

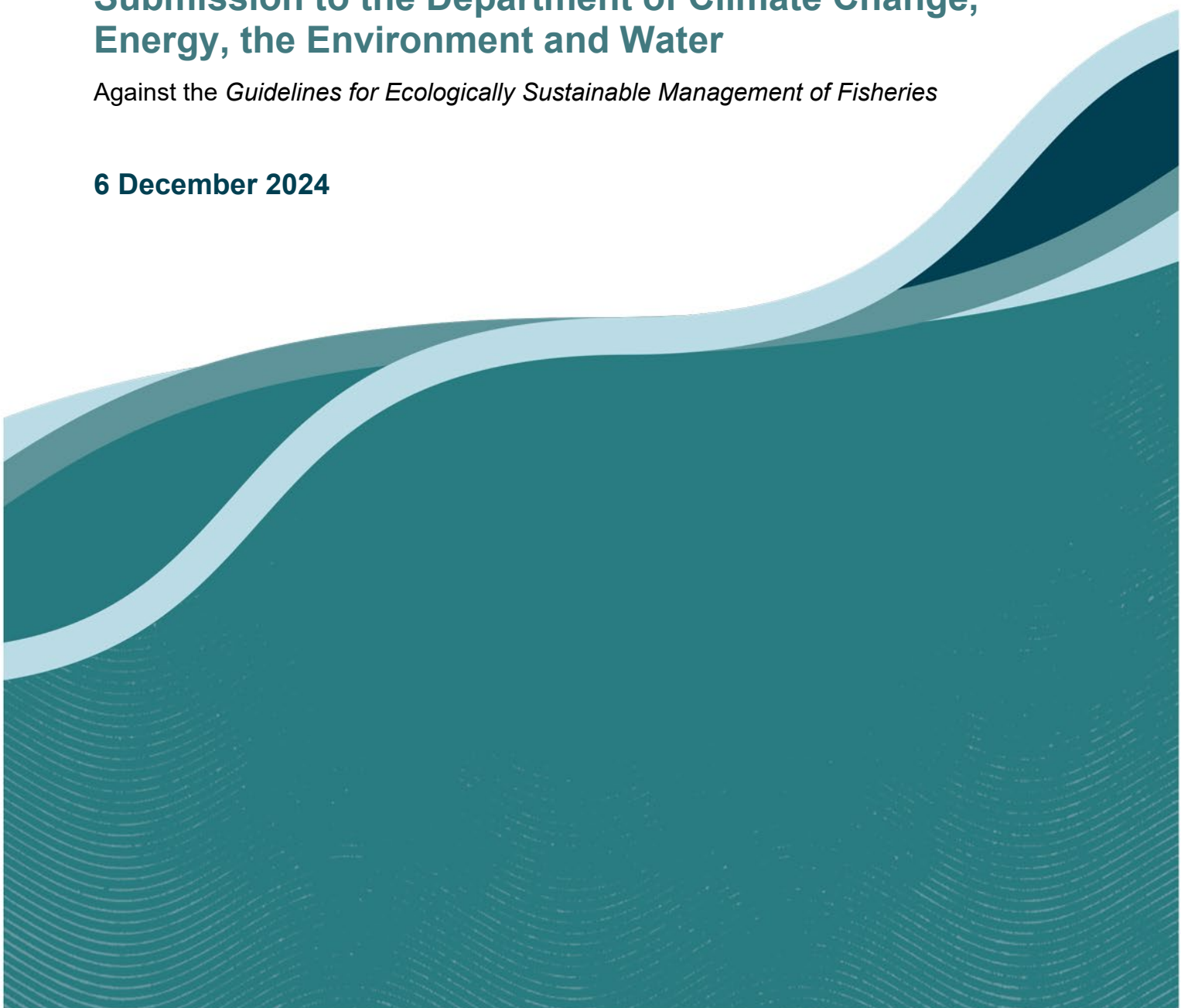


Application for assessment of Western Australia's Exmouth Gulf Prawn Managed Fishery for approval under the Environment Protection and Biodiversity Conservation Act 1999

Submission to the Department of Climate Change,
Energy, the Environment and Water

Against the Guidelines for Ecologically Sustainable Management of Fisheries

6 December 2024



Contents

Acronyms	4
Introduction	5
The Fishery.....	6
Description of the Fishery	6
Fishing methods and gear	9
Bycatch Reduction Devices	10
Commercial fishing operations.....	11
Target and byproduct species.....	12
Brown tiger prawns	12
Western king prawns	12
Blue endeavour prawns	12
Byproduct	13
Value of the Fishery	14
Management Regime	14
Legislative framework	14
Licensing Framework.....	15
Controlling the level of harvest.....	15
Harvest Strategy	16
Performance against objectives, performance indicators and performance measures	17
Performance indicators.....	17
Other ecological components	17
Application of HCRs	17
Fishery performance.....	18
Recovery Strategy	19
Stock Assessments	20
Principles	20
Weight of evidence reports and annual season review	20
Monitoring and data collection	21
Fishery-independent monitoring	21
Fishery-dependent monitoring	22
Statutory reporting	22
Vessel monitoring system	22

Ecosystem.....	23
Marine Stewardship Council (MSC) accreditation.....	23
Mitigating impacts of the wider ecosystem.....	23
Ecological Risk Assessments	23
Bycatch and protected species interactions.....	24
Sea snakes.....	25
Bycatch Action Plan.....	27
Habitat	27
Exmouth Gulf habitat mapping	27
EGPMF habitat interactions and impact	27
Enforcement of management arrangements.....	29
Operations and compliance	29
Role	29
Strategic objectives	29
Compliance operations.....	30
Vessel Monitoring System	30
Consultation Process.....	31
Commercial sector consultation and decision-making	31
Communication of season arrangements	32
Consultation with other groups	33
Research.....	34
Closing the gap in bycatch reporting and population assessments of sea snakes (Project 3.12): Assoc. Prof Kate Sanders, Dr James Nankivell, University of Adelaide.	34
Examining the relationship between fishery recruitment, essential benthic habitats and environmental drivers in Exmouth Gulf (FRDC 2015/027): Scott Evans	34
Changes since previous assessment.....	35
References	36
Appendices	38
APPENDIX 1 – Fishing effort.....	38
APPENDIX 2 – Retained catch data (target and byproduct species).....	40
APPENDIX 3 – Bycatch data	41
APPENDIX 4 – Reported protected species interactions.....	45

Acronyms

ALC	Automatic location communicators
BCA	<i>Biodiversity Conservation Act 2016</i>
CPUE	Catch per unit effort
Cth	Commonwealth
DCCEEW	Department of Climate Change, Energy the Environment and Water
DBCA	Department of Biodiversity, Conservation and Attractions
DPIRD	Department of Primary Industries and Regional Development
EBFM	Ecosystem-based fisheries management
EGPMF	Exmouth Gulf Prawn Managed Fishery
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERA	Ecological risk assessment
ETP	Endangered, threatened and protected species
FBL	Fishing Boat Licence
FRMA	<i>Fish Resources Management Act 1994</i>
FRMR	<i>Fish Resources Management Regulations 1995</i>
GCB	Gascoyne Coast Bioregion
GVP	Gross value product
HCR	Harvest Control Rule
IoE	Instrument of Exemption
LENS	List of Exempt Native Specimens
MFL	Managed Fishery Licence
MIMMA	Muiron Islands Marine Management Area
MSY	Maximum Sustainable Yield
NCWHA	Ningaloo Coast World Heritage Area
NMP	Ningaloo Marine Park
OCP	Operations and Communications Procedure for the SCTF
OpCP	Operational compliance plans
PRI	Point of recruitment impairment
SRFAR	Status Reports of the Fisheries and Aquatic Resources of WA
SRR	Stock recruitment relationship
VMS	Vessel monitoring system
WA	Western Australia
WAFIC	Western Australian Fishing Industry Council
WoE	Weight of Evidence

Introduction

This submission has been produced by the Department of Primary Industries and Regional Development (DPIRD) to enable the Department of Climate Change, Energy, the Environment and Water (DCCEEW) assess the Western Australian (WA) Exmouth Gulf Prawn Managed Fishery (EGPMF) against *Guidelines for the Ecologically Sustainable Management of Fisheries – 2nd Edition* and relevant requirements set out in the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act).

Export of product from the WA EGPMF is currently approved until 30 May 2025, through its inclusion on the List of Exempt Native Specimens (LENS). It is requested that accreditation under Part 13 of the EPBC Act for the purposes of protected species provisions and export approval granted under Part 13A through inclusion on the LENS be continued based on the information and evidence prepared in this application.

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The Fishery

Description of the Fishery

The EGPMF is a commercial fishery accessing the following three prawn species in the waters of Exmouth Gulf:

- Brown tiger prawns (*Penaeus esculentus*).
- Western king prawns (*Penaeus latisulcatus*).
- Blue endeavour prawns. (*Metapenaeus endeavouri*).

Exmouth Gulf is a major tropical gulf within the Gascoyne Coast Bioregion (GCB) of WA immediately east of the Cape Range Peninsula; approximately 1100 km north of Perth. The Gulf is a marine embayment open to the north and expands approximately 2200 km² (White 1975), extending approximately 40 km east to west and 80 km north to south. The Gulf, and the boundaries of the EGPMF, are adjacent the Ningaloo Coast World Heritage Area (NCWHA), Ningaloo Marine Park (NMP) and Muiron Islands Marine Management Area (MIMMA), although EGPMF overlaps with the general use zoning of these protected areas, where sustainable commercial fishing is permitted.

Rainfall and river runoff in the area are extremely low, with rare flooding events, primarily driven by summer tropical cyclones, altering the water quality (salinity and turbidity) of the Gulf from what is typically a relatively stable hydrological environment (Penn & Caputi 1986). The Leeuwin Current affects the inshore and offshore waters, particularly during strong winter flows, with elevated water temperatures, depressed levels of dissolved nutrients and particle concentrations inhibiting the growth of macroalgae (Hatcher 1991). Consequently, EGPMF productivity relies on nutrient sources from benthic habitats in nearshore waters, rather than from oceanic ecosystems (Lenanton et al. 1991).

There are 15 Managed Fishery Licences (MFLs) in the EGPMF held by a single licensee; Sea Harvest Fishing Company Pty Ltd (Sea Harvest). In recent years, six MFLs have been actively fished. Management and season decision-making is implemented under a co-operative, co-management framework between DPIRD and Sea Harvest.

The EGPMF fishing season generally extends from April to early December each year, with specific in-season opening and closing dates set according to the lunar phase and spatial and temporal variation in prawn abundance, developed in collaboration with DPIRD and industry determined based on:

- Fishery-independent monitoring.
- Real-time fishery-dependent monitoring.
- Focussed 'industry-based' surveys of areas that have been kept closed during the season (not permanent closures).

Figure 2 depicts the key management areas within the EGPMF, where the specific in-season area openings and closures apply. The EGPMF has operated since the mid-1960s and is internationally recognised as 'best practice' in terms of management and research. This is further supported by the EGPMF Marine Stewardship Council (MSC) certification that has been in place since 2015, further discussed in a later section.

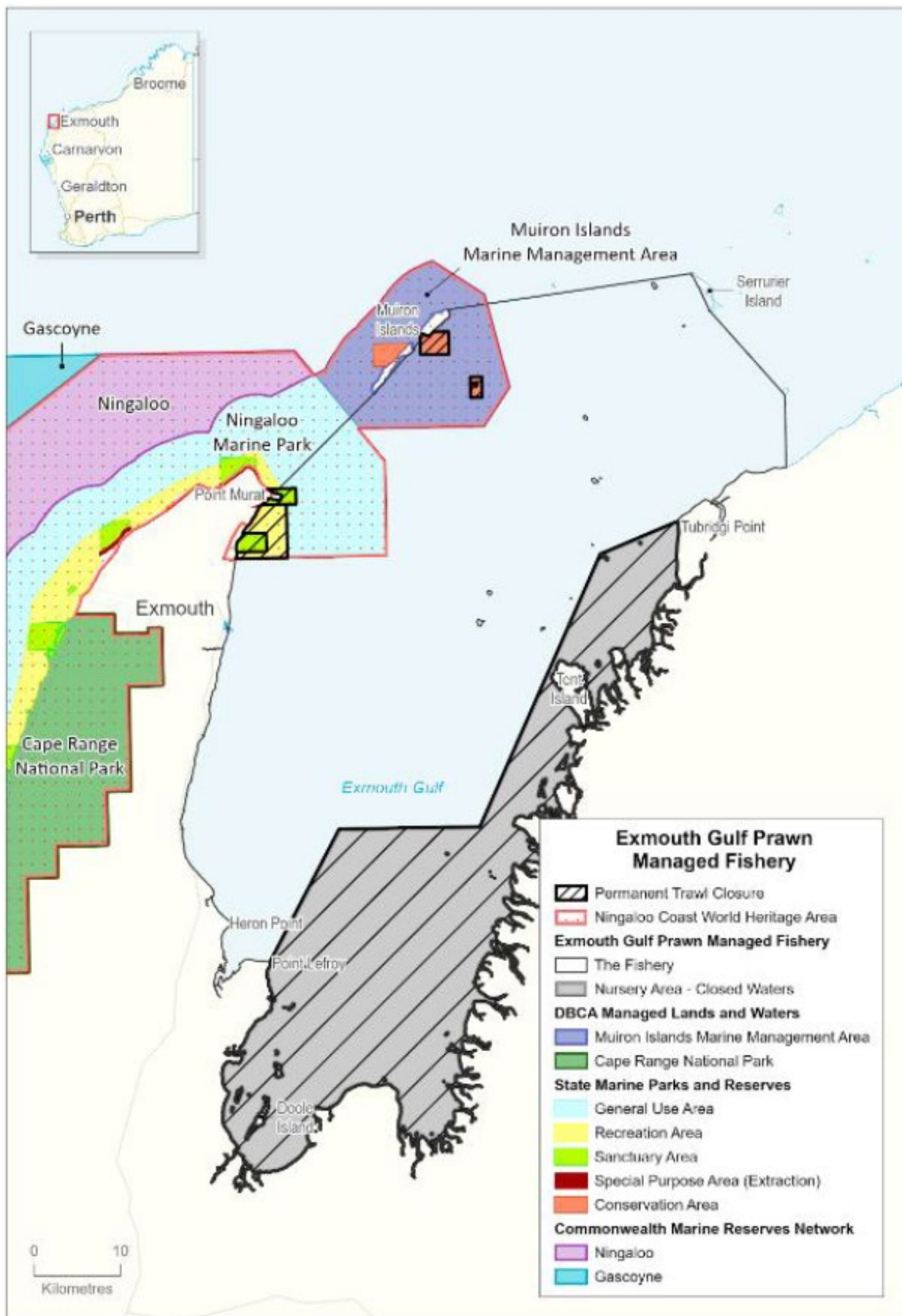


Figure 1: EGPMF boundaries, management areas and trawl closure areas

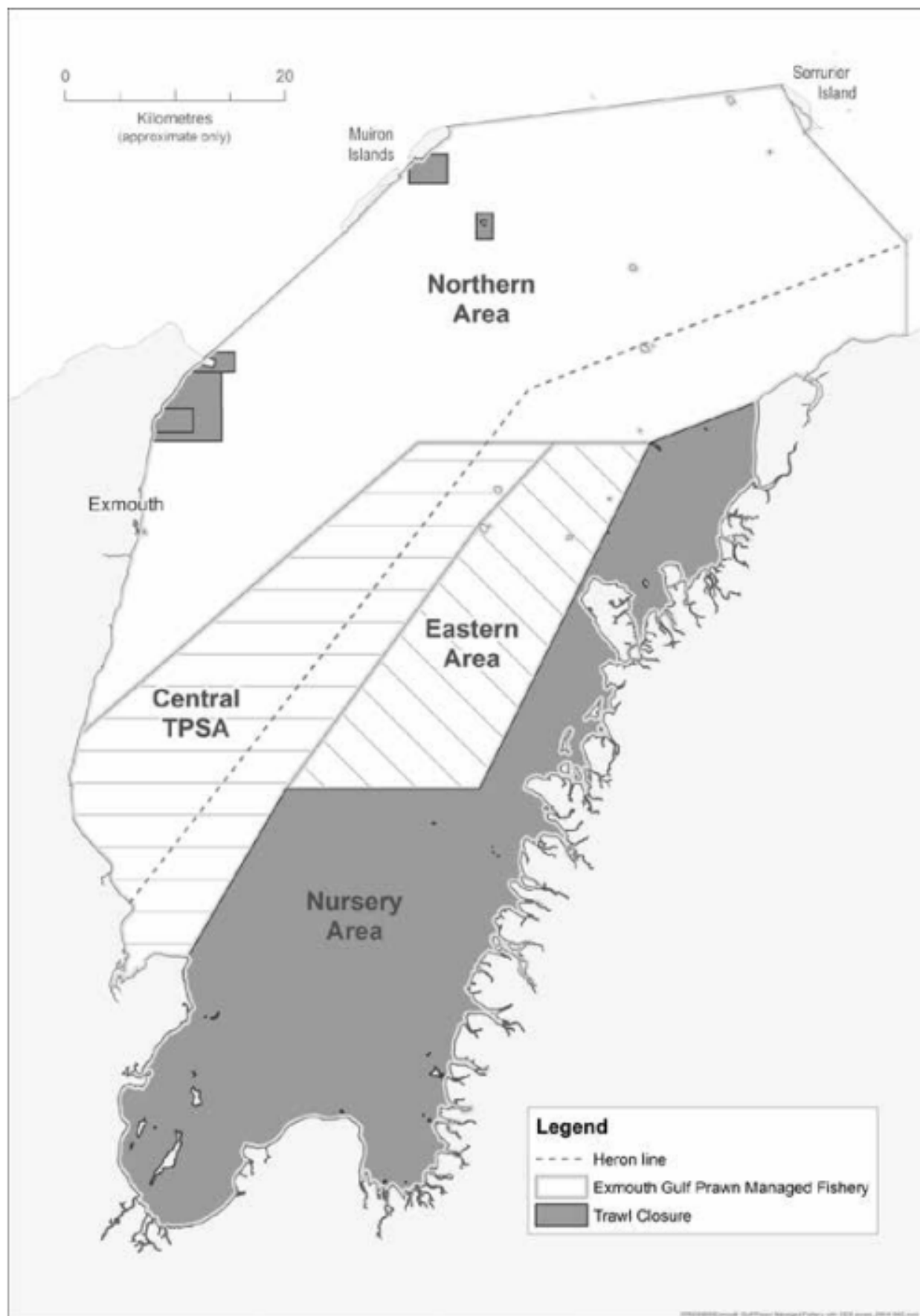


Figure 2: Main EGPMF management area boundaries.

Fishing methods and gear

EGPMF fishing methods and gear requirements are prescribed in the *Exmouth Gulf Prawn Limited Entry Fishery Notice 1989* (Management Plan). Brief descriptions of the gear aspects managed under the Management Plan are summarised in Table 1.

Table 1: Summary of EGPMF gear aspects managed in the EGPMF.

Gear Aspect	Description
Otter trawl nets and try nets	<p>A 'standard' otter trawl net (<i>Figure 3</i>) and a try net may be rigged for prawn trawling.</p> <p>On low opening trawl nets, the headrope overhangs the footrope to enhance the catch efficiency of the nets.</p> <p>Try net with two otter boards have the following maximum dimensions:</p> <ul style="list-style-type: none"> • 914 mm in length, and • 610 mm in breadth.
Otter boards	<p>Attached to each side of the otter trawl net opening, setting the gear height.</p> <p>The force of the water passing over the otter boards opens the nets laterally.</p> <p>A maximum of two otter boards may be attached to each standard trawl net and must be directly attached to the end of the headrope.</p>
Otter board shoes	Attached to the underside of the otter boards, designed to protect the boards from wear.
Ground chain	<p>Attached to the footrope, which contacts the seafloor and disturbs prawns so that they rise into the oncoming net.</p> <p>A 'tickler chain' may also be used to disturb prawns and improve catchability.</p> <p>Only one ground chain and one tickler chain may be used, both of which must be made of material that has a diameter of no greater than 10 millimetres (mm).</p>

Under the Management Plan, a standard trawl net has a maximum headrope length of 13.72 m, however, an Instrument of Exemption (IoE, no. 251058122) that permits a maximum combined headrope length of 395.02 m (216 fathoms) that may be utilised between all 15 MFLs at any time, has been in place since 2022. This allows vessels to trial alternate gear configurations to improve fishing efficiency and operate with otter trawl nets in twin, quad or triple gear configurations (*Figure 3*), noting that only one vessel may operate triple net configuration at any one time.

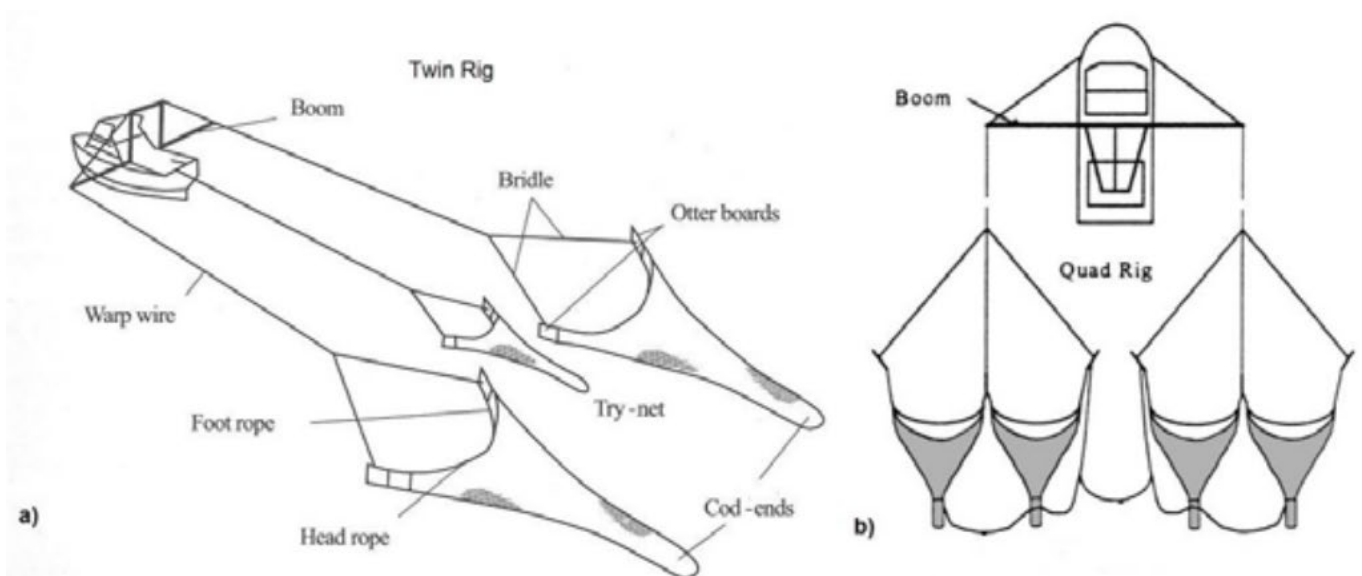


Figure 3: Standard twin-rig otter trawl (a) and quad-rig otter trawl (b) configurations used in the EGPMF.

Bycatch Reduction Devices

All trawl nets in WA are required to be fitted with bycatch reduction devices (BRDs); a device fitted within a net or net modifications which allows non-target species to escape from the net. In the EGPMF, a grid and a secondary Fish Escape Device (FED), either in combination or as separate devices are mandatory BRDs.

FEDs are comprised of mesh panels that direct fish and other large, non-target marine animals towards openings in the top of the net.

Grids are a rigid barrier fitted within the otter trawl net, which allows large animals (including turtles and dolphins), and other objects, to escape immediately after being taken into the net. In WA, grids must comply with the following specifications:

- Have a rigid inclined barrier (installed in the net at an angle no greater than 60°), comprising bars that are attached to the circumference of the net, which guides animals and / or objects towards and escape opening forward of the grid;
- Have an escape opening with the following minimum measures when measured with a taut net:
 - 75 cm across the widest part of the nets; and
 - A perpendicular measure of 50 cm from the midpoint of the width measure.
- Have a maximum vertical bar clearance spacing of 20 cm.

While complying with the above-mentioned requirements, Sea Harvest have continued to develop, trial and implement fishery-specific BRDs, including an industry-led *Grid Kite* trial that was introduced in 2020. The Grid Kite gear configuration provides a foil that creates flow through a series of diamond-shaped net openings of the grid (BRD), allowing sea snakes to move towards and through the escape openings. One vessel has been set up to trial the Grid Kite and has recorded data over the course of two years. This information has been provided by industry for MSC audit purposes, whereby sea snake bycatch has reduced by 81% and finfish bycatch by (18%), with negligible impact on prawn catch (MSC Surveillance Report, 2024).

Industry has advised that the Grid Kite BRD is in the final refinement phases before full implementation (MSC Surveillance Audit Report, 2024). Industry has proposed to continue the use of this BRD, given that the underwater footage from the trial indicates that other small species, as well as sea snakes, are flowing through the nets and avoiding capture.

Since 2002, EGPMF operators have also used an onboard ‘hopper’ or ‘well’ system, which allows catch to remain in recirculating seawater whilst being sorted. This practice reduces the mortality of bycatch and discard species (Ocean Watch Australia 2004) and improves the quality of prawns.

Commercial fishing operations

The annual cycle of operation for the EGPMF is dynamic and depends on the strength and timing of prawn recruitment (Figure 4). The Prawn Resource of Exmouth Gulf Harvest Strategy 2021-2026 (Harvest Strategy) sets out commercial fishing arrangements; aimed to allow prawns to reach optimal market size before fishing commences, while also providing protection to the spawning stocks through spatial and temporal closures of key spawning areas throughout the season to meet ecological and economic Fishery objectives.

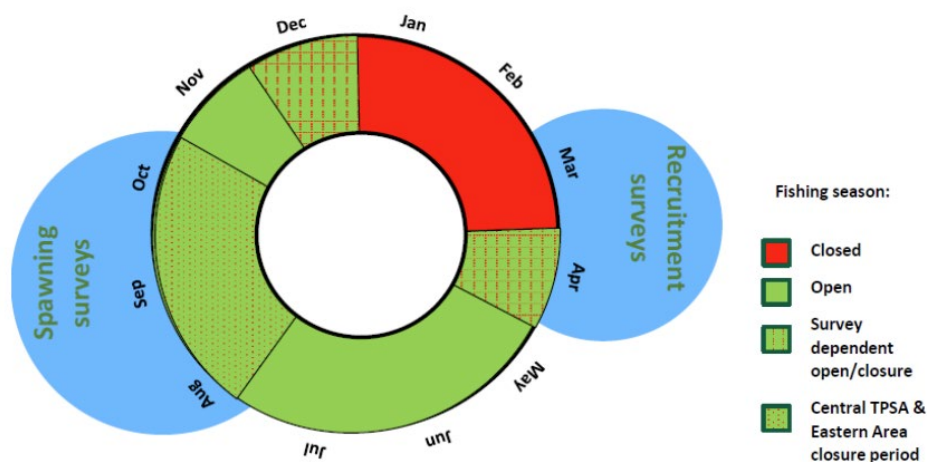


Figure 4: Schematic of the EGPMF annual season arrangements and timing of the two annual survey periods (ref: Harvest Strategy 2021-2026).

While 15 vessels are authorised to operate in the Fishery during any season, six vessels are generally actively fishing. Each licensed vessel, carrying a skipper and typically three crew, focuses fishing effort on brown tiger prawns during the first part of the season (from 1 April) as this species are the first to arrive on the trawl grounds. Fishing operations then shift to the north of the Fishery to target western king prawns, where this species is in peak abundance during August and September. Fishing generally continues into November, and in 2023, fishing ceased on 18 December.

Trawling is not permitted during daylight hours, between 0800 and 1800, and is predominantly carried out on mud and sand habitats in the deeper, central and north-western parts of Exmouth Gulf. The duration of trawl shots range between 60 to 200 minutes, with vessels typically trawling at between 3 to 4 knots.

Target and byproduct species

The species of prawns targeted by the Fishery are decapod crustaceans belonging to the family *Penaeidae*. Western king prawns are widely distributed throughout the Indo-West Pacific region, while brown tiger prawns are generally regarded as endemic to tropical and subtropical Australian waters. Blue endeavour prawns occur in Australia's northern waters.

All three species are short-lived, living for two to three years, are fast-growing and have variable recruitment that is primarily environmentally driven.

Juvenile prawns occupy shallow, nearshore areas where seagrass and algal communities (brown tiger prawns) or sandy/muddy habitats (western king prawns) form important nursery habitats. In Exmouth Gulf, juveniles of all three target species spend about three to six months in the inshore nursery grounds before reaching maturity and migrating into deeper waters further offshore to spawn. The peak spawning season varies between the three species, as this is driven by water temperature. Spawning for western king prawns tends to occur throughout the year, while brown tiger prawns spawn during the spring and summer months.

Exmouth Gulf prawn populations are considered to function as independent, self-sustaining stocks with distinct adult and juvenile habitats and independent variations in recruitment and abundance. However, there may be some mixing of larvae and juveniles with the coastal waters north of the Gulf.

Brown tiger prawns

The brown tiger prawn (*P. esculentus*) is easily identified by its pattern of distinctive pale brown and darker bands (

Figure 5). The species is distributed around the northern coast of Australia, from central New South Wales in the east to Shark Bay in WA (Ward et al. 2006). Major fisheries for this species in WA operate in Shark Bay and Exmouth Gulf, with smaller catches landed in the coastal waters of the North Coast Bioregion, around Onslow and in the Kimberley.

Western king prawns

The western king prawn (*P. latisulcatus*) is distinguished by its bright blue legs and tail (Figure 5). Within Australian waters, this species occurs in the waters of South Australia, WA, Northern Territory, Queensland and down the east coast to northern New South Wales (Grey et al. 1983). In WA, two major fisheries target western king prawns, operating out of Shark Bay and Exmouth Gulf. Smaller quantities of this species are also landed in the North Coast Bioregion by prawn fisheries operating off Onslow and Broome.

Blue endeavour prawns

The blue endeavour prawn (*Metapenaeus endeavouri*) (

Figure 5) is restricted to northern Australian waters between northern New South Wales and Exmouth Gulf in WA (Grey et al. 1983) and are generally found in coastal waters down to approximately 50 m in muddy or sand/mud substrate. Their distribution generally overlaps with that of brown tiger prawns.

This species is considered more resilient to fishing pressure due to their smaller size and lower catchability, as well as the lower level of targeting compared to other prawn species (Kangas et al. 2006).



Figure 5: (a) A brown tiger prawn; (b) A western king prawn; and (c) A blue endeavour prawn. Illustration © R. Swainston (www.anima.net.au).

Byproduct

Recorded byproduct species include:

- **Coral prawns (various species but mainly *Metapenaeopsis crassissima*)** - due to their low value, coral prawns are not generally targeted and landings and retention are highly variable.
- **Banana prawns (*Penaeus merguensis*)** - Banana prawns are at their southern-most distribution limit in Exmouth Gulf with relatively low numbers caught each year. Banana prawns tend to aggregate during daylight hours, when trawling is not permitted reducing the potential effort on this species. Catches do increase after consecutive years of higher rainfall levels, e.g. when cyclonic activity has occurred (Kangas et al. 2006), and temporal arrangements may be implemented to facilitate improved catches of banana prawns, if appropriate.
- **Cephalopods** including cuttlefish (*Sepia* spp.), squid and octopus have been consistently retained in low numbers. Given the short life span, high fecundity and wide distributions of most cephalopods, they are typically considered highly productive and resilient to fishing.
- **Blue swimmer crab (*Portunus armatus*)** retained in low numbers as the Gulf provides extensive refuge areas within the permanently closed nursery areas and in the deeper waters off the adjacent continental shelf.
- **Bugs (*Thenus* spp.)** which have a wide geographical range and generally comprise <1% of retained catch. They are generally caught in the central and northern areas of Exmouth Gulf (Kangas et al. 2006).
- **Mantis shrimp** – retention has increased as markets have developed, although it continues to represent a very small portion of retained catch.
- **Finfish species** - (generally <0.1% of total retained catch), including whiting and mullet.

In 2023, 16.7 t of coral prawns and 13.6 t of blue swimmer crabs were retained by the EGPMF. Appendix 2 provides further information regarding retained catches of species for the past 5 years.

Value of the Fishery

Prawn catches in the EGPMF have remained relatively steady over recent seasons. Of the three target species, brown tiger prawns are most retained, with considerable landings of western king and blue endeavour prawns also reported.

In 2023, the following catches were reported for each species in the EGPMF:

- Brown tiger prawns: 306 t
- Western king prawns; 200 t
- Blue endeavour prawns: 147 t

Beach prices for prawns vary, depending on the type and quality of product and market. In 2023, the beach price of the EGPMF target species were as follows:

- Western King Prawns: \$16.44
- Brown Tiger Prawns: \$18.07
- Blue Endeavour Prawns: \$7.80

Using the state-wide mean beach price for each species in the 2022/2023 financial year, the GVP of the Fishery was reported at \$13.4 million (SFRAR, 2023).

Prawn species harvested by the EGPMF are sold raw frozen or cooked frozen to domestic markets, with occasional green frozen prawns exported to premium Asian markets (Marine Stewardship Council, 2024).

Management Regime

Legislative framework

DPIRD manages the EGPMF under the following legislation:

- *Fish Resources Management Act 1994 (FRMA)*;
- *Fish Resources Management Regulations 1995 (FRMR)*;
- *Exmouth Gulf Prawn Limited Entry Fishery Notice 1989 (EGPMF Management Plan)*;
- Section 43 Orders;
 - *Prohibition on Commercial Fishing (Muiron Islands Marine Management Area) Order 2008*;
 - *Prohibition on Commercial Fishing (Ningaloo Marine Park) Order 2005*; and
- *Trawling Prohibition (Whole of State) Notice 1992*.
- FRMA Section 7(2) instruments of exemption.
- Notice No. 1 of 2024 – *Notice of Permitted and Prohibited Areas to Fish for Prawns in the Exmouth Gulf Prawn Managed Fishery*.

Licence holders operating in the EGPMF must also comply with the requirements of the:

- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- *Marine Safety (Domestic Commercial Vessel) National Law Act 2012*.
- *WA Marine Act 1982*.
- *WA Biodiversity Conservation Act 2016 (BCA)*.
- *WA Conservation and Land Management Act 1984*.

Other policy/management instruments applied to this Fishery include:

- Prawn Resource of Exmouth Gulf Harvest Strategy 2021-2026.
- Managed Fishery Licence (MFL) conditions which prescribe the requirement to use otter trawl nets fitted with BRDs (grids and FEDs.).
- *Sawfish and River Sharks Multispecies Recovery Plan: (Pristis pristis, Pristis zijsron, Pristis clavata, Glyphis glyphis and Glyphis garricki)*. More specifically, the EGPMF complies with the required actions to achieve Objective 1 of the recovery plan:
“Reduce and, where possible, eliminate adverse impacts of commercial fishing on sawfish and river shark species”.
 Such actions include reporting the Fishery’s interactions, full compliance by commercial fishers with management measures specified in fisheries management plans, improvement in monitoring systems, and increased awareness among fishers through education programs in species identification and handling.

Licensing Framework

Commercial fishers in the EGPMF are required to have an EGPMF MFL to fish in the Fishery.

Controlling the level of harvest

The EGPMF is primarily managed via a *constant escapement approach*, which applies input controls to allow adequate stock biomass to remain in the Fishery prior to spawning by keeping fishing effort at a level that does not deplete the residual stock particularly brown tiger prawns).

The following management controls apply to the EGPMF:

- Catch rate limits
- Effort levels
- Limited entry
- Gear controls and vessel restrictions
- Seasonal (spatial and temporal) closures.

Management measures and the associated operational cycle are particularly dependent on the strength and timing of prawn recruitment and have been developed in collaboration with industry based on a comprehensive understanding of the targeted prawn species in Exmouth Gulf. This understanding of stock recruitment has been established through fishery dependent and independent data, whereby reference levels and related control rules apply to fishing activities to maintain prawn abundance and optimize economic return for the commercial fishing industry.

Key EGPMF management aspects to control fishing effort on the Exmouth Gulf prawn resource are provided in the Harvest Strategy. These measures can be amended as needed to achieve management objectives; however, they do not preclude consideration of other options. The Harvest Strategy also outlines the EGPMF harvest approach including trigger limits and guidelines for within-season spatial management; a key mechanism for controlling effort on small prawns and/or during spawning periods.

Harvest Strategy

The regulatory harvest system for the EGPMF is currently managed in accordance with the Harvest Strategy, developed by DPIRD in consultation with the commercial fishing sector, WAFIC and other key stakeholders.

The Harvest Strategy is structured to describe, hierarchically:

1. the high-level, long-term objectives of management.
2. the short-term, operational objectives.
3. how objectives translate into the management approach used for the fishery.

This is followed by a more detailed description of the:

1. Processes for assessing ecological sustainability.
2. Processes for assessing fishery performance.
3. Specific monitoring and assessment procedures used to ascertain if objectives are being met.

The long- and short-term objectives for the management of the Fishery focus on sustainable prawn fishing practices, the environment, social and community benefit, and economic viability. There is no formal allocation between the commercial and recreational fishing sectors, nor a customary allocation.

The Harvest Strategy also provides a detailed description of the specific monitoring and assessment processes used to evaluate ecological sustainability and fishery performance and ascertain whether objectives are being met. Suitable indicators are selected to measure the Fishery's performance, which are assessed against defined reference levels; established to separate acceptable from unacceptable performance.

In association with the Fishery's performance, Harvest Control Rules (HCRs) are developed and outlined in the Harvest Strategy to define the management action that should occur in relation to the value of each ecological performance indicators compared to the reference level. HCRs are designed to maintain the resource above the threshold levels, and therefore the extent of management action taken is determined by the extent to which a performance indicator has breached a reference point, increasing in line with an increasing risk to the resource.

Management objectives, performance indicators, reference levels and HCRs associated with each of the target species, as well as other ecological components, are detailed in the Harvest Strategy.

Central to the EGPMF Harvest Strategy is the co-management approach, whereby the sole licence holder (Sea Harvest) works cooperatively with DPIRD to manage the Fishery in accordance with the Harvest Strategy. This demonstrates Sea Harvest's consistent and excellent corporate behaviour, high-level compliance and proactive communication with DPIRD. This collaborative management approach, in conjunction with the decision-making control rules and processes for in-season operations, allows for real time management of prawn stocks and a demonstrated commitment to sustainable fishing practices.

Examples of decisions that are made under the co-management framework include the opening date of the fishing season, the spatial extent of fishing in particular management areas and the conclusion of the fishing season to maximise the contribution of the spawning stock for the following years' fishing. Industry may also voluntarily choose to fish in alternate areas when catch rates and/or prawn size declines.

Periodic reviews of the Harvest Strategy are scheduled to ensure the current arrangements remain fit for purpose. A review of the Harvest Strategy is also initiated when an indicator suggests that the Fishery's impact on the resource is no longer acceptable.

Performance against objectives, performance indicators and performance measures

Performance indicators

The key performance indicators used to measure the abundance of the target species are primarily derived from annual recruitment surveys undertaken in March and April, and spawning stock surveys undertaken for brown tiger prawns and blue endeavour prawns in August, September and October. Performance indicators include:

- The spawning index for western king prawns, which is currently based on commercial (fishery-dependent) catch rates, however, a fishery-independent survey commenced in 2015 and will be used to provide the spawning index for this species in the future.
- The recruitment indices for brown tiger prawns and western king prawns, which are compared to associated threshold reference levels to inform if fishing can occur in the key management areas prior to the spawning period, or if any particular areas dominated by small prawns need to be further protected.
- The limit reference level (Blim) for the target species, considered to represent conservative estimates.

Further information is provided in the Harvest Strategy.

Other ecological components

Other ecological assets include other retained species, bycatch, ETP species, habitats and ecosystem processes that may be affected by commercial prawn trawling in Exmouth Gulf. In addition to prawns, the EGPMF also retains several other species, including cephalopods (squid, cuttlefish and octopus); blue swimmer crabs (*Portunus armatus*) and bugs (*Thenus spp.*).

Application of HCRs

Where an indicator suggests that the fishery impact on a resource is no longer acceptable, the HCR typically initiates a review of all available information to determine an appropriate management response. The extent of management action taken is determined by the extent to which a performance indicator has breached a reference point, increasing in line with an increasing risk to the resource. This review process also includes consideration of future research and monitoring to ensure the indicator returns to the target level, as well as the compliance response needed to ensure management changes are adequately enforced. Although a wide range of management measures may be used to achieve the management responses outlined by the HCRs, examples for the Exmouth Gulf prawn resource include:

- Delaying the opening of the fishing season to maximise the opportunity for prawns to spawn;

- Reducing the spatial extent of fishing in Central TPSA and Eastern Area to protect areas dominated by juvenile prawns; and/or
- Ceasing fishing earlier in the season where prawn recruitment is low to maximise their contribution to next year's catch and the spawning stock.

Implementing these changes is normally through agreement between industry and Government via the fishery's cooperative management framework.

Fishery performance

A broad catch tolerance range of 436 – 1,347 t has been developed for the EGPMF, based on historical variations in fishing operations and species landings. There is also a catch tolerance range for each species, provided in Table 2, below. Defining annual tolerance levels provides a formal but efficient basis to evaluate the effectiveness of current management arrangements in delivering the levels of catch and/or effort specified by the HCRs and, where relevant, any sectoral allocation decisions (Fletcher et al. 2016).

The tolerance levels are reviewed annually, using fishery-independent and fishery-dependent catch rates during annual surveys undertaken during the fishing season and catch/effort data, whereby indices of recruitment and spawning stock levels are derived. Stock levels are monitored relative to specified reference points at certain times during the fishing season. Further information regarding performance indicators and reference levels used to guide this assessment process are detailed in *section 3.4.1* of the EGPMF Harvest Strategy.

The Fishery's performance (catch) against each species' tolerance range between 2019 and 2023 are provided in Table 2. This information is also reported in the fishery specific Weight of Evidence (WoE) report, the State of Fisheries and Aquatic Resources Report and in the Department's Annual Report to the WA Parliament.

In line with the principles of ESD, this fishery level review process also considers performance against any objectives relating to the economic and social amenity benefits of fishing. Where possible, and in due consideration of ecological sustainability, fisheries management arrangements can be adjusted or reformed to help meet these economic and/or social objectives.

Focussed 'industry-based' surveys of areas that have been closed during the season to provide additional protection, as required, are also used to assess the performance of the Fishery.

Table 2: Catch tolerance levels and total catch data for the EGPMF from 2019-2023.

Year	Brown tiger prawns		Western king prawns		Blue endeavour prawns	
	Catch tolerance (t)	Catch (t)	Catch tolerance (t)	Catch (t)	Catch tolerance (t)	Catch (t)
2019	250 – 550 t	418	100 – 450 t	194	120 – 300 t	208
2020		243		199		237
2021		386		211		177
2022		411		218		269

2023		306		200		147
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Status Report of the Fisheries and Aquatic Resources (SRFAR)

DPIRD conducts a formal, resource-level review of the EGPMF to assess the status of target stocks and performance in relation ecological objectives, which is reported in the annual SRFAR. DPIRD has finalised and published the 2022/23 SRFAR, which includes stock status information up to, and including, that years' fishing season. Key conclusions of this report regarding the status of the brown tiger, western king and blue endeavour prawn stocks taken by WA prawn trawl fisheries, including the EGPMF, in 2022-23 are summarised in *Table 3*.

Table 3: Breeding stock status, catch and effort ranges for the EGPMF (SRFAR, 2023).

Resource	Assessment level	Breeding stock assessment	Catch (and effort) range	Catch, effort and catch rate for season reported	Catch (or effort or catch rate) level acceptable and explanation
EGPMF	Annual: Level 4	Sustainable: adequate	Commercial: 436-1347 t Recreational: N/A	Commercial: 898 t	Acceptable

Further information can be found in the *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2022/2023*, and in previous SRFARs, available on the [DPIRD fisheries website](#).

Recovery Strategy

A strategy to recover depleted prawn stocks is incorporated into the Harvest Strategy (*section 3.4.2.1*). The recovery strategy considers the management approach to rebuild target stocks at an acceptable rate when they have fallen below the threshold and/or limit reference levels. Such arrangements are aimed at reducing catch and effort as soon as possible, and may include:

- Increased monitoring.
- Reducing the spatial (and temporal) extent of fishing in the Central TPSA and Eastern Area to protect areas dominated by juvenile prawns.
- Delaying the opening of the fishing season to maximise the opportunity for prawns to spawn.
- Delaying within season area openings, altering area boundaries and/or leaving areas closed.
- Ceasing fishing earlier in the season where prawn recruitment is low to maximise their contribution to next year's catch and the spawning stock

Additionally, the strategy ensures that arrangements for the next season are sufficiently precautionary to return the stock to the target level.

Where environmental conditions have resulted in, or significantly contributed to, the resource being at an unacceptable level, the strategy will consider how this may affect the speed and extent of recovery.

Stock Assessments

Principles

All DPIRD stock assessments take a weight-of-evidence, risk-based approach. This requires the consideration of each available line of evidence, both individually and collectively, to generate the most appropriate overall assessment of stock status and the risk of future depletion. Lines of evidence include outputs generated from each available quantitative method, 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. Information is also reviewed against the Harvest Strategy to inform the required management response to manage sustainability.

Stock assessments, and the lines of evidence used to assess key prawn stocks for the EGPMF, consider:

- Analysis of biological information (e.g. size composition) collected from fishing-independent sampling and other research;
- Commercial catch
- Catch per unit effort (CPUE) (nominal and standardised),
- spatial/temporal catch distribution, and catch MSY modelling;
- Fishing effort; and
- Fishery independent indices of stock levels, including:
 - Recruitment indices
 - Spawning indices
 - Stock-recruitment relationships (SRR)
 - Environmental impacts

Weight of evidence reports and annual season review

DPIRD prepares an annual WoE report for the EGPMF at the conclusion of the fishing season. The process examines multiple levels of data and considers all lines of evidence in a risk-based approach to determine the overall risk of stock depletion. The WoE is provided to industry and used as a basis to set season arrangements for the coming season, in accordance with the Harvest Strategy's HCRs.

If any indicators specified to measure performance fall outside of the tolerance range and cannot be adequately explained (i.e. environmental or market-induced impacts) this will result in a review and re-assessment of the resource status against the Harvest Strategy, with additional management adjustments being made accordingly.

2023 stock assessment

Stock status for the EGPMF is assessed by monitoring fishery-independent and fishery-dependent catch rates (used as indices of recruitment and spawning stock levels) relative to specified reference points.

A summary of the 2023 assessment outcomes for the EGPMF, as reported in the WoE, is provided at *Table 4*.

Table 4: 2023 EGPMF weight of evidence assessment summary.

Species	Reference Level	2023 Level	Control Rule	Weight of Evidence Assessment (2023)	2023 stock status
Brown tiger prawns	Target – Mean catch rate ≥ 25 kg/hr	Mean catch rate 45.5 kg/hr	No change to season arrangements	Medium risk	Sustainable-adequate
Western king prawns	Target – Mean catch rate ≥ 25 kg/hr	Mean catch rate 30.2 kg/hr	No change to season arrangements	Medium risk	Sustainable-adequate
Blue endeavour prawns	Target – Mean catch rate ≥ 9 kg/hr	Mean catch rate 33.4 kg/hr	No change to season arrangements	Medium risk	Sustainable-adequate

Monitoring and data collection

Fishery-independent monitoring

Prawn surveys in the Exmouth Gulf have been undertaken since 1985. Annually, six fishery-independent surveys are conducted throughout Exmouth Gulf to assess the EGPMF. The surveys are associated with the lunar phases, which typically occur in March and April (three surveys during these months), and in August, September and October (one survey in each month). Indices generated from these surveys assist in the stock assessments of each target species, as well as inform pre- or in-season management arrangements for prawn species.

Indices and other information derived from fishery-independent surveys for each species include:

- Recruitment indices.
- Spawning indices.
- Size composition information.

Environmental information, including depth, water temperature and sea conditions, are also collected. Climate data is also used to assess potential spawning and/or recruitment impairment, which may be influenced by temperature fluctuations, or associated environmental changes. Spatial data validation is undertaken by plotting maps of logbook effort and using VMS to monitor fishing activities in the Fishery, as part of its compliance plan. Refer to *Vessel Monitoring System* section for more information.

Fishery-dependent monitoring

Annual fishery-dependent catch rate data for target prawn species is available from the early 1960s, and has been calculated based on:

- Fishing effort data adjusted for changes in fishing efficiency associated with gear changes (twin hear to quad gear).
- Additional increases in efficiency (estimated at 1.5% per year) associated with technological improvements in fishing technology and the use of information from fishery-independent surveys on areas of prawn abundance.

Reporting of daily catch (kg) and grade categories of each target species, and effort (hours trawled) expended in specific fishing areas is reported by fishers and also used to support the assessment of the Fishery's target stocks.

Brown tiger prawns

A stock-recruitment relationship (SRR) has been derived based on fishery-dependent data for brown tiger prawns, demonstrating that recruitment of the species is negatively impacted at low stock sizes (Penn and Caputi, 1986). Furthermore, catch rate information for this species at peak spawning and recruitment periods, as a measure for spawning and recruitment, has been used to further assess this relationship.

Western king prawns

Estimates of this species' spawning stock is based on fishery-dependent catch rates (adjusted for fishing gear changes) from August to September in key western king prawn fishing grounds. As this species is being targeted during their spring spawning period, these catch rates are considered representative of spawning stock, also noting that brown tiger prawn grounds are closed in these months.

Statutory reporting

Commercial catch and effort data in the EGPMF has been monitored using statutory logbooks, which became mandatory in 2008. All retained (target and non-target) species catches, effort, ETP species interactions and fishing location, i.e. detailed shot-by-shot longitude and latitude, are recorded by fishery operators.

Since 1 April 2024, the Fishery has been approved to submit statutory daily electronic reports via CatchLog; a third-party on-board electronic logbook reporting system. Information reported through CatchLog reflects the information requirements of the mandatory paper logbook.

Vessel monitoring system

A Vessel Monitoring System (VMS) is used in the EGPMF to monitor effort levels and ensure compliance with management arrangements.

For more information regarding VMS in this Fishery, see the *Enforcement of management arrangements* section.

Ecosystem

Marine Stewardship Council (MSC) accreditation

The EGPMF received third party MSC accreditation in 2015, demonstrating its achievement of high standards in relation to sustainability of fish stocks, the minimisation of environmental impacts resulting from fishing activities, and effective management of the Fishery.

The Fishery was re-certified without conditions in 2020, whereby the Fishery was assessed as meeting all required standards addressing the following ecosystem components: target species, non-target retained species (byproduct), non-retained species (bycatch), endangered species, habitat, and the ecosystem overall. The Fishery is scheduled for recertification in 2025. Further information regarding the current status of the EGPMF MSC certification is available in the [2024 Surveillance Audit Report](#).

Mitigating impacts of the wider ecosystem

DPIRD adopts an integrated Ecosystem Based Fisheries Management (EBFM) approach to manage WA fisheries. The EBFM framework involves a risk-based monitoring and assessment approach to determine the cumulative impacts of all fishing activities (commercial, recreational and customary) on the overall ecosystems in which fishing occurs. In line with the principles of Ecologically Sustainable Development (ESD), the EBFM approach also recognises that the economic and social benefits of fishing to all users must be considered.

The EBFM is applied across all fisheries, and aquatic resources, operating at a regional or ecosystem level. The level of risk to each resource is used as a key input to the DPIRD Risk Register, which is an integral component of the annual planning cycle for assigning activity priorities (research, management, compliance, education, etc.) across each bioregion. Outcomes of each assessment contribute to developing and implementing appropriate and sustainable management arrangements.

Reference levels for other ecological assets that may be impacted by the EGPMF have been established, where reliable quantitative information is available, and are considered in the Harvest Strategy. Other ecological assets incorporated into the Harvest Strategy include other retained species, bycatch, ETP species, habitats and ecosystem processes. The reference levels for each of these components aim to differentiate acceptable fishery impacts from unacceptable fishery impacts according to associated risk levels, as defined in Fletcher (2015). These reference levels and specific mitigation measures to minimise the impacts of prawn trawling in the EGPMF on ecosystem components are described in the Harvest Strategy (*section 3.4.1.2 and Appendix 3, Table 5 – bycatch mitigation measures*), the 2020 EGPMF ERA report and in the *Bycatch Action Plan* and *Habitats* sections of this application.

Ecological Risk Assessments

In line with the EBFM framework, Ecological Risk Assessments (ERAs) are undertaken periodically to assess the impacts of fisheries on all components of the aquatic environments in which they operate. The risk assessment methodology (utilised at the time of the EGPMF ERA, 2020) is based on the global standard for risk assessment and risk management (AS/NZS ISO 31000). This methodology applied a consequence-likelihood

analysis, which involves the examination of the magnitude of potential consequences from fishing activities and the likelihood that those consequences will occur given (current) management controls.

An ERA for the EGPMF was convened by DPIRD in 2019, with a final report published in February 2020 ([EGP ERA, 2020](#)). All risks were assessed using a consultative and structured workshop, held in September 2019, and focused on evaluating the ecological impact of prawn trawling on all retained species, bycatch, ETP species, habitats and the broader ecosystem. Workshop participants included subject matter experts, DPIRD management, compliance and research staff, and representatives from the commercial fishing industry.

Risks assessed during the 2019 ERA workshop were scored as medium, low or negligible using the adopted methodology. Risk rankings of medium or less are considered acceptable for a well-managed fishery, subject to ongoing management practices and performance monitoring. These assessment outcomes have informed the relevant ecological components to be managed under the EGPMF Harvest Strategy and have been considered to prioritise research, data collection and monitoring needs, as well as management actions for the Fishery.

Ongoing performance of the EGPMF indicates that the risk of fishing interactions to ecological assessed components remains acceptably low.

The next periodic ERA for the EGPMF is scheduled for 2025, which will ensure that fishing activities continue to be managed both sustainably and efficiently.

Bycatch and protected species interactions

Bycatch information for the EGPMF has been collected during fishery-independent trawl biodiversity surveys undertaken in 2004 (Kangas et al. 2007) and, more recently, between 2014 – 2017, as part of the development of the EGPMF Bycatch Action Plan (Department of Fisheries, 2014).

Broadly, the catch composition of the two sampling periods has remained similar; the level of bycatch in the EGPMF being variable, with the component of catches not typically retained by the Fishery predominantly comprised of invertebrate and fish species (Appendix 3).

These biodiversity surveys, in conjunction with ongoing monitoring both inside and outside EGPMF trawl grounds, indicate that habitat diversity is similar between trawled areas and the larger adjacent un-trawled areas, and that the current level of trawling activity does not affect overall biodiversity and cannot be distinguished from other sources of variation in community structure (SRFAR, 2023).

Bycatch and byproduct

Fishery-independent surveys undertaken between 2015-2024 determined invertebrate bycatch to be dominated by minor crab species, including *Portunus rubromarginatus*, as well as small prawns and echinoderms such as holothurians, sea urchins, sea stars and brittle stars. Finfish bycatch was dominated by lizardfish (mostly *Harpodontidae*), threadfin breams (*Nemipteridae*), goatfish (*Mullidae*), and trumpeters (*Terapontidae*) (Appendix 3).

Most bycatch species are not targeted by other fisheries in the region, except for minor catches of demersal finfish (refer to Appendix 3).

Reported ETP species interactions in the EGPMF over the past three years indicates that sea snakes are most frequently encountered.

Non-target species interactions

Other reported species that interact with the EGPMF include marine mammals, such as cetaceans, dolphins and dugongs, turtles (green, loggerhead, hawksbill and flatback), sygnathids, sawfish, sharks and rays (Appendix 4). A comprehensive summary and assessment of all bycatch information is presented in the [2020 EGPMF ERA Report](#).

ERA assessments in 2001, 2008 and 2019 have reported the risk to non-target and ETP species as negligible, low, or medium (EGPMF ERA, 2020), noting that an increase in reported interactions in more recent years, particularly sea snakes and sawfish, is due to an increased awareness, education and commitment from industry to improve reporting. This is supported by EGPMF operators' participation in bycatch reduction and reporting projects, as detailed below.

With regard to marine mammal interactions, considering the habitats that some of these species occur, such as dugongs primarily being observed in seagrass beds and whales and dolphins in the deeper north-westerly reaches of the Exmouth Gulf, the impact and potential capture of these species is reduced due to the spatial (and temporal) closures imposed on the Fishery.

Similarly, noting the diet and behaviour of turtle species that inhabit Exmouth Gulf, specifically green, loggerhead, hawksbill and flatback turtles, there is little overlap between the foraging behaviours and fishing activities of the EGPMF. Therefore, there have been few reported interactions with these species over the history of the Fishery.

Furthermore, turtle BRDs have been implemented in the EGPMF since 2002/03, through the mandatory use of grids. Grids have effectively reduced turtle (and large shark and ray) bycatch by 90-100% (Kangas and Thompson, 2004) and have increased the number of turtles being returned to the sea live.

In addition to the compulsory use of BRDs in the EGPMF, other arrangements, such as the voluntary reduction in fleet size (since 2012) from nine to six vessels, as well as management controls, including spatial closures and gear requirements; particularly low opening otter trawl nets used for prawn trawling in WA, which are likely to reduce the possibility of larger animals (eg. sawfish) entering the net, and the quad net configuration that uses less headrope length to operate more efficiently, have also contributed to the reduction in the number and intensity of interactions with non-target and ETP species (DPIRD, 2020).

Recent fishery status reports for the EGPMF have assessed the risk of the Fishery to bycatch and ETP species, indicating that this risk is stable (SRFAR, 2023).

Sea snakes

In the EGPMF, about 95% of ETP interactions by number of individuals are with sea snakes. Catch composition from surveys conducted in 2016 indicated that sea snakes were caught in low numbers within Exmouth Gulf (Udyawer et al. 2016). The surveys also showed that sea snakes generally had high rates of pre-release survival regardless of trawl duration, indicating that overall, snakes encountered in these surveys could be robust to short-to-moderate durations of trawls (Udyawer et al. 2016).

An industry-led trial of a new gear configuration referred to as the Grid Kite BRD was introduced in 2020 and is in the final refinement stages before it will be fully implemented by vessels operating in the EGPMF. Information regarding this specialised BRD and the results of the trial are detailed in the *Fishing methods and gear* section of this application.

Crew Member Observer Program

To more accurately report interactions with sea snakes in the EGPMF, a Crew Member Observer Program (CMOP) has been implemented, whereby independent researchers and experts have delivered, or been involved in, training programs for skippers and crew in safe handling of sea snakes and emergency procedures, as well as educational workshops and providing printed materials on species identification and protected species.

Improved handling and education programs for skippers and crew are likely to have resulted in the increased percentage of live releases of sea snakes. In 2016, 83% of sea snakes caught in the EGPMF were returned to the water alive. 93-95% of individuals were returned to the water alive between 2017-2018. The CMOP program has also increased accuracy of sea snake interaction reporting since 2014.

In recent years (2021 – 2023), between one and two vessels have participated in the CMOP. Most of the sea snakes observed by the CMOs were released alive, with the composition of sea snakes observed through the program during this time recorded in Table 5.

Table 5: EGPMF sea snake species composition in the CMOP observed catch in 2021, 2022 and 2023 (MSC Surveillance Audit Report, 2024).

Species	2021 (%)	2022 (%)	2023 (%)
Dubois sea snake (<i>Aipysurus duboisii</i>)	5.6	8.7	31
Olive sea snake (<i>Aipysurus laevis</i>)	13	8.7	24
Short nosed sea snake (<i>Aipysurus apraefrontalis</i>)	4	8.7	0
Olive-headed sea snake (<i>Hydrophis major</i>)	21	40.5	24
Elegant sea snake (<i>Hydrophis elegans</i>)	29	2.5	26
Leaf scaled sea snake (<i>Aipysurus foliosquama</i>)	0.3	1.3	0
Stokes's sea snake (<i>Hydrophis stokesii</i>)	21	19	0
Spotted sea snake (<i>Hydrophis ornatus</i>)	3.6	6.3	0
Mosaic sea snake (<i>Aipysurus mosaicus</i>)	1.8	3.8	0

Bycatch Action Plan

The Harvest Strategy incorporates a Bycatch Action Plan (BAP), which is designed to address unacceptable ecological risks associated with the Fishery to minimise interactions with non-retained and ETP species.

Key elements of the BAP for the EGPMF include gear controls linked to bycatch reduction, a bycatch (non-retained) monitoring program, several research projects undertaken in collaboration with industry and academic institutions to assess the sustainability of bycatch and reduce the capture of ETP species, and improved reporting of interactions, particularly focused on species identification and condition status.

Refer to the Harvest Strategy to review the EGPMF BAP.

Habitat

Exmouth Gulf habitat mapping

During the EGPMF 2015 MSC assessment, it was identified that limited broad scale habitat information was available for Exmouth Gulf. Subsequently, DPIRD commenced a habitat assessment project, through the Fisheries Research Development Commission (FRDC), to understand the benthic habitats in Exmouth Gulf, particularly those that overlap with the Fishery's trawl footprint.

As part of the FRDC project, fine-scale Fishery effort data; a combination of logbook and presence-absence VMS data, was collated to provide the spatial extent, timing and location of fishing activities. Existing broad-scale habitat information was then collated and validated to develop contemporary data maps, which were associated with fishing effort information.

127 sites, stratified by habitat type and fishing intensity, were validated (in 2018) and habitat maps describing the entirety of the EGPMF were created. These maps were developed based on published studies of chemical and biophysical environmental information, including the biogenic structures where fishing takes place, and other habitat information relevant to Exmouth Gulf (Lyne *et al.* 2006 habitat mapping, developed as part of the North West Shelf Joint Environmental Management Study).

More information on this project is available in the Research section of this application.

Habitat information continues to be collated annually and subsequent improvements in EGPMF management informed by habitat information has set a precedent for managing other commercial fisheries in the State. As such, DPIRD is considering future habitat mapping projects in other WA trawl fisheries.

EGPMF habitat interactions and impact

Preliminary information obtained through FRDC project 2015/027, as reported in the EGPMF ERA (2020), indicates that the waters of the EGPMF are dominated by sand (~50%), with most diverse biotic habitats (e.g. seagrass, filter feeders) occurring in the shallow waters of Exmouth Gulf (<5m), where trawling does not occur. Areas that can damage fishing gear (e.g. reefs) are also avoided, and therefore there is a low risk of adverse interactions with sensitive habitats.

Additionally, approximately 25% of Exmouth Gulf is trawled, with prawn fishing by the EGPMF focused on the deeper waters of the central and north-western areas, which are primarily mud habitats (SRFAR 2023).

Furthermore, the total area trawled within the boundaries of the EGPMF is estimated to be significantly less than the allowable fishing grounds. In 2023, the total area trawled within the Fishery's boundaries was estimated at 1057.5 km² (38.8% of the permitted trawl grounds).

Table 6 summarises the types and percentage of habitat that the EGPMF interacts with during two time periods. Most of the fleet's effort is over sand habitat with <20% of individual defined habitats, other than sand, also encountered. There was no observed increased risk between the 2012-2016 and 2019 data.

Table 6: Percentage of habitat (by type) interacted with by the EGPMF.

Habitat type	EGPMF Habitat Interaction (%)	
	2012-2016 <small>** this data set provided the baseline of habitat information</small>	2019
Sand	72.2	65.5
Mixed assemblage	25.3	18.2
Filter feeder environment	8.1	8.2

While the operations of the EGPMF are unlikely to pose a significant risk to benthic habitats, spatial management arrangements apply to provide protection to all sensitive, and some less sensitive, habitats. Spatial closures specifically apply in nursery areas, which occur in the southern and eastern sections of the Exmouth Gulf. The nursery closure area covers 244 nm and 28% of Exmouth Gulf, providing protection to juvenile prawns and secondary protection to the seagrass beds; being spatially separated from trawling activities by occurring in these areas.

The impact of prawn trawling on Exmouth Gulf benthic habitats is monitored by estimating the annual spatial trawl footprint of the EGPMF. Performance indicators have been established relevant to the extent of the area trawled within the entire area of the Fishery. The total area trawled each year must remain below 40%.

Third-party assessments and the 2019 ERA identified the risk of EGPMF impacts to various habitat types (and ecosystem structure) in Exmouth Gulf to be low. This risk status is reported in the annual SRFAR report, with results from the 2023 ecosystem and habitat risk assessment provided in Table 7.

Due to the comprehensive habitat information and subsequent improvements to EGPMF management and ecosystem/habitat risk status, no additional requirements for further research were raised at the time of the Fishery's MSC re-certification in 2020. During the 2024 MSC audit, assessors suggested that the EGPMF trawl footprint had no increase in the impact on habitats and biodiversity because of EGPMF fishing operations (MSC Surveillance Audit Report, 2024).

Table 7: Risk status of ecosystem structure and habitat in Exmouth Gulf (SRFAR, 2023).

Ecosystem / Habitat	Aquatic zone / Category	Current Risk Status
Exmouth Gulf benthic habitat	Sand, mud, sponge, seagrass	Medium
Exmouth Gulf ecosystem	Marine	Medium

Enforcement of management arrangements

Operations and compliance

Role

DPIRD has important statutory functions as a regulator. The contribution of regulatory compliance teams within DPIRD supports the development and implementation of quality legislation, policy and regulatory compliance services. DPIRD is committed to delivering a comprehensive awareness and education program to improve awareness of the legislation, and to increase people's ability to willingly comply with the regulatory requirements.

Strategic objectives

DPIRD's regulatory approach¹ intends to provide international and national markets, primary industries, consumers and the Western Australian community the confidence that our aquatic resources are managed within sustainable limits.

DPIRD's strategic objective as it relates to fisheries compliance is:

'To serve the Western Australian community and promote sustainable and responsible fishing by promoting stewardship and compliance with relevant legislation, preventing offences, and monitoring, investigating and enforcing compliance with relevant legislation'.

DPIRD also seeks to achieve the following outcome as provided in the *Australian Fisheries National Compliance Strategy 2022-2026* (the National Strategy)²:

An Optimal Level of Compliance, which can be described as, 'that which holds the level of non-compliance at an acceptable level, which can be maintained at a reasonable cost while not compromising the integrity of fisheries management or ecological sustainability and ensuring ongoing social licence and legitimacy'.

The Department's regulatory approach is shaped by the three key compliance strategies recommended by the National Strategy:

1. effective deterrence
2. organisational capability and capacity

¹ https://www.wa.gov.au/system/files/2024-03/regulatory_compliance_approach.pdf

² https://www.afma.gov.au/sites/default/files/2023-02/18050_national_fisheries_compliance_strategy-v2_1.pdf

3. maximising willing compliance

Compliance operations

During 2023, the Department developed and implemented a new annual risk-based management framework for commercial fishing and aquaculture compliance programs in WA.

The new framework ensures that:

- a consistent risk assessment, planning, monitoring and reporting process for commercial fisheries and aquaculture compliance programs statewide is completed on an annual basis
- fair, reasonable, and cost-effective compliance approaches are implemented with a focus on outcomes
- both inward and outward facing compliance reporting is greatly improved
- relationships continue to strengthen between Management, Science, and Compliance, including improving communication with a two-way flow of information.

DPIRD delivers a range of monitoring, surveillance, inspection, and investigation services. This regulatory compliance program plays an important role in general deterrence to non-compliance with the legislation and provides confidence to the community that offences will be detected and appropriate sanctions imposed on those who commit the offences. Compliance activities that are used in commercial fisheries include:

- Land and sea patrols
- Catch validation against managed fishery licences
- Inspections of wholesale and retail outlets
- Inspections at processing facilities
- Inspections of vessels in port and pre-season briefings
- At sea inspections of fishing boats
- Closed area/season monitoring via VMS
- Aerial surveillance

Inspections may involve inspection of:

- All compartments on board the vessels
- All authorisations
- Logbooks
- Catch on board the boat.

Vessel Monitoring System

VMS is a mandatory requirement in the EGPMF to enable real-time monitoring of fishery operations and activities and ensure fishers are operating within the legislated permitted fishing areas during designated fishing times.

All vessels operating in the EGPMF are fitted with an automatic location communicator (ALC), which is used to track the location of boats by transmitting information such as the geographical position, course, and speed. Information from the ALC is submitted to DPIRD

via satellite and is processed by specialised software designed to receive, analyse, display and record position reports and messaging via satellite. Prior to intending to commence fishing activities, the master of an authorised EGPMF vessel must make a nomination of intention to enter the Fishery.

Fishers must ensure that all operational ALC requirements are carried out in accordance with the relevant Approved Directions.

DPIRD uses VMS to monitor fishery compliance with operational ALC requirements and spatial closures. VMS information is also used to monitor fishing activities and effort, which is then used to assist with reporting on compliance, evaluating management arrangements and verifying research data.

VMS information, as well as other information reported by Compliance throughout the fishing season, is presented to EGPMF licence holders by DPIRD staff during management meetings.

Consultation Process

In 2012, DPIRD (then Department of Fisheries) published the *Western Australian Government Fisheries Policy Statement* (Policy Statement). This Policy Statement outlines DPIRD's position on, and vision for, Western Australia's fish and aquatic resources, acknowledging that productive engagement and consultation with stakeholders is an important aspect of effective fisheries management.

Management changes are given effect through amendments to legislation, including the EGPMF Management Plan, FRMR, exemptions and CEO determinations, orders and/or notices. These changes require consultation with all affected parties (or interested persons in the case of management plan amendments) and the approval of the Minister for Fisheries and/or DPIRD's Director General (or appropriate delegates). In making decisions relevant to fisheries, the Minister for Fishery may choose to receive advice from any source, although has indicated that:

- DPIRD is the primary source of management advice; and
- the peak body, WAFIC, is the primary source of advice and representation from the commercial fishing sector.

Commercial sector consultation and decision-making

WAFIC is funded by the WA State Government under a SLA to undertake their representation/advisory and consultation roles. Under the SLA, WAFIC is required to undertake statutory consultation functions related to the management of the EGPMF.

Further, WAFIC are responsible for facilitating management meetings between DPIRD, authorised operators in the EGPMF and WAFIC. These meetings are generally held each year and are important forums to consult on the management of the Fishery, as well as other relevant updates to DPIRD activities and priorities. During these meetings, DPIRD (science, management, and compliance) staff, licence holders and WAFIC discuss current and future management issues. DPIRD also consults directly with industry, where relevant, on specific management and operational issues.

Communication of season arrangements

Annual management meetings, held with DPIRD, WAFIC and licence holders in the EGPMF provide a forum to discuss and consult on the current and future management of the fisheries. Any issues that have arisen during the previous fishing season and proposed changes to the management arrangements for the upcoming fishing season are discussed.

Follow-up meetings may be held as required. DPIRD also consults directly with industry, where relevant, on specific management and operational issues and holds meetings on an “as needs” basis with the licence holder.

Prior to, and during, the fishing season, DPIRD works closely with EGPMF operators to develop annual season arrangements that achieve the operational objectives, as specified in the Harvest Strategy. A cooperative, real-time management framework exists between DPIRD’s ASA staff and the licence holder, whereby in-season temporal and spatial management decisions can be implemented, as required, to maximise economic for the Fishery, while continuing to operate within the Fishery’s sustainable management framework.

Skipper’s briefings are also conducted with those skippers operating authorised vessels for that season to ensure all management arrangements, including any voluntary agreements and reporting requirements, are understood.

VMS messaging may also be used to provide information directly to skippers, as required.

Annual consultation and decision-making (season arrangements)

Annual seasonal arrangement decisions are based primarily on maintaining sustainable stocks, while providing the opportunity for industry to maximise economic returns from the prawn resource.

The development of season arrangements considers appropriate season opening and closing dates, moon closure periods, recruitment and spawning survey dates, closures to meet the ecological objectives and closures to meet the economic objective. The proposed season arrangements are then provided to the Deputy Director General for consideration and approval.

Annually, DPIRD meets with industry to:

- Review and discuss the previous season, and develop and propose season arrangements for the coming season;
- Issue an annual season arrangements notice and proposed season planning dates; and
- Conducts an Annual Management Meeting with industry, and other relevant stakeholders.

However, if there is an urgent issue, stakeholder meetings may be called as required to discuss the issue and determine an appropriate management response.

Decision-making processes and subsequent management change may be triggered following the identification of new or potential issues as part of annual fishery performance reviews, ERA processes, management or compliance programs, and expert workshops or peer reviewed research regarding aspect of the Fishery’s research and management.

While annual decision-making processes are designed to apply management measures to meet the operational objectives (driven by the Harvest Strategy), DPIRD will also engage in longer-term decision-making processes with industry that may result in new measures and/or strategies, such as changes to the management system, to achieve the long-term fishery objectives.

In-season consultation and decision-making

DPIRD works cooperatively with Sea Harvest when developing management arrangements each season, in accordance with the Harvest Strategy.

In addition to the permanent closures in the EGPMF, in-season decisions are made based on a rolling approach to open and close specific areas of the Fishery to control fishing effort primarily to maintain breeding stocks of (brown tiger) prawns while providing the opportunity for industry to harvest prawns at an optimum size and value.

These decisions, including the timing and extent of the spatial arrangements, are agreed upon with industry and implemented on a non-statutory basis. However, if an area, such as a nursery, was at risk and needed to be closed, this can still be achieved via a legislative instrument, such as a CEO notice.

Outcomes of these decisions are communicated to all relevant DPIRD staff (i.e. research, management, compliance and VMS) and to skippers of active vessels fishing in the EGPMF via email, as required. Compliance to the closures are monitored by VMS.

The success of the co-management approach adopted by the EGPMF, whereby industry undertakes some responsibility for the delivery of services or functions that would normally be the responsibility of DPIRD, supported by the detailed and sophisticated management regime, has been recognised and considered in the development of co-management strategies for other WA management fisheries (Rogers, 2008).

Consultation with other groups

Consultation on prawn management with the recreational sector is undertaken in accordance with the SLA between DPIRD and Recfishwest, as the recognised peak sector body for the recreational fishing sector. Recfishwest is required to engage and consult with recreational fishers as necessary to meet its obligations.

Consultation with other stakeholders, including customary fishers and non-fisher stakeholders, such as Government agencies, conservation sector non-Government organizations and other affected/interested parties, is undertaken consistent with DPIRD's Stakeholder Engagement Guideline (SEG).

The SEG apply a framework designed to assist with selecting the appropriate level of engagement for difference stakeholder groups and includes collaborating with and involving key stakeholders, seeking input from interested parties through a public consultation process and keeping all parties fully informed through the provision of balanced, objective and accurate information.

Key fishery specific documents, such as harvest strategies, recovery plans and bycatch action plans, are subjected to both formal key stakeholder consultation and public consultation processes.

Noting that the EGPMF operates adjacent to the Ningaloo Marine Park and other proposed Marine Park boundaries, key stakeholders that have been identified in

accordance with the SEG include the Department of Biodiversity, Conservation and Attractions.

Research

Closing the gap in bycatch reporting and population assessments of sea snakes (Project 3.12): Assoc. Prof Kate Sanders, Dr James Nankivell, University of Adelaide.

As the research partner of this project, DPIRD is currently playing an important role in working towards reducing the gap in bycatch reporting, specifically sea snakes, between fishery-dependent and independent logbooks. This will be achieved by training crew members on fishing vessels to correctly handle and identify commonly encountered sea snakes.

Industry participation in the project is necessary for the project's success and needs to consider training, compliance matters, ethics under wildlife protections, management plans and crew safety.

Species abundance and identification information can then be used for population assessments.

An ancillary research project regarding bycatch reporting and population assessments of sea snakes has commenced in northern Australia (2023), to support the success of the above-mentioned project. The objective of this secondary project is to align multiple CMOPs and train crew members to enable:

- i) improved safety, accuracy, and consistency of sea snake bycatch reporting by commercial fishers,
- ii) the generation of broadscale data needed to assess species- and fisheries-specific population status for sea snakes, and
- iii) the reduction in discrepancies in sea snake bycatch reporting between fishery collected and fisheries independent sources (Sanders & Udyawer, 2023).

Examining the relationship between fishery recruitment, essential benthic habitats and environmental drivers in Exmouth Gulf (FRDC 2015/027): Scott Evans

This project was initiated following the 2015 MSC assessment of the EGPMF.

EGPMF prawn resource spawning stock information indicated that factors other than the index appeared to be responsible for low levels of prawn recruitment. Noting that the distribution and abundance of seagrass habitats may influence prawn recruitment, this project was designed to establish a better understanding of the relationship between prawn recruitment, environmental conditions and habitats.

Initial findings based on this project have led to a more comprehensive understanding of these relationships, with the production of detailed habitat maps of the Exmouth Gulf being used to clarify the uncertainty around stock fluctuations and improve stock assessments.

Habitat assessment information has also been used to inform management measures, which consider the impacts of environmental conditions on annual recruitment variability and environmental change.

FRDC 2015-27 is currently being finalised and will continue to provide baseline habitat and ecosystem data, particularly for the EGPMF nursery grounds, to support management in relation of the Fishery's recruitment and ongoing EBFM.

Additional available context regarding this project is provided in the *Habitats* section of this document and is available on the [FRDC's project webpage](#).

Changes since previous assessment

In 2015, the EGPMF was assessed by DCCEEW against the Guidelines, under Part 13 and Part 13A of the EPBC Act. DCCEEW assessed the SCTF in 2017.

The assessment determined the EGPMF posed a low environmental risk and as a result, the Australian Government Minister for the Environment declared List of Exempt Native Specimens (LENS) export approval to the Fishery.

A copy of DCCEEW's assessment reports and letters of approval are available on the [DCCEEW website](#) and an analysis of changes to the Fishery since the previous assessment is provided in *Table 8*.

Table 8: Level of change since previous assessment of the EGPMF.

Issue	Area of Interest	EGPMF	
		Yes	No
Fishery	Has there been any change to management arrangements, and/or fishing practices?	✓	
External influence	Has there been any change to an environmental issue/influence outside of the fishery management agency's control?		✓
Interactions with protected species	Has there been any change in the nature, scale, or intensity of impact and/or management response?		✓
Ecosystem impacts (e.g. habitat, food chains, etc.)	Has there been any change in nature, scale, or intensity of impact and/or subsequent management response?		✓
Target stock status	Has there been any change in the target stock status? e.g., Increase or decrease in number of overfished or uncertain stocks, limit reference points of performance indicators have been triggered.	✓	
By-product/bycatch stock status	Has there been any change in the by-product and/or bycatch stock status? e.g., performance indicators triggered, or risk		✓

	assessment outcomes show risk levels have changed.		
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Appendices

APPENDIX 1 – Fishing effort

Table 9: Cumulative (2012-16) compared to annual EGPMF effort levels within the allowable fishing area of the EGPMF (MSC Surveillance Audit Report, 2024).

Year	Total spatial effort of fishery (km ²)	Annual spatial effort within 2012-16 Footprint (%)	Number of Vessels
2012-16	1212	100.0	6
2015	849	100.0	6
2016	963	100.0	6
2017	1009	90.8	6
2018	1142	87.2	6
2019	1031	91.9	6
2020	969	91.8	6
2021	939.5	93.2	6
2022	932	93.7	7
2023	1057.5	92.5	6

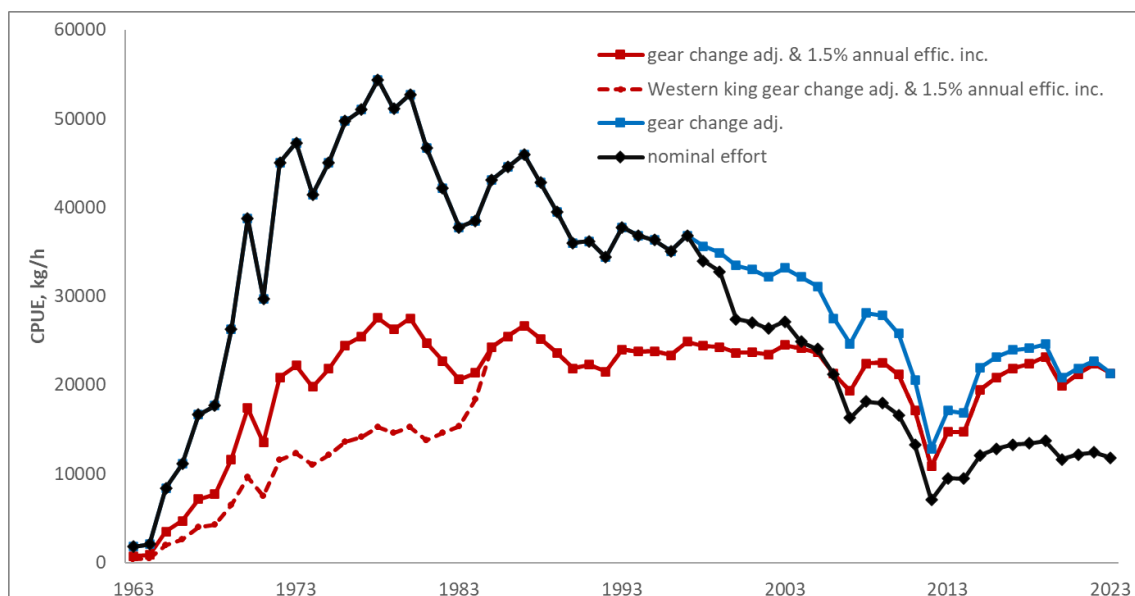


Figure 6: Annual fishing effort for the EGPMF (hrs). 1) nominal effort (black). 2) Effort adjusted for increases in efficiency due to changes in fishing gear alone (twin nets to quad nets; blue). 3) Same adjustments as 2) with an additional 1.5% annual increase

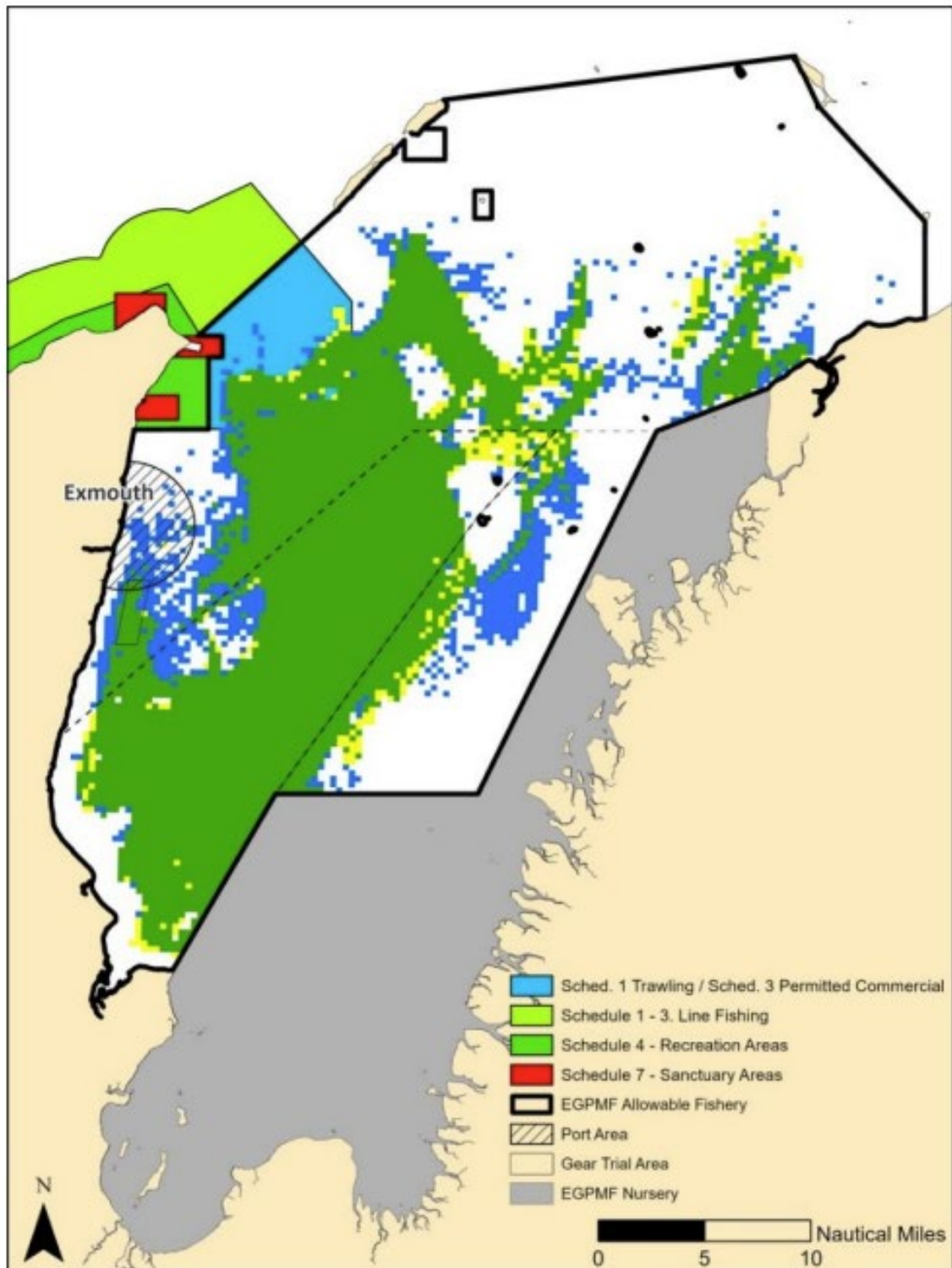


Figure 7: Spatial change in fishing effort in the EGPMF for 2023 compared to the 2012-2016 cumulative trawl footprint.

NOTE: Blue blocks indicate a contraction, yellow blocks indicate an expansion and green blocks indicate areas that remain fished between the 2012-2016 cumulative and 2023 footprints. Individual blocks are representative of 0.25 km² area.

APPENDIX 2 – Retained catch data (target and byproduct species)

Table 10: Retained catch data from 2018 to 2023 in the EGPMF.

Year	Target Prawn Species (t)				Byproduct Species (t)						
	Brown tiger	Western king	Blue endeavour	Banana	Coral Prawns	Bugs	Crabs	Cuttlefish	Octopus	Squid	Mantis Shrimp
2018	391.9	174.3	312.7	0.6	20.4	2.8	0.9	7.5	0.3	2.2	1.2
2019	418.0	194.2	208.4	0.7	21.1	2.3	6.2	5.8	0.4	1.8	0.0
2020	233.5	198.5	237.2	3.5	16.6	1.1	4.4	4.8	0.2	2.2	0.0
2021	386.2	211.5	177.2	2.4	8.0	1.6	10.4	4.3	0.2	2.5	0.0
2022	410.9	217.6	269.5	0.3	8.2	4.1	8.1	8.5	0.2	4.2	0.0
2023	305.7	200.2	147.3	0.0	16.7	1.5	13.6	7.2	1.6	4.0	0.0

APPENDIX 3 – Bycatch data

Table 11: Weight (kg) by species (top 50 species provided) for discarded catch from Exmouth Gulf Prawn trawls by year and month of sampling.

Species	2015-09	2015-10	2016-04	2016-08	2017-03	2020-06	2021-04	2024-04	2024-08
<i>Saurida undosquamis</i>	5.7	13.42	12.79	41.56	44.8	36.89	34.8	11.67	39.17
<i>Upeneus asymmetricus</i>	5.7	6.53	9.41	16.68	27.92	24.6	49.22	16.29	20.78
<i>Nemipterus peronii</i>	3.39	2.62	7.02	132.81	10.06	4.71	7.68	3.04	4.63
<i>Sillago burrus</i>	2.49	7.98	7.68	25.64	15.96	22.12	59.87	1.44	18.26
<i>Inegocia japonica</i>	3	5.85	5.48	9.9	28.75	9.4	23.12	20.94	20.38
<i>Charybdis anisodon</i>	0.03	0.25	5.34	2.31	29.55	6.64	35.1	16.58	15.59
<i>Pseudorhombus arsius</i>	1.95	2.2	4.65	10.05	22.82	8.83	29.66	13.43	13.01
<i>Pelates quadrilineatus</i>	0.46	6.76	0.62	31.8	18.37	17.87	1.64	2.06	14.35
<i>Terapon theraps</i>	0.02	1.23	0.29	55.9	4.88	11.25	6.58	0.8	6.37
<i>Leiognathus leuciscus</i>	2.27	11.11	15.17	37.66	8.37				

<i>Portunus armatus</i>					10.67	48.41	5.17	9.37	
<i>Photolateralis moretoniensis</i>				24.86	13.67	0.44	10.59		
<i>Upeneus sundaicus</i>	2.14	2.18	5.67	11.23	2.59	11.01	6.4	2.41	4.89
<i>Portunus rubromarginatus</i>	3.48	5.91	5.78	14.5	5.56	4.53	3.76		
<i>Paramonacanthus choirocephalus</i>	1.6	2.1	2.69	6.54	6.71	4.5	7.81	3.23	3.26
<i>Sillago ingenuua</i>	0.27	6.34	7.83	3.43	5.7	3.24	9.7	0.19	1.24
<i>Pentapodus vitta</i>	0.12	2.37	2.4	2.37	7.38	7.36	8.13	1.05	6.44
<i>Pomadasy maculatus</i>	0.14	0.08	20.63	1.86	12.17	0.62	0.11	0.27	
<i>Metapenaeopsis crassissima</i>	0.21	13.83	0.7	0.97		3.04	4.03	8.42	4.53
<i>Charybdis truncata</i>	0.05	0.5	1	1.13	16.8	1.49	8.12	2.86	0.64
<i>Xiphonectes rugosus</i>					3.65	11.58	11.93	4.97	
<i>Scolopsis taeniopterus</i>	1.85	1.37	6.02	4.36	16.71				
<i>Scolopsis taeniopterus</i>	1.85	1.37	6.02	4.36	16.71				

<i>Gerres subfasciatus</i>	0.35	1.58	2.42	1.85	9	1.13	10.47	0.79	1.8
<i>Calliurichthys grossi</i>					6.27	9.83	4.84	5.85	
<i>Scolopsis meridiana</i>					2.37	13.56	4.79	4.29	
<i>Pseudorhombus jenynsii</i>	0.29	0.36	0.9	5	1.49	3.25	5.37	1.71	6.4
<i>Parapercis nebulosa</i>	0.15	0.73	0.94	4.94	5.79	2.88	4.83	1.2	2.54
<i>Equulites leuciscus</i>					15.59	3.35	0.02	2.44	
<i>Polydactylus multiradiatus</i>	0.24	0.1	0.07	0.72	3.47	1.81	4.05	3.7	6.98
<i>Plotosus lineatus</i>	0.71		10.53	0.06	6.02	0.35	1.44		0.04
<i>Sepia pharaonis</i>	2.24	1.1	3.21	9.59	1.73		0.48		
<i>Sillago vittata</i>	0.6	1.44	1.57	0.3	7.1	5.02	0.3	1.6	
<i>Lethrinus genivittatus</i>	0.01	4.87	1.45	6.88	0.22	3.54	0.55	0.14	
<i>Choerodon cephalotes</i>	0.04	1.22	2.03	6.88	0.51	1.6	2.78	1.77	
<i>Trachinocephalus trachinus</i>				2.75	8.16	2.87	3.01		
<i>Gerres oyena</i>		0.56		1.82	0.37	12.6	0.19	0.64	

<i>Portunus armatus/pelagicus?</i>	5.72	9.7							
<i>Monomia rubromarginatus</i>						3.89	11.11		
<i>Torquigener whitleyi</i>	2.59	0.64	1.44	2.89	1.35	1.82	2.42	0.13	1.57
<i>Upeneus sulphureus</i>	3.99	0.04	1.92	4.78	2.81	0.48	0.27	0.08	0.1
<i>Selaroides leptolepis</i>	0.11	1.53	5.44	0.2	3.77	0.54	2.53	0.24	0.04
<i>Callionymus grossi</i>	0.08	1	2.76	4.54	5.82				
<i>Jaydia poecilopterus</i>	0.85	0.49	1.49	1.46	4.28			2.24	3.34
<i>Portunus rugosus</i>	0.24	3.32	1.98	7.21					
<i>Charybdis jaubertensis</i>					2.94	4.4	2.45	2.69	
<i>Sillago lutea</i>				2.57	4.31	3.13	0.1	2.01	
<i>Johnius borneensis</i>	0.64	0.09	0.73	5.17	2.04	0.88	1.1	0.47	0.3
<i>Repomucenus sublaevis</i>	0.52	0.94	2.26	1.85	1	0.62	2.77	0.78	0.59
<i>Charybdis helleri</i>	0.16	0.6	2.6	3.82	3.82				

APPENDIX 4 – Reported protected species interactions

Table 12: Reported ETP species interactions in the EGPMF between 2014 and 2023.

Species Group	Alive / Dead	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Dolphins	Alive	0	0	1	0	0	0	0			1
	Dead	0	0	0	1*	0	0	0			0
Sawfish	Alive	0	4	11	3	4	13	3	5	11	10
	Dead	0	1	9	10	5	0	3	4	0	0
	Unknown	0	1	0	2	1	0	0	1	0	0
Sea Snakes	Alive	50	496	1262	1436	1167	944	1286	788	579	890
	Dead	10	74	267	115	81	50	61	49	20	68
Syngnathids	Alive	2	6	15	37	3	5	0		3	2
	Dead	0	0	14	34	1	1	1		0	3
Turtles	Alive	20	14	16	35	20	20	14	11	2	17
	Dead	0	1	0	0	0	0	0	1	0	0