Australian Government
Australian Fisheries Management Authority

Bycatch and Discard Workplan

Bass Strait Central Zone Scallop Fishery

2025

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Contents

Version and date	Updates	Approver
Version 1	To include the 2023 ERA	Yvette Lamont

1 Introduction

In carrying out its functions, the Australian Fisheries Management Authority (AFMA) must pursue objectives in the Fisheries Management Act 1991 including having regard to the impact of fishing activities on non-target species and the long-term sustainability of the marine environment.

AFMA is responsible for implementing the *Commonwealth Bycatch Policy 2018* (the Bycatch Policy) through its operational policies and supporting fisheries management strategies (bycatch strategies). Consistent with the requirements of the Bycatch Policy, and as required under the *The Bass Strait Central Zone Scallop Fishery Management Plan 2002* (the Management Plan), AFMA implements Bycatch and Discard Workplans for each fishery to ensure that:

- information is gathered about the impact of the fishery on bycatch species;
- all reasonable steps are taken to minimise incidental interactions with seabirds, marine reptiles, marine mammals and fish of a kind mentioned in sections 15 and 15A of the *Fisheries Management Act 1991*;
- the ecological impacts of fishing operations on habitats in the area of the fishery are minimised and kept at an acceptable level; and

bycatch is reduced to, or kept at, a minimum and below a level that might threaten bycatch species. Under Fisheries Management Paper 14, the primary ecological sustainability objective that AFMA pursues via the ERM framework mirrors the sustainability objectives defined in existing fisheries and environmental legislation, policies, guidelines, and international agreements. In summary;

- to ensure that fishing (in Commonwealth commercial fisheries) does not reduce any commercial or bycatch species populations (that is, discrete biological units, commonly referred to as stocks in the BP and HSP) to or below a level at which the risk of recruitment impairment is unacceptably high
- where such fishing impacts have occurred, to put in place management to allow rebuilding of species populations to above that level
- to minimise fishing-related impacts on general bycatch and EPBC Act-listed species by ensuring the exploitation of fisheries resources is consistent with the principles of ESD, and
- to pursue broader habitat security for non-living ecological components.

There are five guiding principles that AFMA uses to identify issues and to minimise and avoid bycatch of protected and general species. These are outlined in the *AFMA Bycatch Strategy 2017-22:*

- Principle 1. Management responses are proportionate to the conservation status of bycatch species and Ecological Risk Assessment results.
- Principle 2. Consistency with Government Policy and legislative objectives (including to avoid and minimise) and existing national protected species management strategies such as the threat abatement plan and national plans of action.

- Principle 3. Incentives should encourage industry-led solutions to minimise bycatch of protected species utilising an individual accountability approach.
- Principle 4. Accounting for cumulative impact of Commonwealth Fisheries on protected species when making management decisions on mitigation.
- Principle 5. Appropriate and consistent monitoring and reporting arrangements across fisheries.

As articulated in the Bycatch Policy, the primary objective for bycatch management is to minimise fishing-related impacts on bycatch species in a manner consistent with the principles of ecologically sustainable development (ESD) and with regard to the structure, productivity, function and biological diversity of the ecosystem. In delivering on this objective for Commonwealth fisheries, the Bycatch Policy requires AFMA to:

- draw on best-practice approaches to avoid or minimise all bycatch, and minimise the mortality of bycatch that cannot be avoided;
- manage fishing-related impacts on general bycatch species to ensure that populations (that is, discrete biological units, commonly referred to as stocks in the *Commonwealth Harvest Strategy Policy*) are not depleted below a level where the risk of recruitment impairment is regarded as unacceptably high; and
- where fishing-related impacts have caused a bycatch population to fall below the level described, implement management arrangements to support those populations rebuilding to biomass levels above that level.

The Bass Strait Central Zone Scallop Fishery Management Plan 2002 requires AFMA to implement a bycatch action plan (now referred to as a Bycatch and Discarding Workplan) to ensure that the incidental catch of scallops and the incidental catch of other species are minimised. The Bass Strait Central Zone Scallop Fishery (BSCZSF) has had three previous workplans:

- the BSCZSF Bycatch and Discarding Workplan 1 June 2009 to 31 May 2011,
- the BSCZSF Bycatch and Discarding Workplan 1 May 2012 to 31 April 2014; and
- the BSCCZSF Bycatch and Discarding Workplan 1 May 2015 to 31 March 2017.

This Bycatch and Discarding Workplan incorporates findings from the review of the 2015 to 2017 workplan and the results of the Ecological Risk Assessment (ERA) finalised in 2025.

The aims of this Bycatch and Discarding Workplan are to:

- respond to high ecological risks assessed through AFMA's ERA processes, management responses and other assessment processes
- avoid interactions with species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- minimise overall bycatch in the fishery over the long-term.

This Bycatch and Discarding Workplan should be read in conjunction with the:

- *Commonwealth Policy on Fisheries Bycatch 2018*
- *AFMA Bycatch Strategy – Mitigating protected species interactions and general by catch (2017-2022)*
- *Bass Strait Central Zone Scallop Fishery Management Plan 2002*
- *Ecological Risk Management Report for the Bass Strait Central Zone Scallop Fishery (2023)*

- *Harvest Strategy for the Bass Strait Central Zone Scallop Fishery (BSCZSF) (2015) (Currently under review).*
- *Commonwealth Fisheries Harvest Strategy Policy*
- *Ecological risk management strategies*

2 Fishery Description

Commercial scallop fishing in Bass Strait commenced in the early 1970s and is managed under three jurisdictions. AFMA manages the BSCZSF, and Victoria and Tasmania manage zones generally out to 20 nm off their respective coastlines under Offshore Constitutional Settlement agreements (Figure 1). The target species of the BSCZSF is the Commercial Scallop (*Pecten fumatus*). Concession holders are also able to target Doughboy Scallops (*Chlamys asperrimus*), a species common throughout the Bass Strait, which is rarely retained as markets do not currently exist. Further information on the BSCZSF can be found in the BSCZSF Management Arrangements Booklet.

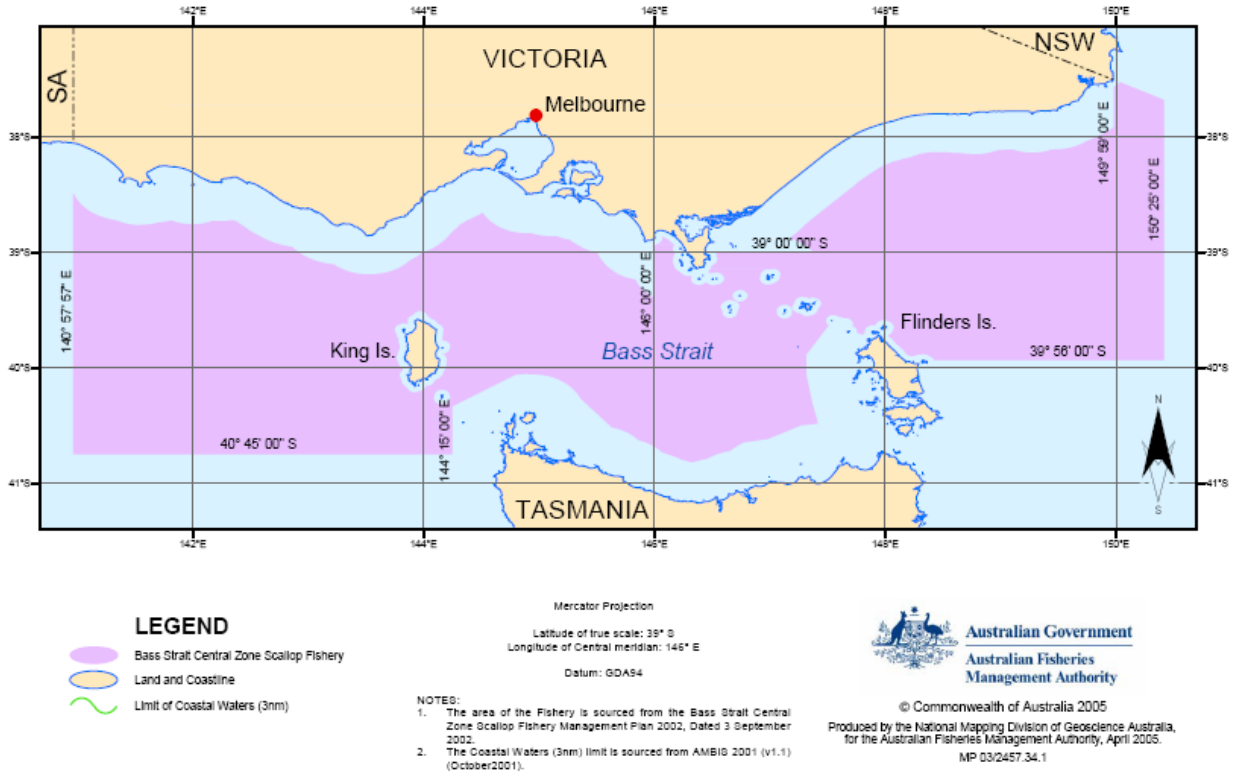


Figure 1 Area of the Bass Strait Central Zone Scallop Fishery (Geoscience Australia, 2005)

3 Characterisation of bycatch, discarding and habitat

This Bycatch and Discarding Workplan focuses on discards of, or damaging interactions with fishing gear of:

- juvenile or damaged Commercial Scallops, a quota species
- Doughboy Scallops, a quota species
- other non-quota species assessed as high risk species for the BSCZSF (see below).

Bycatch in the BSCZSF has been low primarily because of the targeted nature of fishing. The areas fished are regions where scallops are abundant and generally exhibit low species diversity (almost exclusively Commercial Scallops) and low bycatch abundance (Haddon et al. 2006).

Discarding of Commercial Scallops occurs only when scallops are undersized. Catches of juvenile scallops are low because:

- smaller scallops can pass through the teeth of scallop dredges
- the Harvest Strategy works to prevent fishing in areas where there are high concentrations of juveniles. The Harvest Strategy directs the industry co-management committee to voluntarily close scallop beds that do not meet the discard rate of less than 20 per cent of scallops less than 85mm in length.

3.1 Ecological Risk Assessment: high risk and, endangered, threatened and protected (ETP) species

No interactions with ETP species or high risk species have been reported in the BSCZSF since the first Bycatch and Discarding Workplan was implemented in 2009, which continues the historically low levels of reported interactions. In recent years some interactions have been recorded during fishery-independent surveys, three species classified as high risk were reported: the southern blue-ringed octopus (*Hapalochlaena maculosa*), black and white seastar (*Luidia australiae*), and King Island thickshell clam (*Eucrassatella kingicola*), the survey reports are available on the AFMA website.

The ERM carried out in 2023 as part of the ERA identified 174 bycatch species that were thought to occur within the waters of the fishery, of all assessed bycatch species, 45 were at high risk, 112 were at medium risk, and 12 were at low risk. Of these, 144 were non-robust (i.e., data deficient) species. Of the 45 high risk species, none have all 11 attributes, four are missing one to three attributes, and 41 are non-robust (i.e., missing more than three attributes). A residual risk analysis was performed on 45 species. Following the residual risk analysis, 17 of the 45 species remained at high risk, i.e., 28 species were reduced to medium risk. Therefore, overall, there were a total of 17 high risk species, 140 medium risk species and 12 low risk species (Sporcic et al, 2024).

In 2025, AFMA released the Ecological Risk Assessment: Report for the Bass Strait Central Zone Scallop Fishery (ERA) (Sporcic et al, 2024). The report describes the ERA process for the BSCZSF and provides a priority list comprised of seventeen species which were scored at high risk due to lack of information (**Table 1**). There have been no reported interactions with the high risk species in

Table 1 or the four identified species from the previously ERA, since the implementation of the Bycatch and Discarding Workplan.

As part of the review of the Bycatch and Discarding Workplan, Australian Bureau of Agricultural and Resource Economics and Science (ABARES) carried out further assessment of high risk species (1 sea star, 9 brittle stars and 7 sea cucumbers), noting that many of the species (**Table 1**) are not well studied, and in particular, there is very little information in relation to species specific productivity related attributes. This matches the CSIRO conclusion in the draft ERA report. ABARES has identified a number of echinoderm experts in Australia to provide species specific attributes relevant to the BSCZSF.

Experts including, Professor Maria Byrne (University of Sydney), Mr Tim Skewes (ex-CSIRO, now consultant) and Dr Tim O'Hara (Museums Victoria) provided comments and known records of interactions (see **Table 1**) in relation to the high risk species. They concluded that due to the diverse nature of the listed echinoderms it was difficult to make assumptions regarding attributes, distribution and whether these species would be present in the BSCZSF or impacted by fishing interactions. However, this advice will be provided to CSIRO to inform an update of the ERA in the future. The Commonwealth Fisheries Bycatch Policy is also currently under review and may also result in future amendments to the Workplan.

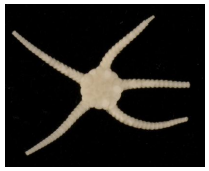
AFMA and CSIRO have implemented new ERA methodology and ERM framework, resulting in a revised ERA methodology to enable AFMA to report on and monitor the environmental performance of its fisheries against its targets and objectives for environmental management (Fisheries Management Paper 14). The change in ERA methodology since the last assessment has resulted in a different set of high-risk species being identified, of these, *Luidia australiae* is the only species that overlaps with the previous assessment.

Following the assessment of the BSCZSF under the EPBC Act in April 2013, the Department of the Environment recommended that AFMA develop materials to enable crew to identify species classified as high risk so that catch information can be collected. The Department of Climate Change, Energy, the Environment and Water (Previously Department of Environment and Energy) extended the export approval in 2016 from five years to ten years due to the BSCZSF being assessed as posing a low environmental risk, the next assessment is due in April 2026.

Table 1. Priority list of high risk species to be addressed in the BSCZSF (No. Missing = missing attributes in PSA analysis).

Taxonomic Group	Scientific Name	Common Name	No. Missing	Role in Fishery	Highest Level of Assessment	Risk Score	Expert Review comments	Known record of interactions
Invertebrate 	*Luidia australiae*	Black and white seastar	4	Discard	Level 2 PSA Residual Risk Assessment	High	Major predator of benthic species, including scallops Endemic to S Aus – wide distribution, common Same habitat as scallops - vulnerable 1000+ eggs, feeding larvae	Records off South Australia (SA) and Tasmania (TAS), no records of Flinders Island (FI) or King Island (KI).
Invertebrate 	*Conocladus australis*	Southern Basketstar	6	Discard	Level 2 PSA Residual Risk Assessment	High	Predator Endemic to S Aus, common Lives epizootically on sponges so could be vulnerable to dredging No info on eggs/larva/life history, but likely to spawn 100+'s of eggs	Atlas of Living Australia (ALA) suggests species occurs off SA and TAS, including FI and KI. Uncertainty as to overlap with fishery.
Invertebrate 	*Astrosierra amblyconus*	Basketstar	6	Discard	Level 2 PSA Residual Risk Assessment	High	N NSW to Tas, Predator of zooplankton No info on eggs/larva/life history, but likely to spawn 100+'s of eggs	ALA suggests species occurs off New South Wales (NSW) and Victoria (VIC). One record in Bass Strait (BS). Uncertainty as to overlap with fishery.

Invertebrate 	*Astrothrombus rugosus*	Basketstar	6	Discard	Level 2 PSA Residual Risk Assessment	High	Deep water NSW coast – occasionally extends to Bass S and Tas, so less abundant in region of the fishery (MB) Predator of zooplankton. No info on eggs/larva/life history, but likely to spawn 100+'s of eggs	<10 records off TAS and none in BS. Uncertainty as to overlap with fishery.
Invertebrate 	*Gorgonocephalus pustulatum*	Basketstar	6	Discard	Level 2 PSA Residual Risk Assessment	High	Deep water – (max depth ~75 m) (TO) overlap with fishery is unlikely. Predator of zooplankton, lives epizootically. No information on eggs/larva/life history, but likely to spawn 100+'s of eggs.	<10 records off TAS and none in BS. Uncertainty as to overlap with fishery.
Invertebrate 	*Ophiomisidium irene*	Brittlestar	9	Discard	Level 2 PSA Residual Risk Assessment	High	Predator/Scavenger, common in NZ. Likely to live in soft sediments, same habitat as scallops. No information on life history, likely to have small eggs – spawning 1000+ eggs.	12 records off TAS and none in BS. Uncertainty as to overlap with fishery.

Invertebrate 	*Ophioplinthus accomodata*	Brittlestar	5	Discard	Level 2 PSA Residual Risk Assessment	High	Occur too deep to be impacted by the scallop industry in Bass Strait (max depth ~75 m). Detritovore, no information on life history.	15 records off TAS and none in Bass Strait. Uncertainty as to overlap with fishery.
Invertebrate 	*Amphiophiura urbana*	Brittlestar	5	Discard	Level 2 PSA Residual Risk Assessment	High	Predator/scavenger, lives in sediment therefore habitat may overlap with fishery. No information on life history. Likely to have small eggs – spawning 1000+ eggs,	26 records off TAS and none in BS. Uncertainty as to overlap with fishery.
Invertebrate 	*Ophiactis resiliens*	Brittlestar	5	Discard	Level 2 PSA Residual Risk Assessment	High	Filter feeder – very common May overlap with fishery, but widespread and numerous so would not be threatened Spawning 1000+ eggs – feeding larva	Species depth range suggests that it may occur in BS and potentially overlap with fishery operations. 33 records around TAS/BS.

Invertebrate	*Ophiactis tricolor*	Brittlestar	5	Discard	Level 2 PSA Residual Risk Assessment	High	Filter feeder – rare May overlap with fishery, No information on life history Liley to spawn 1000+ eggs with feeding larva.	Species depth range suggests that it may occur in BS and potentially overlap with fishery ops. 7 recs around TAS/BS.
Invertebrate 	*Thyone tourvillei*	Sea Cucumber	6	Discard	Level 2 PSA Residual Risk Assessment	High	Suspension feeder Likely to live in soft sediment so habitat may overlap with fishery No information on life history Spawning 100+ eggs – non-feeding larva.	Uncertainty to extent of spatial overlap with fishery. 2 recs around TAS/BS.
Invertebrate 	*Neoamphicyclus mutans*	Sea Cucumber	5	Discard	Level 2 PSA Residual Risk Assessment	High	Suspension feeder Likely to live in soft sediment so habitat may overlap with fishery. No information on life history Spawning 100+ eggs – non-feeding larva.	Uncertainty to extent of spatial overlap with fishery. 15 recs around TAS/BS.
Invertebrate	*Bathyplotes sulcatus*	Sea Cucumber	9	Discard	Level 2 PSA Residual Risk Assessment	High	Deep water – overlap with fishery considered unlikely. Suspension feeder, no information on life history	Uncertainty to extent of spatial overlap with fishery. 2 recs around TAS/BS.

Invertebrate	*Pseudostichopus hyalegerus*	Sea Cucumber	8	Discard	Level 2 PSA Residual Risk Assessment	High	Continental slope – seems too deep BUT appears to have been identified as bycatch as is named by CSIRO. A deposit feeder, no information on life history. Likely to live in soft sediment so habitat may overlap with fishery Spawning 1000+ eggs – feeding larva	Modelled distribution on edge of fishery area and likely outside BS. 6 recs around TAS/BS
Invertebrate 	*Leptosynapta dolabrifera*	Sea Cucumber	5	Discard	Level 2 PSA Residual Risk Assessment	High	Deposit feeder Widespread and common Likely to live in soft sediment so habitat may overlap with fishery Dioecious, likely spawns 1000++ eggs with feeding larva.	Uncertainty to extent of spatial overlap with fishery. 19 recs around TAS/BS.
Invertebrate 	*Scoliorhapis theeli*	Sea Cucumber	5	Discard	Level 2 PSA Residual Risk Assessment	High	Endemic to Australia, uncommon. Detritus/deposit feeder, no information on life history.	Uncertainty to extent of spatial overlap with fishery. 4 recs around TAS/BS

Invertebrate 	*Taeniogyrus papillis*	Sea Cucumber	5	Discard	Level 2 PSA Residual Risk Assessment	High	Southeast Australia. Detritus/deposit feeder. This genus includes brooders, no information on life history.	

4 Monitoring programs

The monitoring program for the BSCZSF includes information collected through logbooks, catch disposal records, scientific surveys, observer coverage and independent research. An overview of the monitoring program is provided below.

4.1 Logbooks and Catch Disposal Records

All concession holders operating in the Bass Strait Central Zone Scallop Fishery (BSCZSF) are required to complete either paper-based logbooks or electronic logbooks (elogs) for each fishing operation. These records must capture comprehensive operational data, including vessel and operator details, gear type, fishing location, time, and catch composition.

In addition to catch data, logbooks must document:

- Bycatch species encountered,
- Interactions with Endangered, Threatened, and Protected (ETP) species,
- Observations on bottom type, scallop size, and discard rates.

This information is critical for monitoring bycatch and discarding trends, supporting sustainable fishery management, and identifying emerging ecological or operational concerns.

To complement logbook data, landed catch is reported through the SCQ02B Catch Disposal Record (CDR) or electronic CDRs (eCDRs). These records serve as a verification mechanism for logbook entries and are mandatory across all Commonwealth managed fisheries.

A review of the 2015–2017 Bycatch and Discarding Workplan identified deficiencies in the consistency and accuracy of bycatch reporting within logbooks. In response, the Australian Fisheries Management Authority (AFMA) will maintain ongoing engagement with industry stakeholders to improve the quality and reliability of logbook reporting.

4.2 Observer Program

Concession holders are required to carry an observer if requested by AFMA. Since 2013, there has been no requirement for observer coverage in the fishery due to evidence the fishery catches minimal bycatch. Although the BSCZSF has detailed data from annual biomass surveys, and a small, seasonal fishing footprint, there is a gap in bycatch information from the commercial fishery and an increasing need to demonstrate the fishery is low impact to meet requirement such as accreditation under the EPBC Act. To gather data on bycatch and discards BSCZSF operators may be requested to carry an observer, carrying observers assist AFMA to sustainably manage marine resources, through observing and documenting commercial fishing catches, collecting vessel technical and biological data, monitoring operations and documenting interactions with ETPs. The BSCZSF had a small level of observer coverage in 2024 with AFMA aiming for observer coverage of five percent in 2025. The cost of observer coverage will be recovered through levies to Industry. The data

collected by observers will inform a decision about the ongoing need for monitoring and what that might look like.

4.3 Electronic monitoring

Electronic monitoring will be explored as a potential monitoring measure. This may include camera footage or still images to be able to capture the best quality to be interpreted. Observers have been asked to assess fishing operations and vessel set ups as part of an ongoing process that will include an EM trial before consideration of the need to implement a cost effective monitoring program.

4.4 Fishery Surveys

Since 2000, AFMA, in conjunction with Researchers have undertaken industry based surveys of the BSCZSF. Fishery surveys indicating that the dominant bycatch species are molluscs, crustaceans, sponges and ascidians. Recent surveys are designed to monitor the condition of known beds by assessing the size structures, density, condition and distribution of the commercial scallop stock. The survey project involves both assessing the fishery and determining biomass estimates for commercial scallops in areas of the fishery.

Under the new Harvest Strategy for the BSCZSF, implemented at the commencement of the 2014 season, the TAC of 150 tonnes set at the start of the season can only be increased if an independent research survey identifies a maximum of two scallop beds containing a biomass estimate of at least 1500 tonnes. The bed/s are then closed to fishing for the season with fishing permitted throughout the remaining area of the fishery. These independent research surveys will be carried out as required.

So far there have been independent surveys undertaken every year to increase the possible TAC for the fishery with it recently averaging around 4,000 tonnes, however it has been significantly under caught each year. The surveys also include identification and recording of any bycatch and high risk species caught.

Annual analysis will be undertaken and reviewed to compare bycatch and benthic habitat composition each year and between survey years, allowing identification of new species in addition to changes over time and space in the longer term.

5 Summary

Where possible, this Bycatch and Discarding Workplan describes action items which are aimed at reducing the impact to species from fishing activities, and to cost effectively collect bycatch and discard data for the BSCZSF (see summary of action items in **Table 2**). Some action items are designed to collect the information needed to improve data, rather than reducing the fishing impact to a species.

The categorisation of seventeen high risk species is due to a lack of data, AFMA has consulted with researchers to assess the susceptibility attributes relating to spatial overlap between fishing

gear/effort and species likely habitat and distribution, both from area and depth overlap perspectives. It is important that the Bycatch and Discarding Workplan address not only species that have been identified via the ERA process as being at high risk, but also general bycatch reduction methods. AFMA and industry will continue to work co-operatively to reduce bycatch, minimise discarding and improve monitoring within the BSCZSF.

Table 2. Bycatch and Discarding Workplan Actions

Actions	Risk / Issue to be addressed	Timeframe	Costs $	Performance Indicators	Milestones
Undertake a process to review the ERA methodology in relation to the high risk species	Appropriateness of the high risk species as determined from the ERA	TBC (it is unclear when the review of the ERA methodology will be complete)	Staff time (includes AFMA and ScallopRAG)	Review completed Results of the review considered for the BSCZSF	AFMA and CSIRO to complete the review of ERA methodology ScallopRAG and ScallopMAC to consider the results of the review and recommend management responses
Monitor logbook data, observer data and catch disposal records to identify gaps in reporting	Inconsistency with data collection Bycatch and discards data gaps	Annually	AFMA staff time	Quality of reporting assessed	AFMA to compare logbook data, observer data and catch disposal records annually ScallopRAG and ScallopMAC consider the results of the comparison and recommend management responses AFMA to consult with operators regarding accurate recording in logbooks
Monitor interactions with high risk and ETP species	Information on the level of interaction and impact on TEP species and high risk species identified in the ERA process	Annually	AFMA staff time	ScallopRAG to annually consider interactions with high risk and ETP species	AFMA to annually review logbook data and observer reports for ETP interactions AFMA to report the results of the review to ScallopRAG
Consider observer and EM coverage in the BSCZSF	General bycatch and discarding information Determine fishery data needs and ensure cost effective collection of data	Ongoing monitoring program development	Staff time (includes AFMA and ScallopRAG)	Identify fishery data needs with a view to developing a monitoring plan with appropriate observer coverage	AFMA to identify fishery data needs to provide advice to ScallopRAG on observer coverage and the development of an appropriate monitoring program.

6 Review and Reporting Process

The Bycatch and Discard Workplan will be reviewed at:

- 12 months to ensure actions are progressing and to determine if additional actions can be taken including reviewing potential alternative measures for limiting bycatch and discards.
- 18 months to monitor the progress of action items.
- 24 months to assess the overall effectiveness of the workplan actions in addressing the associated bycatch risks and discard reduction.

At the end of the two years a new workplan will be developed and implemented in the BSCZSF.

7 References

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