

Southern and Eastern Scalefish and Shark Fishery Five Year Strategic Research Plan 2016-2020



Australian Government

Australian Fisheries Management Authority



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1 Introduction

The *Fisheries Administration Act 1991* provides that AFMA is to establish priorities in respect of research relating to fisheries and arrange for the undertaking of such research. This is supported by the *Southern and Eastern Scalefish and Shark Fishery Management Plan 2003* (Management Plan) performance criteria that cost-effective and high quality research (including independent research) is carried out in relation to the fishery in accordance with a five year strategic research plan.

This *Southern and Eastern Scalefish and Shark Fishery Five Year Strategic Research Plan 2016-2020* (Strategic Research Plan) identifies the research priorities for the fishery over the next five years to:

- assist with the pursuit of the management objectives for the Southern and Eastern Scalefish and Shark Fishery (SESSF), which are consistent with AFMA's objectives
- enable the effective implementation and appraisal of management arrangements.

This Strategic Research Plan provides the framework for identifying annual research priorities for the SESSF. The annual research statement should consider the cost-effectiveness, priority and timeframe for undertaking the work. Where research has already been funded the annual research statement should identify this including the source of funding.

This Strategic Research Plan and annual research statements are used by:

- the AFMA Research Committee (ARC) at its annual November meeting to develop the ARC annual research call made in early December
- the ARC to recommend priorities to the Commonwealth Fisheries Research Advisory Body (ComFRAB) for potential Fisheries Research and Development Committee (FRDC) funding
- FRDC in making its annual call for research expressions of interest in May each year.

This Strategic Research Plan should be considered along with:

- the SESSF Monitoring and Data Plan which aims to ensure that prioritised research can be supported with data
- annual research statements for the SESSF and Great Australian Bight including monitoring and stock assessment schedules.

This Strategic Research Plan will be reviewed following dissemination of the results of the research project *SESSF Monitoring and Assessment – Strategic Review* (FRDC 2014-203), and finalisation of the reviews of the *Commonwealth Fisheries Bycatch Policy* and *Commonwealth Fisheries Harvest Strategy Policy*.

2 Overview of the Southern and Eastern Scalefish and Shark Fishery

The SESSF extends from the coast off Fraser Island in Queensland south and west to Cape Leeuwin in Western Australia (see Fig. 1). The area of this fishery covers nearly half of the waters within the Australian Fishing Zone off mainland Australia and Tasmania. Over 20 ports are used by the fleet from New South Wales to Western Australia. The major ports are Ulladulla, Lakes Entrance, Portland, Eden, Hobart, Adelaide, San Remo and Port Lincoln. The fishery operates in both Commonwealth and State waters under different Offshore Constitutional Settlement arrangements with State governments.

The SESSF is comprised of the following fishery sectors:

- Commonwealth Trawl Sector (CTS)
- Great Australian Bight Trawl Sector (GABTS)
- Scalefish Hook Sector
- Shark Hook Sector
- Gillnet Sector
- East Coast Deepwater Trawl Sector (ECDTS)
- Trap Sector.

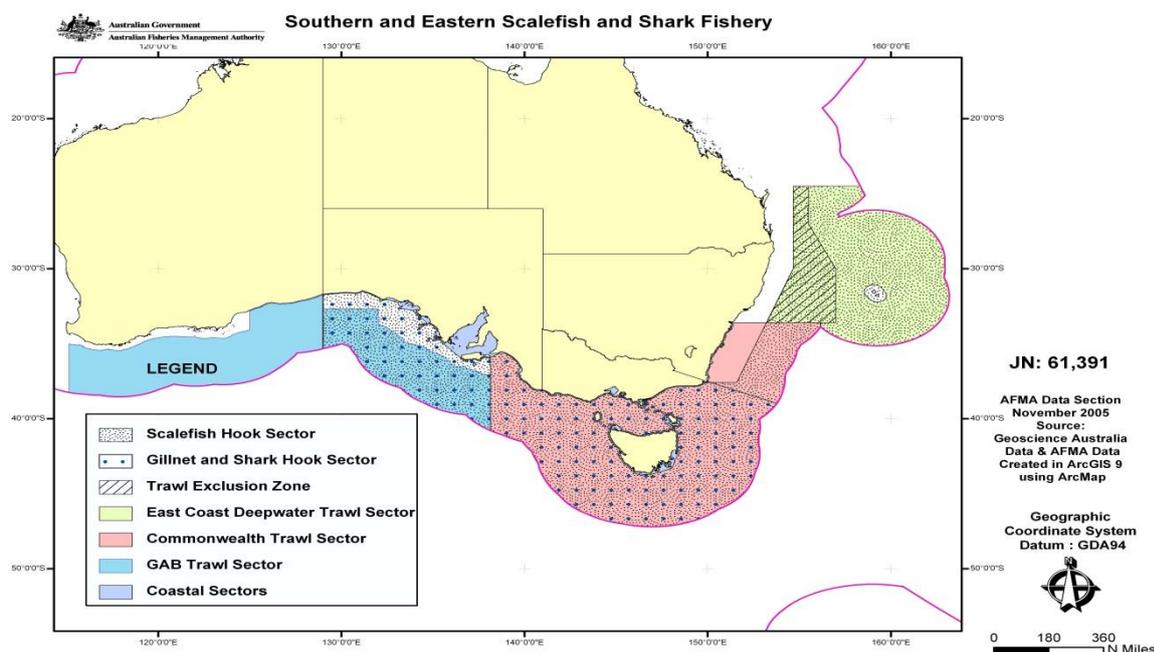
The Gillnet, Scalefish Hook, Shark Hook and and Trap Sectors are collectively referred to as the Gillnet, Hook and Trap (GHAT).

In addition, there are smaller sectors which include the South Australian, Tasmanian and Victorian coastal waters sectors.

A combination of methods is used in the fishery, including demersal otter trawl, Danish seine, demersal longline and gillnet. The main target species in the:

- CTS are tiger flathead, pink ling and blue grenadier
- GABTS are bight redfish and deepwater flathead
- GHAT are gummy shark, blue eye trevalla and pink ling.

Fig. 1: Area of the Southern and Eastern Scalefish and Shark Fishery



Further information on the SESSF is available in the Management Arrangements Booklet which is available at: http://www.afma.gov.au/wp-content/uploads/2014/08/SESSF_Management_Arrangements_Booklet_2015.compressed.pdf

3 Research framework

3.1 Roles

3.1.1 Resource Assessment Groups

The main function of RAGs is to peer review scientific data and information and provide advice to AFMA on the status of fish stocks, substocks, species (target and non-target species) and the impact of fishing on the marine environment.

The Management Plan provides that RAGs give advice in relation to stock status, research needs, the environment and economics of the fishery.

The overarching resource assessment body in the fishery is the SESSF Resource Assessment Group (SESSFRAG). There are four fishery RAGs:

- Slope Resource Assessment Group (SlopeRAG)
- Shelf Resource Assessment Group (ShelfRAG)
- Shark Resource Assessment Group (SharkRAG)
- Great Australian Bight Resource Assessment Group (GABRAG).

3.1.2 Management Advisory Committees

Management Advisory Committees (MACs) are the main advisory bodies to AFMA. They provide advice on a variety of issues including fisheries management arrangements, research, compliance and management costs.

The MACs provide a link between AFMA and those with an interest in the fishery with members from commercial industry, fisheries management, the scientific community, the recreational sector, the environment/conservation sector and, in some instances, State governments.

MACs provide a broad perspective on management options and are a forum where issues relating to a fishery are discussed, problems identified and possible solutions developed. The MACs consider the advice of RAGs and provide recommendations to the AFMA Commission based on how the options will contribute to meeting the overall objectives for a particular fishery and the pursuit of AFMA's legislative objectives. The South East MAC (SEMAC) and the Great Australian Bight MAC (GABMAC) provide advice on issues affecting the SESSF.

3.1.3 AFMA Research Committee

The AFMA Research Committee considers essential research priorities that contribute to improved management for fisheries. As part of its role the committee also:

- develops research priorities for Commonwealth fisheries in conjunction with MACs that are consistent with AFMA's management needs and objectives specified in the *Fisheries Administration Act 1991* and *Fisheries Management Act 1991*
- approves five-year fishery research plans for individual fisheries managed by AFMA
- advises the AFMA Commission on the allocation of AFMA research funds and accounts and reports against their use
- monitors biological and economic indicators in Commonwealth fisheries, with an emphasis on sustainability indicators and economic efficiency
- liaises with research providers and funding agencies to make sure AFMA's research priorities are given appropriate weight in the wider allocation of research funds.

3.1.4 Commonwealth Fisheries Research Advisory Body

The Commonwealth Fisheries Research Advisory Body (ComFRAB) considers research proposals for potential Fisheries Research and Development Corporation funding.

ComFRAB was established to facilitate the delivery of efficient and effective research, and is the primary planning and entry point for research proposals for Commonwealth fisheries research funding. It also provides advice to funding partners and research providers on Commonwealth fisheries research. This includes:

- strategic direction
- priorities, project evaluation and review
- funding and appropriate funding mix.

3.1.5 Fisheries Research and Development Corporation

The Fisheries Research and Development Corporation (FRDC) is a co-funded partnership between its two stakeholders, the Australian Government and the fishing industry.

The FRDC's role is to plan and invest in fisheries research, development and extension (RD&E) activities in Australia. This includes providing leadership and coordination of the monitoring, evaluating and reporting on RD&E activities, facilitating dissemination, extension and commercialisation. The FRDC achieves this through coordinating government and industry investment, including stakeholders to establish and address RD&E priorities. In addition the FRDC monitors and evaluates the adoption of RD&E to inform future decisions.

3.2 The research process

For information on prioritising research, calling for and assessing proposal, please view the research timeline at <http://www.afma.gov.au/research/research-afma/>

4 AFMA's Strategic Research Plan

AFMA has four research programs which are directed to pursuing AFMA's legislative objectives. These support the SESSF research priorities and are listed below.

4.1 Program 1 – Fishery stocks and biology

- Stock monitoring: to collect appropriate information to support stock assessments, using a total stock management approach.
- Understanding stocks: to underpin stock assessments with a knowledge of the stock biology and the total stock accessed by all sectors.

4.2 Program 2 – Ecosystem-based fisheries management

- Impact monitoring: to base management decisions on knowledge of impacts on fisheries ecosystems.
- Impact reduction: to minimise impacts on fisheries ecosystems.

4.3 Program 3 – Evaluation

- Management indicators: to monitor and evaluate the effectiveness of existing management strategies.
- Management strategies: to development management and harvest strategies to ensure best-practice management and the greatest return to the community.

4.4 Program 4 – Development

- Management development: to develop policies and technology to support the management of Commonwealth fisheries.
- Industry development: to develop skills and knowledge of stakeholders involved in the fishing industry.

For further information on AFMA's research programs, refer to the 'AFMA Strategic Research Plan' which is available on the AFMA website.

5 SESSF research priorities 2016-2020

5.1 Target species, bycatch and byproduct

- Stock assessment: undertake assessment as provided for under the HSF and development of alternative assessment methods.
- Fishery-independent surveys (FIS): estimate abundance of key SESSF species. FISs will be subject to independent review and RAG, MAC and Industry Association advice.
- Declining and recovering stocks: investigate the lack of recovery of low biomass stocks given periods of low catches and failure to recover as expected, including environmental factors and climate change. This incorporates under caught TACs: determine why some TACs in the SESSF are under caught and propose options to resolve this where possible. This to potentially include Atlantis.
- Alternative indexes: develop resource status indicators when catch per unit effort (CPUE) data is not reliable.
- Discarding: assess levels of discards and consider the impact of discarding quota and non-quota species and possible responses.
- Biological: undertake biological and ecological studies on individual species and groups of species.
- Selectivity: further examine the extent and impact of gear changes to assess its affect on gear selectivity and discard rates. Incorporate selectivity changes into the assessments and consider estimating selectivity patterns for various time-blocks.
- Catchability: further describe and quantify the nature of changes in fishing practices, including whether any change is best modelled via catchability or is better done through additional factors in the CPUE standardisation or other approaches.
- Stock structure: further explore spatial dynamics, differences in stocks and the relationship between different stocks (e.g. east-west stocks). Examine the impacts of over-lapping stocks, e.g. if some catches in the west come from eastern stocks.

5.2 Ecosystem based fisheries management

- Protected species: monitor protected species interactions, develop approaches to obtaining a better understanding of the level of interactions and consider measures that may reduce protected species interactions.
- Mitigation: develop and evaluate mitigation measures to reduce ecological impacts of the fishery, including incidental catch and discards.
- Environmental factors: identify environmental and oceanographic factors influencing the availability of fish, species recruitment and movement patterns.
- Climate change: investigate the effects of climate change on stock dynamics, movement patterns, species recruitment and the availability of fish.
- Habitats: assess the impact of fishing on habitats with a focus on reviewing previously undertaken work.

- Communities: assess the impacts of commercial fishing on trophic levels and food chains, including threats to protected species.

5.3 Economic optimisation and social benefits

- Economic targets: investigate how to select economic targets for a multi-species fishery, including the selection of targets for bycatch species, with and without the use of bio-economic models. Measure and monitor progress against economic efficiency targets.
- Bio-economic modelling: develop bio-economic models for selected species and the fishery.
- Maximising economic returns to the community.
 - Identify factors which impact on the profitability of individual operators and the fishery.
 - Improve market dynamics.
 - Increase efficiency of vessels.
- Risk-cost-catch: consider the risk-cost-catch framework in the context of implementing management measures and the cost-effectiveness of stock assessments.
- Social drivers: consider approaches to understanding social drivers in the fishery.

5.4 Development

- Gear technology: improve efficiency of gear including consideration of precision harvesting techniques.

5.5 Monitoring and evaluation of management

- Evaluation: evaluate the ecological and economic consequences of alternative harvest strategies (eg. adjusting TACs annually or for multiple years) and decision rules/harvest strategies.
 - Management strategy evaluations (MSE): conduct MSEs for HSF rules and meta-rules.

6 Acronyms

AFMA	Australian Fisheries Management Authority
SESSF	Southern and Eastern Scalefish and Shark Fishery
CTS	Commonwealth trawl sector
GAB	Great Australian Bight
GHAT	Gillnet, Hook and Trap
RAG	Resource Assessment Group
MAC	Management Advisory Committee
GABMAC	Great Australian Bight Management Advisory Committee
SEMAC	South East Management Advisory Committee
TAC	Total allowable catch

SFR	Statutory Fishing Right
ITQ	Individual transferable quotas
GVP	Gross Value of Production
R&D	Research and Development
HSF	Harvest Strategy Framework
FIS	Fishery Independent Survey
ERA	Ecological risk assessment
ERM	Ecological risk management
TEP	Threatened, endangered and protected
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
FRDC	Fisheries Research Development Corporation
ARC	AFMA Research Committee
CSIRO	Commonwealth Scientific and Industrial Research Organisation
COMFRAB	Commonwealth Fisheries Research Advisory Board
