



**Australian Government**

**Australian Fisheries Management Authority**

**Southern Squid Jig Fishery  
Bycatch and Discarding  
Workplan 2021**



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01	Replaces SSJF Bycatch Action Plan 2004	Dan Corrie	27/01/2021

## Introduction

The purpose of this Southern Squid Jig Fishery (SSJF) Bycatch and Discarding Workplan 2021 (the Workplan) is to outline a clear plan for ongoing actions to support evidence based fishery management decisions in the SSJF. This Workplan replaces the SSJF Bycatch Action Plan 2004 (2004 Bycatch Plan).

The Australian Fisheries Management Authority (AFMA) are responsible for efficient management and sustainable use of Commonwealth fisheries on behalf of the Australian community. In carrying out its functions, AFMA pursues Ecologically Sustainable Development (ESD) and, as one part of this, must ensure the sustainability of species, populations and ecosystems which AFMA fisheries interact. AFMA operates under a range of legislative instruments including the [Fisheries Management Act 1991](#) (FMA), the [Fisheries Administration Act 1991](#) (FAA) and the [Environment Protection and Biodiversity Conservation Act 1999](#) (EBBC Act). Their implementation is supported by fisheries policies and guidelines, including the [Commonwealth Fisheries Bycatch Policy 2018](#) (Bycatch Policy).

The Bycatch Policy and the [Guidelines for the Implementation of the Commonwealth Fisheries Bycatch Policy 2018](#) (the Bycatch Guidelines) were updated in 2018 and provide a transparent and systematic approach to assessing, managing, monitoring and reporting fisheries bycatch in Commonwealth fisheries based on the precautionary principle. The primary objective of the Bycatch Policy is to minimise fishing-related impacts on bycatch species in a manner consistent with the principles of ESD and with regard to the structure, productivity, function and biological diversity of the ecosystem.

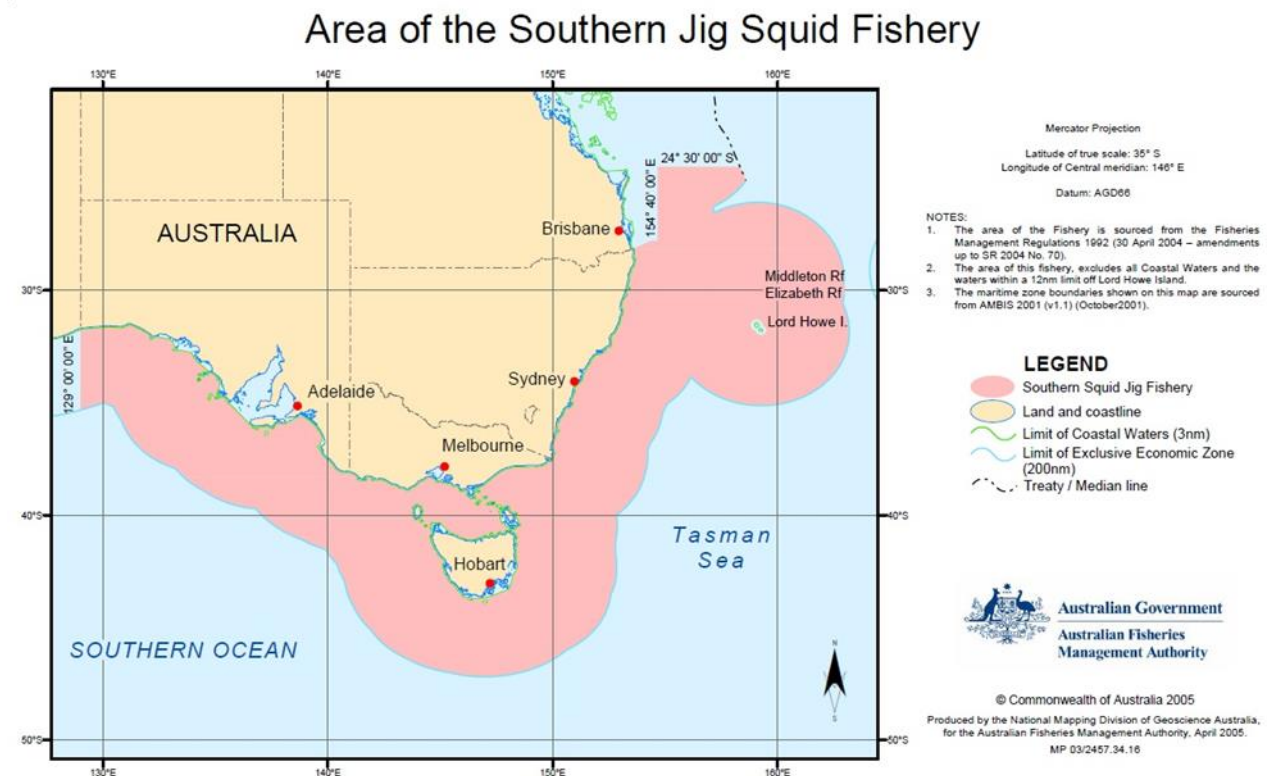
AFMA implements the Bycatch Policy through its operation policies and supporting strategies, such as the [AFMA Bycatch Strategy 2017-2022](#). Consistent with the requirements of the Bycatch Policy, and as required under the [Southern Squid Jig Fishery Management Plan 2005](#) (the Management Plan), this Workplan ensures that:

- information is gathered about the impact of the fishery on bycatch species;
- all reasonable steps are taken to avoid incidental interactions with Threatened, Endangered and Protected (TEP) species;
- ecological impacts of fishing habitats are minimised; and
- bycatch is reduced to, or kept at, a minimum and below a level that might threaten bycatch species.

The Workplan replaces the 2004 Bycatch Plan and is intended to be consistent with the guiding principles and actions of the AFMA Bycatch Strategy 2017-2022 and has been developed to support the [SSJF Ecological Risk Management Strategy](#) (ERM).

## Fishery description

The SSJF is a low impact, single method, single species fishery that covers almost half of the Australian Fishing Zone (AFZ). The SSJF is located off New South Wales, Victoria, Tasmania and South Australia; with a small area of oceanic water off southern Queensland (Figure 1). The major landing ports are located in Portland (Victoria), Queenscliff (Victoria) and Triabunna (Tasmania). Gould's squid (*Nototodarus gouldi*, also known as arrow squid) is the key commercial species targeted in the SSJF.



**Figure 1. Area of the Southern Squid Jig Fishery**

Management arrangements in the SSJF are primarily implemented to manage effort; including restricting the number of boats and regulating gear type. The permitted fishing gear in the SSJF is a 'standard squid jigging machine,' which is defined in the Management Plan as:

*"...a squid jigging machine that has two elliptical spools with one jig line on each spool."*

There are no restrictions on the amount of line, number or type of squid jigs that can be used with each standard jig machine.

Squid jig boats operate in continental-shelf waters in depths of between 50 to 100 metres. Overhead lights are used to create an area of illumination around the boat, with a shaded area directly under the boat. The lines are set with barbless lures on monofilament fishing lines and are suspended from elliptical rollers which jig the line up and down in the water, through both the lit and shaded areas. Gould's squid gather in the shaded area and dart into the light to take the lures.

Prior to the start of each fishing season (1 January – 31 December), an annual Total Allowable Effort (TAE) is set by AFMA, in consultation with the Squid Resource Assessment Group (SquidRAG) and the South East Management Advisory Committee (SEMAC). The TAE determines the total number of standard jigging

machines that can be used in the SSJF during the relevant fishing season. Bycatch levels are also discussed annually by the SquidRAG as part of the TAE setting process.

## Bycatch objectives

The primary objective of the Bycatch Policy is to minimise fishing related impacts on bycatch species in a manner consistent with the principles of ESD and with regard to the structure, productivity, function and biological diversity of the ecosystem.

In delivering on this objective AFMA will:

- 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 are not depleted below a level where the risk of recruitment impairment is regarded as unacceptably high; and
- in instances 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 operational objectives for this Workplan have been developed to align with the guidance in the Bycatch Guidelines which recognises the need for fishery specific objectives. There is no economic objective as bycatch by definition do not contribute to the economic value of the fishery.

### Ecological sustainability

- Interactions between squid jigging and general bycatch species, to the extent practicable, are avoided and minimised to ensure species biomasses are maintained at a level where the risk of recruitment impairment is not considered as unacceptably high.
- The outcomes of the Ecological Risk Assessment (ERA) are applied for prioritising the management of high, medium and low risk species once risk categorisation is verified and validated.
- If the ERA identified bycatch species, where appropriate, monitor and measure performance against benchmarks that will detect substantial changes or trends in key drivers that may indicate increase risk and trigger re-assessment.
- Encourage industry-led solutions to minimise interactions with general bycatch utilising an individual accountability approach.

### Management accountability

- Relevant stakeholders, including industry, to be consulted with on relevant management decisions, arrangements and strategies.
- Management decisions, arrangements and strategies are clearly explained, transparent, documented and communicated to industry and the broader community.
- Reporting obligations under fisheries policies and guidelines are met.

### Cost effectiveness

- Management responses are proportionate to the conservation status of affected species and ERA results and are proportionate with the cumulative risk of fishing on the species.
- Management approaches are consistent with the principle of the risk-cost-catch trade off.

## Ecological Risk Assessment

AFMA conducts ERAs to identify risks posed by fishing to the ecological sustainability of the species, habitats and communities with which Commonwealth fisheries interact.

Ecological Risk Management (ERM) strategies are developed to respond to the outcomes of the ERA (which identifies high risk species) and address general bycatch and discarding issues in the fishery. Bycatch is considered to be low in the SSJF, with only six tonnes of bycatch reported since logbooks were introduced in 2001, of which four tonnes were recorded as 'squids' in 2008. There was no bycatch reported between 2009 and 2018.

The [SSJF ERA](#) was last undertaken in 2007; with an ERM developed for the SSJF in 2009. The SSJF was assessed at Level 1 of the ERA (qualitative analysis) as not requiring any further level of assessment. The assessment identified 216 TEP species (3 chondrichthyans, 83 marine birds, 50 marine mammals, 13 marine reptile and 67 teleosts) which are theoretically found within the area of the fishery. None of these 216 species were assessed as being at risk from commercial fishing operations in the SSJF.

Due to the low levels of bycatch, the SSJF has not been listed as a 'high priority' for an updated ERA. Unless a high priority issue is identified requiring immediate action, the SSJF is not scheduled to be reassessed until after 2022.

## Bycatch management arrangements

The SSJF bycatch management arrangements are designed to be proportionate to the level of bycatch in the fishery while still meeting the objectives of the Workplan. A summary of the management arrangements for each of the objectives and a justification as to why this approach is considered appropriate are provided at Table 1.



Table 1. Summary of management arrangement/s for each of the Workplans objectives

Objective	Management arrangement/s	Justification
Interactions between squid jigging and general bycatch species, to the extent practicable, are avoided and minimised to ensure species biomasses are maintained at a level where the risk of recruitment impairment is not considered as unacceptably high.	No specific management arrangement.	Due to the highly selective nature of squid jigging there is minimal bycatch and protected species interactions, meaning the level of risk to recruitment of bycatch species is considered low.
The outcomes of the ERA are applied for prioritising the management of high, medium and low risk species once risk categorisation is verified and validated.	No specific management arrangement.	No species assessed in the 2007 ERA were identified as being at risk from commercial fishing operations.
If the ERA identified bycatch species, where appropriate, monitor and measure performance against benchmarks that will detect substantial changes or trends in key drivers that may indicate increase risk and trigger re-assessment.	No specific management arrangement.	No priority species/groups identified to be addressed under a bycatch and discarding workplan.
Encourage industry-led solutions to minimise interactions with general bycatch utilising an individual accountability approach.	Industry have previously implemented a Code of Practice (including bycatch handling issues) for the fishery.  No specific management arrangement.	Bycatch is generally considered to be low, which is supported by the outcomes of the ERA. If any issues are identified, AFMA will encourage industry-led solutions where appropriate.
Management decisions, arrangements and strategies are clearly explained, transparent, documented and communicated to industry and the broader community.	Implementation of fishery specific: <ul style="list-style-type: none"> <li>• Management Arrangements Booklet, updated annually</li> <li>• Concession conditions, updated annually</li> <li>• Bycatch and Discarding Workplan</li> </ul>	Management arrangements and strategies are made publically available on the AFMA website.

Objective	Management arrangement/s	Justification
	<ul style="list-style-type: none"> <li>• Data and Monitoring Strategy</li> <li>• Harvest Strategy</li> </ul>	
Relevant stakeholders, including industry, to be consulted with on relevant management decisions, arrangements and strategies.	Avenues for consultation: <ul style="list-style-type: none"> <li>• SquidRAG</li> <li>• SEMAC</li> <li>• Operators</li> <li>• Concession holders</li> </ul>	Management decisions, arrangements and strategies are developed in consultation with relevant stakeholders including SquidRAG and SEMAC.
Reporting obligations under fisheries policies and guidelines are met.	Operators are required to report catch and discards for all species in daily fishing logbooks and catch disposal records (CDR).	The daily fishing logbooks and CDRs are designed to ensure reporting obligations under fisheries policies and guidelines are met.
Management responses are proportionate to the conservation status of affected species and ERA results and are proportionate with the cumulative risk of fishing on the species.	Operators are required to report all catch and discards, including interactions with protected species, in daily fishing logbooks.	There is considered to be a low cumulative risk of fishing on bycatch and protected species, however, logbook reporting allows for catch and interactions to be monitored.
Management approaches are consistent with the principle of the risk-cost-catch trade off.	Management approaches: <ul style="list-style-type: none"> <li>• Harvest Strategy</li> <li>• Bycatch and Discarding Workplan</li> <li>• Data and Monitoring Strategy</li> <li>• Concession Conditions</li> </ul>	Management arrangements in the fishery are considered consistent with the principles of risk-cost-catch trade off given the low impact and value of the fishery.



In addition there are general management arrangements in the SSJF concession conditions which are implemented to ensure all reasonable steps will be taken to minimise bycatch in the fishery, these include:

**Bycatch handling:** Operators are responsible for handling bycatch species appropriately to maximise the chance of their survival.

**Bycatch treatment:** Operators must not mistreat bycatch. Mistreat is defined as the taking of an action or actions, or the failure to take an action or actions, which results, or is likely to result, in the death of, injury to, or causing of distress to any bycatch.

**Fin fish obligations:** Operators must not

- carry on board more than 100 kg of fish of the Superclass Pisces;
- take any fish of the species:
  - blue eye trevalla (*Hyperoglyphe antarctica*)
  - pink ling (*Genypterus blacodes*)
  - blue warehou (*Seriola lalandi*)
  - gemfish (*Rexea solandri*)
- take any fish of the Families:
  - Fish of the Family *Scombridae*, except fish of the genera *Scomberomorus*, *Scomber*, *Acanthocybium*, *Rastrelliger* and *Grammatorcynus*: (commonly known as tuna); and
  - Fish of the Families *Istiophoridae* (commonly known as marlins) and *Xiphiidae* (commonly known as billfish).

**Catch reporting:** Operators must report any interactions with EPBC listed species under the 'Wildlife and other Protected Species' section of their logbook.

## Data collection and monitoring

AFMA requires the collection of accurate and informative data to meet its legislative objectives. An overview of the data collection, and monitoring programs in the SSJF is provided below:

### Daily fishing logbooks

Accurate data from logbooks allows continued monitoring of bycatch and discards in the fishery and assists in identifying any emerging issues.

All concession holders in the SSJF are required to complete the SQ05 logbook. This logbook provides for the recording of information on the boat's fishing gear, number of lights, location, water temperature, depth of seabed, retained catch of Gould's squid and other species, discards of all species, interactions with TEP species and other trip observations including size of squid and whether there has been any loss of catch to seals or sharks.

### **Catch Disposal Records**

Catch Disposal Records (CDRs) provide a means to verify information recorded in the daily fishing logbooks, and provides accurate weights for each species landed.

Operators in the SSJF are not required to land their catch to licensed Fish Receiver Permit Holders, like most Commonwealth fisheries, instead the catch must accurately weighed at the point of unload and a CDR is completed before it is transported.

### **Vessel Monitoring Systems**

Vessel Monitoring Systems (VMS) provide AFMA with near real time information to effectively monitor the movements of all Commonwealth endorsed fishing boats. Each VMS unit routinely produces positional reports which contain information including the boat's current location, course and speed; for the purpose of domestic compliance, fisheries management and research.

### **Observer Program and port sampling**

Observer programs provide fisheries managers, research organisations, environmental agencies, industry and the wider community with independent, reliable, verified and accurate information on the fishing catch, effort and practice of Commonwealth boats. Data is collected by scientifically trained observers, either on-board the boats or in port when product is landed. An observer program can be used to verify logbook information; determine levels of interactions with TEP species; quantify levels of bycatch and status of discards and educate operators.

There is no formal observer program in the fishery however concession holders may be required to carry an observer if there is a need identified by AFMA or SquidRAG.

### **Crew collected data program**

Crew collected data provides a cost effective alternative to an observer program, with data collected on-board by crew. Unlike the observer program, crew collected data is not independent and verified but can provide information on the fishing catch and effort.

Under a revised Data and Monitoring Strategy AFMA are considering establishing a crew collected data program.

### **Boat inspections**

AFMA fisheries officers conduct targeted inspection of Commonwealth endorsed operators in an effort to check compliance with relevant regulations and legislation.

## **Reporting and consultation**

In addition to meeting the legislative objectives AFMA requires the collection of accurate and informative data to measure the effectiveness of its management arrangements. When reviewing or implementing management arrangements AFMA will consult with a range of stakeholders. An overview of the reporting and consultation undertaken in the SSJF is provided below:

### **Fishery assessments under the EPBC act**

The implementation of the EPBC act allows the Australian Government to assess the environmental performance of its fisheries and promote ecologically sustainable development.

All fisheries granted export approval under the EPBC act are required to produce [annual reports](#) containing the information outlined in Appendix B of the [Guidelines for the Ecologically Sustainable Management of Fisheries 2<sup>nd</sup> edition](#)

### **External reporting**

The data collection, monitoring and reporting programs provide input into external reports such as the Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES) Fishery Status Report. The ABARES Fishery Status Report, which is published annually, provides an independent evaluation of the biological and economic status of fish stocks managed both solely and jointly by the Australian Government.

### **Consultative Committees**

The main forum for consultation in Commonwealth fisheries are the relevant Resource Assessment Groups (RAG) and Management Advisory Committees (MAC) which provide an avenue for consultation between industry members, fishery managers, fishery economists, fishery scientists, conservation and other interest groups. The consultative committees for the SSJF are SquidRAG and SEMAC.

SquidRAG provides advice to SEMAC, the AFMA Commission and AFMA management on the status of Gould's squid stock, the impact of squid jigging on the marine environment and the type of information needed for stock assessments. They also evaluate the impact over time of the SSJF Harvest Strategy, stock depletion and recovery rates, confidence levels for fishery assessments and risk to the success of fishery objectives. Compliance and economic factors affecting the fishery are also evaluated and reported on by this group.

SEMAC is the overarching committee that provides management advice to AFMA on the Southern and Eastern Scalefish and Shark Fishery; Small Pelagic Fishery; and the SSJF. Specifically, SEMAC provides management advice to the AFMA Commission and AFMA management on the scientific and economic status of fish stocks, sub stocks, species (target and non-target) and the impacts of fishing on the marine environment. SEMAC provide a forum where management issues relating to fisheries are discussed and possible solutions developed.

### **AFMA Commission**

AFMA's responsibilities are shared between a commission and the Chief Executive Officer (CEO), with the AFMA Commission responsible for domestic fisheries management and the CEO responsible for foreign compliance, and for assisting the commission and giving effect to its decisions.

### **Operators and concession holders**

The main consultative forum for the SSJF is through SquidRAG and SEMAC. AFMA will also consult with SSJF operators and concession holders when reviewing and implementing management arrangements.

## **Action items**

Although the low levels of annual reported bycatch would not be expected to produce measurable impacts on the broader ecosystem, this Workplan recognises the need to identify, quantify and verify bycatch in the SSJF allowing for bycatch management to be prioritised. This will be achieved through the monitoring of the actions at [Table 2](#). In this Workplan, action items are designed to collect the information needed to improve data collection, noting there are no risks currently identified for bycatch species.

Table 2. SSJF Bycatch and Discarding Workplan Action Items

Actions	Risk/ issues to be addressed	Timeframe	Cost	Performance indicators	Milestones
Undertake an updated ERA for the fishery.	To provide an ERA that reflects the current state of the fishery.	Currently scheduled after 2022.	To be determined.	ERA completed.	AFMA and CSIRO to complete ERA. SquidRAG and SEMAC to consider the result of the ERA.
Annual report to industry regarding reporting of bycatch and discards in logbooks and CDRs.	Accurate reporting of Bycatch and discards data.	Ongoing	Within existing staff time.	Reports distributed to operators annually.	AFMA to review logbook and CDR data for bycatch and discards. AFMA to report the results of the review to SquidRAG. Report to be provided to operators on their reported bycatch and discards as a part of the season rollover.
Annual report to industry regarding reporting of interactions with TEP species.	Accurate reporting of TEP species interactions.	Ongoing	Within existing staff time.	Reports distributed to operators annually.	AFMA to review logbook data for TEP interactions. AFMA to report the results of the review to SquidRAG Report to be provided to operators on their reported TEP species interactions as a part of the season start.

## Monitoring and performance evaluation

AFMA will formally review this Workplan every two years or if there are significant changes in gear, spatial distribution of catch or effort, or changes in targeting behaviour. With periodic review of the Workplan also occurring as prescribed by the actions.

AFMA and industry will continue to work together to reduce bycatch, minimise discarding and improve monitoring with the SSJF.