

**Australian Government** 

Australian Fisheries Management Authority

# Southern and Eastern Scalefish and Shark Fishery Data Plan

(Revised August 2024)



### Contents

Vers	ion history3
Acro	onyms
1.	Introduction
0	bjectives
2.	Monitoring and data collection
Fi	shery dependent data
Fi	shery independent data
Re	esearch Projects
3.	Commercial Species
4.	Non-Commercial Species
By	vcatch Species
Τł	hreatened, endangered and protected species
5.	Reporting14
6.	Data Management
7.	Data plan review
8.	Action items and ad-hoc data collection16
9.	Logbook data and methods for verification and independent collection
10.	Data requirements and sources by species groups23
11.	References

# **Version history**

Date	Details	Updated by:					
22 Aug 2024 SESSFRAG	ISMP length and biological sampling targets for Orange Roughy (Albany and Esperance) downgraded from high priority to low priority.						
data meeting	Addition of a length collection target of 1000 measurements per annum for Southern (non Pedra Branca) Orange Roughy as a medium priority.						
19 Aug 2024	Addition of version history table.	Mark					
(prior to	Minor changes to text and refresh of hyperlinks.	Grubert & Cate					
SESSFRAG data meeting)	Addition of ad-hoc collection/storage of Frostfish, Ocean Jackets (East and Great Australian Bight) and John Dory (East) until July 2026 for Ms Rikki Taylor (CSIRO/IMAS PhD student).	Coddington					
	Previous sampling table split into separate tables for: depleted species (excluding Orange Roughy); trigger species; MYTAC species (excluding Orange Roughy); and all SESSF Orange Roughy stocks.						
	Clarification that the collection of School Shark lengths and biologicals from deepwater otter trawl vessels should include sampling from freezer boats.						
	Sampling target of 1000 biologicals per annum added for Silver Trevally and length sampling target for the same species reduced from 2000 to 1000.						
	Added the trial collection of Blue-eye Trevalla CKMR tissue samples and removed the requirement to collect Ribaldo lengths.						

### Acronyms

AFMA	Australian Fisheries Management Authority
CDR	Catch Disposal Record
CPUE	Catch per Unit Effort
СТЅ	Commonwealth Trawl Sector
DCCEEW	Department of Climate Change, Energy, the Environment and Water
ERA	Ecological Risk Assessment
ERM	Ecological Risk Management
FIS	Fishery Independent Survey
GABRAG	Great Australian Bight Resource Assessment Group
GABMAC	Great Australian Bight Management Advisory Committee
GHaT	Gillnet Hook and Trap Sector
HSF	Harvest Strategy Framework
MAC	Management Advisory Committee
MYTAC	Multi-Year Total Allowable Catch
RAG	Resource Assessment Group
RBC	Recommended Biological Catch
SEMAC	South East Management Advisory Committee
SERAG	South East Resource Assessment Group
SESSF	Southern and Eastern Scalefish and Shark Fishery
SESSFRAG	Southern and Eastern Scalefish and Shark Fishery Resource Assessment Group
SharkRAG	Shark Resource Assessment Group
TAC	Total Allowable Catch
TEP	Threatened, Endangered and Protected
VMS	Vessel Monitoring System

# 1. Introduction

The purpose of this document is to provide a plan for collecting data needed to support fishery management decisions and assessments in the Southern and Eastern Scalefish and Shark Fishery (SESSF).

The *Fisheries Management Act 1991* (the Act) sets out the broad objectives for the Australian Fisheries Management Authority (AFMA) to manage fisheries and ensure that fisheries are ecologically sustainable and economically efficient. Each year, the AFMA Commission makes decisions on sustainable catch limits for key commercial species and AFMA implements management arrangements to maintain catches of commercial species within these limits and minimise impacts on bycatch (including protected species) and habitats.

In order to make management decisions in pursuit of its objectives, AFMA needs an accurate measure of what is being caught (total fishing mortality and impacts) and an assessment of what is an acceptable catch and impact. These two questions provide the basis for AFMA's data collection and scientific assessment processes.

The core data collected includes a measure of what is caught (catch) and how it has been caught (effort). This data is primarily collected and reported by fishers directly through daily fishing logbooks and catch disposal records (CDRs). Independent verification of catch reports is important to ensure accurate data collection and AFMA is increasingly investing in cost effective data verifications tools. This includes the use of Vessel Monitoring Systems (VMS) that verify boat location as well as Electronic Monitoring (e-monitoring) systems that include cameras and sensors to enable independent verification of catch and effort.

Catch and effort data is used to support Ecological Risk Assessments (ERAs) for all non-commercial species and habitats that interact with fishing gear, as well as scientific stock assessments for commercial species. At a minimum, AFMA requires catch and effort data to be collected in a fishery to provide a measure of what is caught and support assessments of what is ecologically sustainable.

The AFMA Ecosystem Based Fisheries Management Framework (Figure 1) provides high-level guidance on the legislative and policy framework, and what types of assessments are applied to each species group. Commercial species are assessed using quantitative stock assessments and managed in accordance with the <u>Commonwealth Harvest Strategy Policy 2018</u> (the HSP). Broader impacts on the marine environment, including for bycatch and Threatened, Endangered and Protected (TEP) species, are assessed through ERAs and are managed in accordance with the objectives of the <u>Commonwealth Fisheries Bycatch Policy 2018</u> (the Bycatch Policy 2018).



Figure 1 AFMA's Ecosystem Based Fisheries Management Framework

### Objectives

The objectives of this data plan are to define the data needs to support the monitoring, assessment and management of:

- commercial species under the <u>SESSF Harvest Strategy Framework</u> (HSF; AFMA 2024) to support the objectives of the HSP; and
- non-commercial species, including bycatch and TEP species, under the <u>SESSF Ecological Risk</u> <u>Management Strategy</u> to support the objectives of the Bycatch Policy.

The data plan should also compliment the objectives of <u>SESSF Five-year Strategic Research Plan</u> (2021-25) to ensure future priority research can be supported with data.

### 2. Monitoring and data collection

AFMA utilises a suite of monitoring and data collection programs in the SESSF which can typically be categorised as fishery dependent, which relies on information collected during commercial fishing operations, and fishery independent, which involves collecting data which is not influenced by fisher behaviour. The combination of fishery dependent and independent programs utilised in the SESSF is intended to provide a cost-effective approach to collecting the data required to inform management decisions and assess the impact of commercial fishing on the ecosystem.

### Fishery dependent data

### Logbooks and Catch Disposal Records

AFMA requires operators to record catch and effort information, which is then used for various purposes, including but not limited to; informing management decisions, supporting AFMA's reporting requirements, monitoring catch, undertaking stock assessments and supporting research.

All SESSF operators are required to complete daily fishing logbooks for each shot or fishing operation. Historically, these were completed on paper sheets, but more recently, electronic logbooks have been implemented across the fishery.

Logbooks include detailed catch and effort information such as: the port and date of departure and return, gear type and fishing method, hours trawled, number of hooks set or length of gillnet set, species ID and weight of fish kept and discarded<sup>1</sup>; and interactions with TEPs. Catch and effort data from commercial logbooks is used for many purposes and is a key input for analyses of catch per unit of effort (CPUE), which is the main index of abundance for most SESSF commercial species. Logbook data is also used to inform ERAs for non-commercial species. Tables 11 and 12 provide a detailed overview of the data collected in logbooks.

When fish are landed in port, operators are required to fill in Catch Disposal Records (CDRs) which include verified weights of all species landed to licenced fish receivers. Weights in CDRs are considered more accurate than logbooks for determining the total landed weight and are an important input to commercial species stock assessments. CDRs are also used to monitor landed catch of SESSF quota species against total allowable catches (TACs) and to decrement quota.

### Electronic Monitoring

E-monitoring integrates video, sensors and programmable loggers to record data that can be used to independently verify logbook catch, effort and wildlife interactions. A typical e-monitoring system uses sensors to detect and record fishing activity. An on-board computer integrates the information from sensors, cameras and GPS relating to fishing activities. Information is stored on the system for detailed analysis and some information is transmitted to AFMA for real-time monitoring.

E-monitoring is currently implemented in the GHAT on shark gillnet boats and hook boats to validate logbook catch and effort data, verify catch, and reporting of TEP species interactions. One hundred per cent of fishing activity is monitored for boats with e-monitoring, however the percentage of footage reviewed depends on the data being collected. The review coverage GHAT sector is as follows:

- 10 per cent catch review of all fishing events per drive with a minimum of one catch review per drive;
- An additional 30 per cent TEP review of all manual longline fishing events per drive. This is to support achieving the 10% coverage requirement of the Seabird Threat Abatement Plan (TAP) in the hook sector<sup>2</sup>;

<sup>&</sup>lt;sup>1</sup> Different discard reporting requirements are in place for specific gear types in the SESSF – See Chapter 4

<sup>&</sup>lt;sup>2</sup> To be reviewed subject to achieving 10% coverage across all boats in the hook sector

- 100 per cent TEP review for all gillnet fishing events within Australian Sea Lion (ASL) Management Zones (including all events on those trips where fishing takes place both inside and outside an ASL zone). For automatic longline methods, the corresponding sets of the reviewed hauls will also be assessed for seabird mitigation; and
- Fishing events outside the SESSF (e.g. High Seas) will be excluded from the 10 per cent sampling regime. Ad-hoc reviews may occur upon direction of AFMA for TEP review with trips and events annotated.

Trials of E-monitoring in the Commonwealth Trawl Sector (CTS) and Great Australian Bight Trawl Sector (GABTS) are currently underway.

### Vessel Monitoring Systems

Vessel Monitoring Systems (VMS) are utilised by AFMA to visualise and record near real time boat location information, in order to track the movements of all Commonwealth endorsed fishing boats. Each VMS unit transmits regular position reports which contain information such as the boats current location, course and speed for the purpose of domestic compliance, fisheries management and research.

The VMS system is a vital tool to ensure compliance with fishery management arrangements, particularly where fishing activity needs to be restricted to certain areas or zones. VMS data can also be used for fine-scale position data for stock assessments.

### Integrated Scientific Monitoring Program

The Integrated Scientific Monitoring Program (ISMP) provides fisheries managers, research organisations, environmental agencies, the fishing industry and the wider community with independent, reliable, verified and accurate information on the fishing catch, effort and activities of Commonwealth boats.

The ISMP was designed so that coverage is proportional to fishing effort within and across fisheries, and the data collected is sufficient to provide inputs to stock assessments, including ERAs, and broader fishery management objectives. Generally, the ISMP is used to:

- verify logbook information;
- determine levels of interaction with TEP species;
- quantify levels of bycatch and status of discards (mortality rates);
- collect biological data for stock assessments and research projects on-board or at port (e.g. collection of otoliths fish ear bones to age fish, and collect sex and length data of fish);
- record environmental observations;
- collect anecdotal information (qualitative data) for research;
- quantify level of depredation (if high coverage);
- educate fishers (e.g. data collection, species identification, handling TEP species, tag recovery, compliance regulations).

The document <u>Revised sampling regime for the Southern and Eastern Scalefish and Shark Fishery</u> (Bergh *et al*, 2009) provides a detailed overview of the sampling design for the SESSF.

The SESSF Resource Assessment Group (SESSFRAG) reviews the coverage and sampling targets annually, and this review informs the ISMP Plan. **Tables 3–10** summarise the sampling targets for SESSF species

across the various sectors and programs, and a more detailed overview of the ISMP Plan is published on the AFMA website each year following the SESSFRAG data meeting in August.

#### Industry based data collection programs

Industry (crew) based data collection programs have been implemented in some sectors of the SESSF, with a focus on collecting biological data to either supplement or replace the ISMP program. Depending on the complexity of the fishery and the number of species for which data is required, industry-based programs can provide a cost-effective alternative for collecting data.

There is a long-standing industry-based data collection program in the GABTS that provides length frequency information on Deepwater Flathead and Bight Redfish for use in stock assessments of these species. While there are no specific sampling targets under this program, the <u>GABT Operators Handbook</u> outlines protocols for sampling fish lengths from each shot.

An industry based data collection program was introduced in the GHaT in 2018 as an alternative to onboard observers. The Shark Industry Data Collection (SIDaC) program is implemented under a formal comanagement agreement, and sampling targets are defined for key species in the GHaT: Blue-eye Trevalla (**Table 6**), Gummy Shark (**Table 7**), Pink Ling (**Table 8**) and School Shark (**Table 9**).

### Fishery independent data

Most SESSF stock assessments use some form of CPUE time series data from logbooks as the main index of stock abundance. Fishery independent data provides a time-series of information, ideally an index of abundance, which can be used in addition to, or instead of, commercial CPUE data for key target species.

### Trawl surveys

Fishery Independent Surveys (FISs) in the Commonwealth Trawl Sector and Great Australian Bight Trawl Sector were discontinued in 2020 and 2022, respectively. This was due to a combination of factors, including cost, the inability (in some cases) of stock assessment models to fit the relative biomass estimates produced by these surveys, and the direction of limited funds towards industry-based data collection programs.

### Acoustic Surveys

Acoustic surveys provide acoustic biomass estimates as inputs to stock assessments, either as an index of abundance or as a line of evidence to help inform the model. The surveys are typically undertaken during commercial fishing operations, based on a structured survey design using calibrated transducers which are either mounted to the hull of the boat, towed as an independent device, or attached to fishing gear.

In the SESSF, acoustic surveys are currently undertaken for the Blue Grenadier winter spawning aggregation off the west coast of Tasmania, the Orange Roughy spawning aggregation on the east coast of Tasmania, and (when funds allows) the Orange Roughy spawning aggregation on the Cascade Plateau. The timing of these surveys is scheduled in the SESSF Annual Research Statements, and is dependent on timing of stock assessments, fishing effort and the availability of suitable boats to undertake the survey.

### Close-Kin Mark Recapture

In the GHaT, the Close-Kin Mark-Recapture (CKMR) methodology has been adopted for School Shark and is being considered for other species in the SESSF, such as Redfish and Tiger Flathead. CKMR uses genetic sampling to estimate abundance based on the number of parent–offspring pairs identified in the samples.

### **Research Projects**

Research projects are used to collect and assess additional data required for scientific or management purposes where significant data gaps are identified. In the past, this has included:

- tagging programs for migration and stock structure studies;
- genetic data for studies of stock structure;
- stomach contents data for food-web and predation studies;
- environmental and oceanographic data as inputs to stock dynamics, migrations and production models;
- survivorship of discard species; and
- biological characteristics of target and non-target species.

Further information about the AFMA Research Program, including the SESSF Strategic Research Plan, can be found on the AFMA website at <u>www.afma.gov.au/research</u>.

### 3. Commercial Species

Under the <u>SESSF Harvest Strategy Framework</u> (HSF; AFMA 2024), stock assessments are conducted for all quota species, which are typically referred to as commercial species, and can be further categorised as either key commercial or byproduct species. The HSP defines key commercial species as those most relevant to the objective of maximising net economic returns to the Australian community from the management of the fishery, whereas byproduct species make a lesser contribution to the value of the catch in a fishery. Key commercial species are generally targeted, and mostly retained, whereas the retention of byproduct species depends on a combination of catchability and demand.

All quota species are subject to a Total Allowable Catch (TACs) in the SESSF, and as such require stock assessments to understand the status of the stock/s and their interaction with the fisheries that target them. For stock assessment models to produce reliable estimates, the data must be accurate, representative and of sufficient quantity. If the data does not meet the above criteria, poor model estimates may result in poor management decisions.

The HSF uses a tiered approach designed to apply different types of assessments and cater for different amounts of data available for different stocks. Each commercial stock is assessed depending on the amount and type of information available to assess stock status and also what level of assessment is needed. Each stock assessment tier has its own harvest control rule or decision rule that is used to determine the recommended biological catch (RBC). The RBC provides the best scientific advice on what the total fishing mortality (landings from all sectors plus discards) should be for each species. A recommended TAC is then calculated using rules outlined in the HSF. Further information on the assessment Tiers is available in the <u>SESSF HSF</u>.

**Table** provides a general overview of the fishery dependent data requirements for each stock assessment tier, which are further detailed in the *logbook data and independent data collection* section above.

**Catch**: Includes information on retained and discarded catch recorded in daily fishing logbooks and catch disposal records, and informs estimates of fishing mortality, catchability and CPUE.

**Effort**: Includes information recorded in daily fishing logbooks including gear type, hours fished, number of hooks or length of net, location and depth fished, and is used to estimate CPUE, fishing mortality and gear selectivity.

**Biologicals:** Includes information on age and size structure (derived from otolith and vertebrae samples), length frequencies, sex structure and gonad stage. These are either collected through the SESSF ISMP or industry/crew based programs and inform inputs to stock assessments such as growth, recruitment, natural mortality, age at maturity, stock structure, catchability and gear selectivity.

Tier Level	Description	Catch	Effort	Length	Age	Sex	Gonad Stage
Tier 1	Robust assessment of fishing mortality and biomass based on fishery dependent and independent data	x	x	х	х	х	х
Tier 3 <sup>3</sup>	Empirical estimates of fishing mortality based on size and/or age data	х	х	х	x		
Tier 4	Empirical estimates of relative biomass based on fishery dependent or fishery independent surveys	х	х				
Tier 5	Weight of evidence approach, may estimate the central tendency of sustainable catches (such as the median catch, average catch, or 3 <sup>rd</sup> highest catch) when catch data is not available.	х		х	x		
ERA	Considers recent estimates of fishing mortality (F) relevant to $F_{MSY}$ . Other indicators, such as CPUE or length frequencies also considered.	х	х	х			

#### Table 1 General fishery dependent data requirements for SESSF stock assessment Tiers.

<sup>&</sup>lt;sup>3</sup> Not currently applied to any species in the SESSF

# 4. Non-Commercial Species

The Bycatch Policy provides guidance on managing those aspects of bycatch that are not currently subject to commercial fishery management provisions as outlined in the HSP (i.e. non-commercial species). Under the Bycatch Policy, species that are incidentally caught and returned to the sea or killed/injured as a result of interacting with fishing equipment are referred to as bycatch species and can be considered as either general bycatch or listed species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), also referred to as TEPs.

AFMA's Ecological Risk Management (ERM) Guidelines outline the need to avoid and minimise bycatch, and encourage industry-led solutions to minimise bycatch of TEP species. A continued focus on greater accuracy in bycatch reporting within Commonwealth fisheries is necessary to progress the ecologically sustainable development of fisheries and ensure the sustainability of the species and ecosystems with which fisheries interact.

Ecological Risk Assessments (ERAs) are the primary method for assessing the impact of commercial fishing on non-commercial species and the broader ecosystem. The ERA framework involves a hierarchy of risk assessment methodologies progressing from a qualitative analysis at the first stage, to a more detailed and quantitative analysis at the final stage. This approach allows for the identification of high and low risk species, as well as those that are data deficient. For more details on the ERA process, see <u>AFMA's ecological risk management strategies</u>.

ERAs rely on data collected from logbooks, CDRs, ISMP and independent monitoring programs. Improvement in the data collected will allow fisheries management to better assess and mitigate the impact of commercial fishing operations on the environment and account for the cumulative impact of Commonwealth fisheries on bycatch and TEP species.

### **Bycatch Species**

For non-trawl methods, operators are required to report non-quota discards to the highest possible taxonomic resolution (species is preferred) in the daily fishing logbooks. In some sectors, discards are verified using e-monitoring – further information about e-monitoring coverage, including coverage and review rates, is detailed above and in individual TEP management strategies that can be found on AFMA's website regarding protected species management.

Due to the nature of trawl fishing, where catch is brought on board in large bags, and discards are batched as mixed species, reporting to the species level is not currently possible. For trawl methods in the SESSF, operators are required to report non-quota discards into groups that have been developed based on commonly discarded species with similar morphology (**Table**). It is expected that these changes will improve the quality of discard reporting in SESSF trawl sectors and reduce operator workload. Obtaining accurate discard data will improve the understanding of stock status and allow for implementation of more efficient management arrangements.

CAAB Code	Common Name (CAAB Taxon Report)	Name in logbooks
37465000	Triggerfishes and Leatherjackets	Leatherjackets
37990084	Scorpionfishes, gurnards & latchets	Scorpionfishes/Gurnards/Latchets
37439918	Gemfishes	Barracoutas
37440000	Hairtails & cutlassfishes	Frostfish/Hairtails
37990077	Dories	Dories/Oreodories
37990020	Fish oceanic/marine	Other Finfish
23590000	Cephalopods	Squids/Octopus/Cuttlefishes
37020923	Dogfishes (Squalidae)	Dogfish (including Spurdog)
37990030	Skates & Rays (mixed) (Rajiformes)	Skates/Rays/Stingarees/Guitarfish
37990003	Sharks (other)	Other Sharks
1000000	Sponges	Sponges

Table 2 Bycatch reporting - non-quota discard groups for the trawl sectors of the SESSF

### Threatened, endangered and protected species

The EPBC Act lists four different categories of protected species in Commonwealth areas.

**Threatened** – this generally includes species with low population numbers and those that have lost some of their habitat or face other threats to their survival.

**Migratory species** – species that move between countries and across international boundaries. Whales are an example of a migratory species. These animals require special protection under the <u>Convention on Migratory Species</u>. Australia joined many other countries in signing this convention.

**Marine species** – species listed in this category are provided with general protection to ensure their population numbers do not decline. They cannot be killed, injured, traded, taken, kept or moved without a special permit.

**Cetaceans** – all cetaceans (whales and dolphins) are included in this category.

Operators are required to report interactions with TEPs in their daily fishing logbooks, and AFMA uses this information for reporting purposes, and to monitor interaction rates against triggers established in various TEP management strategies, such as:

- The <u>Threat Abatement Plan for the incidental catch (or bycatch) of seabirds during oceanic longline</u> <u>fishing operations (2018);</u>
- The <u>Gillnet Dolphin Mitigation Strategy</u>; and
- The <u>Australian Sea Lion Management Strategy</u>.

These strategies can be found on AFMA's website at <u>Protected species management & commercial fish</u> <u>species rebuilding strategies</u>.

# 5. Reporting

### **Quarterly Reporting**

A Memorandum of Understanding (MOU) between AFMA and the Department of Climate Change, Energy, the Environment, and Water (DCCEEW) allows AFMA to report interactions with protected species in AFMA managed fisheries on behalf of fishers. AFMA provides regular summary reports on protected species interactions to DCCEEW. Records of protected species interactions for AFMA managed fisheries, as reported in fishery logbooks, are published on the AFMA website on a quarterly basis.

#### Reporting to MACs and RAGs

AFMA will report on TEP interactions to MACs and RAGs on a regular basis. This will be facilitated through bycatch and discard work plans, fishery updates and consultative group advice on TEP management strategies. These reports are generated using logbook data, EM reports and observer data.

#### WTO annual report

All fisheries granted export approval under the EPBC Act are required to produce annual reports containing the information outlined in Appendix B of the Australian Government's *Guidelines for the Ecologically Sustainable Management of Fisheries – 2<sup>nd</sup> Edition* (the Guidelines).

The annual report summarises management arrangements across the SESSF, and uses data collected across the various monitoring and data collection programs mentioned above, to provide an overview of the SESSF against reporting requirements and conditions outlined in the WTO (see <u>SESSF Strategic assessment under the EPBC Act 1999</u>).

### 6. Data Management

AFMA oversees the collection of large amounts of fishery data that are collected through methods outlined in Section 2. Data collected from on-board observers, crew based sampling, port sampling, logbooks, VMS and e-monitoring are all stored in-house by AFMA through various methods. These data sources are collected via systems directly integrated into the AFMA database (e.g. electronic logbooks), via paper forms submitted and manually entered into the database (e.g. TEP interaction forms, observer reports) and via vendors who analyse the data to then provide reports to AFMA (e.g. e-monitoring).

Logbook, CDR, VMS and observer program data is currently stored on the AFMA database for internal use and is provided to research organisations for data analysis services. E-monitoring footage is analysed by an AFMA contractor and annotated catch data is stored in AFMA databases. Annotated e-monitoring data is compared to logbook data for the same shots and comparison reports are sent to fishers and stored by AFMA. The data is used internally for day-to-day management activities and externally for stock assessments, ERAs and other ad-hoc data needs. Data is provided on request to organisations or individuals requiring the data for research when confidentiality agreements are agreed to. AFMA has recently developed a data strategy for improving the agency's data management and analytics. The data strategy aims to establish common methods, practices, tools and processes to manage, manipulate and share data within and outside of the organisation in a consistent manner, while providing flexibility to those business areas with unique needs.

Figure 2 (below) outlines the data lifecycle and AFMA's business requirements.



Figure 2 Summary diagram depicting the stages in the fisheries data lifecycle.

# 7. Data plan review

SESSFRAG will review this plan at its annual data meeting, which is typically held in August, prior to stock assessments and RAG meetings that year. SESSFRAG will identify and prioritise data needs and gaps for SESSF quota species, bycatch species and TEPs, to ensure the data collected is sufficient to inform research, stock assessments and management decisions.

A key part of this process is the review of the ISMP and industry-based sampling programs to determine if sampling targets are being achieved and if any changes to these targets are required.

# 8. Action items and ad-hoc data collection

In addition to the sampling requirements summarised in Error! Reference source not found.–**10**, AFMA may i dentify the need to collect additional data on an ad-hoc basis. This section serves as a register of these activities.

### Gummy and school shark (SharkRAG March 2021):

Collection of 75 samples (dual length measurements partial and total) for each species greater than 160cm total or 100cm partial as a once off collection. The data collection must be measured in accordance with ISMP sampling protocols.

### Blue-eye trevalla tissue sample collection (SESSFRAG data meeting 2023):

Collection of blue eye trevalla (TBE) tissue samples to be collected on a trial basis for 6 months under a CKMR data sampling program. With tissue samples collected alongside the current sampling program for TBE at 50 to 100 fish per trip to a maximum of 600 samples (paired with otolith samples) before the end of 2024.

#### Samples for PhD project (July 2024):

Where observer resources allow, assist in the collection and storage of samples/specimens of Frostfish, Ocean Jackets (East and GAB) and John Dory (East) for Rikki Taylor (an IMAS/CSIRO PhD student). This work stems from FRDC Project 2022-032 <u>Biological parameters for stock assessments in South Eastern Australia –</u> <u>an information and capacity uplift</u>.

### Table 3 - Annual sampling targets for depleted species/stocks (excluding relevant Orange Roughy stocks)

RAG codes: GA = GABRAG; SE = SERAG; SH = SharkRAG Gear codes: GN = Gillnet; LL = Longline; OT = Otter Trawl

Collection priorities: Green = High priority; Purple = Medium priority; Blue = Low priority

Species/stock (RAG)	Source/Program	Sector (Gear)/Zone	Lengths	Biologicals
Blue Warebou (SE)	ISMP	CTS (OT)/East	1000	450
Blue Waterlou (SE)	131011	CTS (OT)/West	2000	450
Comfich aset (CE)		CTS (OT)/non-spawn	1700	350
Germisn – east (SE)	ISIVIP	CTS (OT)/spawn	300	300
Jackass Morwood (SE)	ISMAD	CTS (OT)/East	1000	600
Jackass Morworld (SE)	ISIVIP	CTS (OT)/West	1000	600
John Dory (SE)	ISMP	CTS (OT)	2000	500
Redfish (SE)	ISMP	CTS (OT)	2000	1000*
School Shark (SH)	SiDaC	GHaT (GN &LL)	3220	1480
	ISMP	CTS (OT)/deepwater (inc. freezer boats)	250	250

\*Biologicals to include tissue samples for CKMR analysis - these must be linked to otoliths/vertebrae from the same individual

#### Table 4 - Annual sampling targets for trigger species/stocks

RAG codes: GA = GABRAG; SE = SERAG; SH = SharkRAG

Gear codes: ALL = Auto Longline; OT = Otter Trawl

Collection priorities: Green = High priority; Purple = Medium priority; Blue = Low priority

Species/stock (RAG)	Source/Program	Sector (Gear)/Zone	Lengths	Biologicals
Alfonsino (SE)	ISMP	CTS (OT)	1000	-
Blue-eye Trevalla – SM (SE)	SiDaC	GHaT (ALL)	1200	750
Elephant fish (SH)	-	-	-	-
Gemfish – west (SE)	ISMP	CTS (OT) GAB (OT)	2000 1000	300 300
Ocean Perch (SE)	ISMP	CTS (OT)/Offshore	1000	-
Royal Red Prawn (SE)	ISMP	CTS (OT)	2000	-
Sawshark (SH)	-	-	-	-
Smooth Oreo - Cascade (SE)	-	-	-	-
Smooth Oreo – other (SE)	ISMP	CTS (OT)	1000	500

#### Table 5 - Annual sampling targets for MYTAC species/stocks (excluding relevant Orange Roughy stocks)

RAG codes: GA = GABRAG; SE = SERAG; SH = SharkRAG

Gear codes: ALL = Auto Longline; DS = Danish seine; LL = Longline; GN = Gillnet; OT = Otter Trawl Collection priorities: Green = High priority; Purple = Medium priority; Blue = Low priority

Species/stock (RAG)	Source/Program	Sector (Gear)/Zone	Lengths	Biologicals
Bight Redfish (GA)	Industry ISMP	GAB (DS & OT)	2000	570
Blue-eye Trevalla – slope (SE)	SiDaC	GHAT (ALL)	1200	750 (+600 CKMR 2024*)
Blue Grenadier (SE)	ISMP	CTS (OT)/non-spawn CTS (OT)/spawn	1500 2000	800 1000
Deepwater Flathead (GA)	Industry ISMP	GAB (DS & OT)	As per GABT Man 2000	As per GABT Man 570
Deepwater Shark – east (SE)	ISMP	CTS (OT)	1000	1000
Deepwater Shark – west (SE)	ISMP	CTS (OT)	1000	1000
Gummy Shark (SH)	SiDaC	GHaT (ALL & GN)	2700	700
Mirror Dory (SE)	ISMP	CTS (OT)/East CTS (OT)/West	1000 1000	-
Oreo basket (SE)	ISMP	CTS (OT)	1000	1000
Pink Ling (SE)	SiDaC ISMP	GHaT (ALL) CTS (OT)/East CTS(OT)/West	720 1000 1000	400 400 400
School Whiting	ISMP	CTS (DS) CTS (OT)	1500 1000	300 300
Silver Trevally (SE)	ISMP	CTS (OT)	1000	1000
Silver Warehou (SE)	ISMP	CTS (OT)/East CTS (OT)/West	1000	450
Tiger Flathead (SE)	ISMP	CTS (DS) CTS (OT)	1000 1000	700 450

\*Biologicals to include tissue samples for CKMR analysis and these must be linked to otoliths from the same individual

Method	Collection		Lengt	hs (N)		Biolog	gicals & tiss	sue sample	s (N)*
	zone	<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>
	20	75	75	75	75	47	47	47	47
Auto-	30	75	75	75	75	47	47	47	47
Longline	40	75	75	75	75	47	47	47	47
	50	75	75	75	75	47	47	47	47
	Total		12	00			7!	50	

Table 6 - Sampling regime for Blue-eye Trevalla caught by auto-longline in the GHaT.

\*Trial to also collect up to 600 tissue samples during 2024 for CKMR analysis to be linked to otoliths from the same individuals

Table 7 - Proposed Gummy Shark yearly sampling schedule for length and vertebrae data collection. (SA = South Australia; TAS = Tasmania; BS = Bass Strait).

Mathod	Collection zone		Lengt	hs (N)		Vertebrae (N)					
Method	Collection zone	<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>		
	Adelaide/Robe	150	150	150	150						
Gillnet	Lakes/San Remo	200	200	200	200	Combined gear types					
	Triabunna/Hobart	125	125	125	125						
	Adelaide/Robe	100	100	100	100	50	50	50	50		
Longline	Lakes/San Remo	0	0	0	0	75	75	75	75		
	Triabunna/Hobart	100	100	100	100	50	50	50	50		
Total		Gillr	net: 1900	Longline:	800	700 (1	trip per z	one/gear	type)		

### Table 8 - Proposed sampling regime for Pink Ling caught by auto-longline in the GHaT.

Method	Collection		Lengt	hs (N)		Biologicals (N)			
	zone	<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>
	20	45	45	45	45	25	25	25	25
Auto-	30	45	45	45	45	25	25	25	25
Longline	40	45	45	45	45	25	25	25	25
	50	45	45	45	45	25	25	25	25
	Total		72	20			40	00	

Table 9 - School Shark yearly sampling schedule for length and vertebrae data collection. (SA = South Australia; TAS = Tasmania; BS = Bass Strait). Lengths to be taken from the same animals as vertebrae, vertebrae to have tissue attached, no more than 50 samples per shot.

Mathad	Collection zone	Lengths (N)					Vertebrae (N)			
ivietnoa		<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	
	Adelaide/Robe	100	100	100	100		Combined Gear Types			
Gillnet	Lakes/San Remo	250	250	250	250	Co				
	Devonport/Triabunna	125	125	125	125					
	Adelaide/Robe	100	100	100	100	50	50	50	50	
Longline	Lakes/San Remo	0	0	0	0	75	75	75	75	
	Devonport/Triabunna	100	100	100	100	50	50	50	50	
Any	West Tas	65	65	65	65	65	65	65	65	
GABTF)	West SA	65	65	65	65	65	65	65	65	
Auto-longline Deepwater (>183m)		65	65	65	65	65	65	65	65	
Total		Gillnet: 1900 Hook: 800 Any method: 260 Deepwater: 260				1480 (1 trip per zone/gear type, no more than 50 samples per shot)				

#### Table 10 - Annual sampling targets for all SESSF Orange Roughy stocks

RAG codes: GA = GABRAG; SE = SERAG

Gear code: OT = Otter Trawl

Collection priorities: Green = High priority; Purple = Medium priority; Blue = Low priority

Stock (RAG)	Source/Program	Sector (Gear)/Zone	Lengths	Biologicals
Albany & Esperance (GA)	ISMP	GAB (OT)	1000	1000
Eastern* (SE)	ISMP	CTS (OT)/spawn	1000	1000
Cascade (SE)	ISMP	CTS (OT)	1000	1000
Southern (SE)	ISMP	CTS (OT)/Pedra Branca	1000	1000
		CTS (OT)/Southern	1000	-
Western (SE)	WORRP	CTS (OT)/North	1000	1000
		CTS (OT)/Central	1000	1000
		CTS (OT)/South	1000	1000

\*An additional 1000 lengths and biologicals to be collected in conjunction with Acoustic Optical Surveys as and when they occur.

# 9. Logbook data and methods for verification and independent collection

#### Table 11 - SESSF logbooks.

Gear Type	Logbook	Electronic schema
Hook & Gillnet	LN01B/NT01B	ELINE
Тгар	TR01	EGNET
Trawl	EFT01C	ESEINE

Table 12 - Data collected using logbooks, including methods for verification and independent collection.

Turnes of leash ook date	Data verified or collected independently												
collected	E-monitoring <sup>4</sup>	On-board observers	VMS	Port based observers									
Fishing boat & crew det	ails												
Boat name	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$									
Voyage start date	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$									
Gear details													
Gear type/method	$\checkmark$	$\checkmark$		√5									
Gear details /		1											
measurements		•											
Mitigation details	√6	$\checkmark$											
Vessel activity													
Inshore/Offshore		$\checkmark$	$\checkmark$										
Shot date	$\checkmark$	$\checkmark$	$\checkmark$										
Start fishing time	$\checkmark$	$\checkmark$											
Start fishing position	$\checkmark$	$\checkmark$	$\checkmark$										
End fishing position	$\checkmark$	$\checkmark$	$\checkmark$										
Start haul time	$\checkmark$	$\checkmark$											
End haul time	$\checkmark$	$\checkmark$											
Offal discharge		$\checkmark$											
Minimum depth	$\checkmark$	$\checkmark$											
Maximum depth	$\checkmark$	$\checkmark$											
Shot details													
Shot date / number	$\checkmark$	$\checkmark$											
Mitigation deployed	$\checkmark$	$\checkmark$											
No. of hooks, length of net, shots		$\checkmark$											
Total gear lost (mainline length, # hooks)		$\checkmark$											

<sup>&</sup>lt;sup>4</sup> Currently used on shark gillnet and some hook boats to validate logbook data

<sup>&</sup>lt;sup>5</sup> Where a single gear type is used on a trip

<sup>&</sup>lt;sup>6</sup> Details of some mitigation can be collected via e-monitoring.

Tupos of logbook data	Data verified or collected independently												
collected	E-monitoring <sup>4</sup>	On-board observers	VMS	Port based observers									
Catch													
Boat name	$\checkmark$	$\checkmark$	$\checkmark$										
Shot number	$\checkmark$	$\checkmark$											
Voyage ID	$\checkmark$	$\checkmark$											
Retained species weight		$\checkmark$		$\checkmark$									
Retained species piece count	$\checkmark$	$\checkmark$		$\checkmark$									
Discard species weight		$\checkmark$											
Discard species piece count	$\checkmark$	$\checkmark$											
Life status of discards		✓											
Biological data													
Date	✓	✓											
Time	$\checkmark$	$\checkmark$											
Species identification	$\checkmark$	$\checkmark$											
Catch location	$\checkmark$	$\checkmark$	$\checkmark$										
Life status	$\checkmark$	$\checkmark$											
Fate	$\checkmark$	$\checkmark$											
Retained species length/weight <sup>7</sup>		$\checkmark$		$\checkmark$									
Discard species length/weight <sup>6</sup>		$\checkmark$											
Otolith/vertebra <sup>6</sup>		$\checkmark$		$\checkmark$									
Wildlife interactions													
Species name	$\checkmark$	$\checkmark$											
Number of species interacted with	$\checkmark$	$\checkmark$											
Date	$\checkmark$	$\checkmark$											
Time	$\checkmark$	$\checkmark$											
Shot number	$\checkmark$	$\checkmark$											
Latitude/Longitude	$\checkmark$	$\checkmark$											
Caught during set/haul/other	$\checkmark$	$\checkmark$											
Band or tag number		$\checkmark$											
Life status	$\checkmark$	$\checkmark$											

<sup>&</sup>lt;sup>7</sup> Not collected in logbooks

# **10.Data requirements and sources by species groups**

Table 13 Overview of data requirements for species groups and collection sources.

 $\checkmark$  data is currently collected  $\checkmark$  Potential for data collection  $\bigcirc$  Logbook verification absence

Potential for verifications

P/A Presence

		Tar	get		Byproduct				Bycatch				Protected Sp.				Habitat				
Source	Data type	Board Trawl	Danish seine	Gillnet	Ноок	Board Trawl	Danish seine	Gillnet	Ноок	Board Trawl	Danish seine	Gillnet	Ноок	Board Trawl	Danish seine	Gillnet	Ноок	Board Trawl	Danish seine	Gillnet	Ноок
	Catch*	$\checkmark$	$\checkmark$	$\checkmark$	√	√	~	√	√	√	√	√	√	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	✓	$\checkmark$	~	
	Discards	$\checkmark$																			
	Effort / location	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$												
S	Gear details	$\checkmark$																			
gbook	Baiting Ratio				$\checkmark$																
L	Depth	$\checkmark$	$\checkmark$	~	~	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$												
	Life Status													$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$				
	Depredation																				
	CTD#	$\sim$	$\checkmark$									$\checkmark$	$\checkmark$	$\checkmark$							
	Catch*	P/A	P/A	$\bigcirc$	0	P/A	P/A	0	$\bigcirc$	P/A	P/A	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$		0	$\bigcirc$	
	Effort / location																				
	Discards	P/A	P/A	0	0	P/A	P/A	0	0	P/A	P/A	0	0						0	0	
EMS	Length	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$																
	Spp comp	P/A	P/A	$\bigcirc$	$\bigcirc$	P/A	P/A	$\bigcirc$	$\bigcirc$			$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$		$\bigcirc$	$\bigcirc$	
	Landed catch	P/A	P/A	$\bigcirc$	$\bigcirc$	P/A	P/A	$\bigcirc$	$\bigcirc$												
	Gear/Mitigation													P/A	P/A	P/A	P/A				
	Catch*									$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$					$\checkmark$	$\checkmark$	$\checkmark$	
	Discards	$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$							$\checkmark$	$\checkmark$	$\checkmark$	
	Gear																				
ooard	Interactions													$\checkmark$	$\checkmark$						
– On-k	Spp pres													$\checkmark$	$\checkmark$						
ISMP .	Retained length	~	$\checkmark$			$\checkmark$	$\checkmark$														
	Discarded length	~	$\checkmark$			$\checkmark$	~														
	Age	$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$														
	Mitigation deployment													$\checkmark$	$\checkmark$						

			Target B				Bypr	yproduct			Bycatch				Protected Sp.				Habitat			
Source	Data type	Board Trawl	Danish seine	Gillnet	Ноок	Board Trawl	Danish seine	Gillnet	Ноок	Board Trawl	Danish seine	Gillnet	Ноок	Board Trawl	Danish seine	Gillnet	Ноок	Board Trawl	Danish seine	Gillnet	Ноок	
	Tissue samples	$\checkmark$	$\checkmark$																			
	Biologicals	$\checkmark$	$\checkmark$																			
FIS ISMP - Port Source	Retained length	$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$															
	Age	$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$											$\checkmark$				
	Tissue samples	$\checkmark$	$\checkmark$																			
	Biologicals	$\checkmark$	$\checkmark$																			
	Catch*	$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$											
	Effort/location	$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$											
	Depth	$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$											
Industry FIS ISMP - Port Source	TEP interactions													$\checkmark$	$\checkmark$							
	Length	$\checkmark$	$\checkmark$																			
	Age	$\checkmark$	$\checkmark$																			
	Tissue sample	$\checkmark$	$\checkmark$																			
	Environment	$\checkmark$	$\checkmark$																			
	Discarded length	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$																	
	Retained lengths	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$																	
stry	Age	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$																	
Industry FIS	Tissue samples	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$																	
	Biologicals	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$																	
	Environment	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$															

\*Inc interactions

<sup>#</sup>Conductivity, Temperature, Depth

### **11.References**

AFMA, 2024. *Harvest Strategy Framework for the Southern and Eastern Scalefish and Shark Fishery, 2009* (*Amended 2024*).

Bergh, M., Knuckey, I., Gaylard, J., Martens, K. and Koopman, M., 2009. <u>A revised sampling regime for the</u> <u>Southern and Eastern Scalefish and Shark Fishery – Final Report</u>. AFMA Project F2008/0627. OLRAC and Fishwell Consulting.