmer Crab
CAES	Catch and Effort Statistics
CALM	Department of Conservation and Land Management (now Department of Biodiversity, Conservation and Attractions)
CDR	Catch and disposal record
CI	Confidence Interval
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CL	Confidence Limits
CPUE	Catch Per Unit Effort
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSLPMF	Cockburn Sound (Line and Pot) Managed Fishery
CW	Carapace Width
DOF	Department of Fisheries now Department of Primary Industries and Regional Development
DPIRD	Department of Primary Industries and Regional Development
EBFM	Ecosystem Based Fisheries Management
EGP	Exmouth Gulf Prawn
EGPMF	Exmouth Gulf Prawn Managed Fishery
ENSO	El Niño/Southern Oscillation
EPBC	(Commonwealth Government) Environment Protection and Biodiversity Conservation (Act 1999)
ERA	Ecological Risk Assessment
ESD	Ecologically Sustainable Development
ETP	Endangered, Threatened and Protected
FBL	Fishing Boat License
FED	Fish escapement device
FFS	Flesh-footed shearwaters
FHPA	Fish Habitat Protection Area
FRDC	Fisheries Research and Development Corporation
FRMA	Fish Resources Management Act
FRR	Fisheries Research Report
FTO	Fishing Tour Operator
GAB	Great Australian Bight
GCB	Gascoyne Coast bioregion
GDSMF	Gascoyne Demersal Scalefish Managed Fishery
GDSR	Gascoyne Demersal Scalefish Resource
GVP	Gross Value of Product
HCF	Hermit Crab Fishery

HMAS	Her Majesty's Australian Ship
HS	Harvest Strategy
IFM	Integrated Fisheries Management
IMCRA	Interim Marine and Coastal Regionalisation for Australia
ISO	International Organisation for Standardisation
ITQ	Individually Transferable Quota
IUCN	International Union for the Conservation of Nature
JASDGDLF	Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery
KCMF	Kimberley Crab Managed Fishery
KGBF	Kimberley Gillnet and Barramundi Managed Fishery
KPMF	Kimberley Prawn Managed Fishery
LASCF	Lake Argyle Silver Cobbler Fishery
MAFMF	Marine Aquarium Fish Managed Fishery
MMF	Mackerel Managed Fishery
MOP	Mother-of-Pearl
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NBPMF	Nickol Bay Prawn Managed Fishery
NCB	North Coast bioregion
NDSMF	Northern Demersal Scalefish Managed Fishery
OIMF	Octopus Interim Managed Fishery
OPMF	Onslow Prawn Managed Fishery
PCMF	Pilbara Crab Managed Fishery
PDSF	Pilbara Demersal Scalefish Fisheries
PFRC	Pemberton Freshwater Research Centre
PFTIMF	Pilbara Fish Trawl (Interim) Managed Fishery
PI	performance indicator
RAR	Resource Assessment Report
RFBL	Recreational Fishing from Boat Licence
RFFSS	Recreational Freshwater Fisheries Stakeholder Subcommittee
SBBSMNF	Shark Bay Beach Seine and Mesh Net Managed Fishery
SBPMF	Shark Bay Prawn Managed Fishery
SBCMF	Shark Bay Crab Managed Fishery
SBSMF	Shark Bay Scallop Managed Fishery
SCB	South Coast bioregion
SCCMF	South Coast Crustacean Managed Fishery
SCDSR	South Coast Demersal Scalefish Resource
SCPUE	standardised catch per unit effort
SCPSMF	South Coast Purse Seine Managed Fishery
SCTF	South Coast Trawl Fishery
SDGDLF	Southern Demersal Gillnet and Demersal Longline Managed Fishery
SL	Standard Length
SLED	Sea Lion Exclusion Device
SPR	Spawning Potential Ratio

SSMF	Specimen Shell Managed Fishery
SSPA	Southern Seafood Producers Association WA
SST	sea surface temperature
SWRFA	South West Recreational Freshwater Angling
SWTMF	South West Trawl Managed Fishery
TAC	Total Allowable Catch
TACC	Total Allowable Commercial Catch
TAE	Total Allowable Effort
TARC	Total Allowable Recreational Catch
TDGDLF	Western Australian Temperate Demersal Gillnet and Demersal Longline Fisheries
VFAS	Voluntary Fisheries Adjustment Schemes
VMS	Vessel Monitoring System
WAFIC	Western Australian Fishing Industry Council
WAMSI	Western Australian Marine Science Institute
WCB	West Coast bioregion
WCDGDLF	West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery
WCDSR	West Coast Demersal Scalefish Resource
WCDSMF	West Coast Demersal Scalefish Managed Fishery
WCEMF	West Coast Estuarine Managed Fishery
WCRLMF	West Coast Rock Lobster Managed Fishery
WDWTF	Western Deepwater Trawl Fishery
WTO	Wildlife Trade Operation

Important disclaimer

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