



Australian Government

Australian Fisheries Management Authority

# Annual Research Statement 2019-20

Southern & Eastern Scalefish and  
Shark Fishery (SESSF)

## Southern and Eastern Scalefish and Shark Fishery Annual Research Statement for 2019-20

This Southern and Eastern Scalefish and Shark Fishery (SESSF) Annual Research Statement was developed by AFMA, in consultation with the SESSF Resource Assessment Group (SESSFRAG), South East Resource Assessment Group (SERAG) and the South East Management Advisory Committee (SEMAC). It identifies areas of high priority research for both AFMA and potential FRDC funding in 2019-20 and will be presented to the AFMA Research Committee (ARC) for consideration at their October 2018 meeting as part of the 2019-20 funding round.

### AFMA funding in 2019-20 - AFMA Research Committee (ARC)

Title	Objectives and component tasks	Evaluation		
		Total cost (\$) (approx. only)	Priority/ranking	Feasibility
<b>RESEARCH UNDERWAY</b>				
Integrated Scientific Monitoring Program (ISMP)	AFMA observer program, logbooks	\$600k (funded by the Fishery, not ARC)	Essential	High
Fish Ageing for SESSF quota species	Undertake fish ageing for the SESSF to support stock assessments	\$262k approx (total project cost over three years 2017-18 to 2019-20 is \$786k approx)	Essential	High
Analysis of Electronic Monitoring Data	A comparison of weights recorded by operators (logbook) and weights estimated by AFMA observers against piece counts recorded by electronic monitoring in order to establish discard weight estimates from piece counts using electronic monitoring. Investigating obtaining length data from electronic monitoring.	\$70k	High	High

Title	Objectives and component tasks	Evaluation		
		Total cost (\$) (approx. only)	Priority/ ranking	Feasibility
SESS Fishery Independent Survey	To conduct a winter survey which will provide further points in the times-series of fishery independent survey (FIS) indices of abundance. The resulting FIS data series will be included in stock assessments of target species and time series analysis of major by-product and by-catch species. The FIS also provides time series information on the spatial and temporal distribution of a large number of non-commercial fish species and a platform from which biological information (length, sex, maturity, age etc) can be collected in a systematic way from these species.	Did not proceed in 2018	Essential	High

NEW IDENTIFIED RESEARCH FOR 2019-20				
Stock assessments for the SESSF 2018-19 to 2020-21	The annual assessment presents fishery statistics and catch at size/age data and synthesises existing stock assessment information for the key target species of the SESSF. This is a requirement of the SESSF Harvest Strategy.	\$200k approx. (total project cost over three years - \$900k approx.)	Essential	High
GHAT CPUE calculation methodology	<p>Currently CPUE for gillnet-caught species is calculated on a kilogram per shot basis. Given the change to net length restrictions, the RAG has identified a strong need to change gillnet CPUE calculations:</p> <ul style="list-style-type: none"> <li>from catch by shot to catch by metres of net set to better account for zero shots.</li> </ul>	\$30k	Essential	High
Pre-1998 data	Review and investigate observer length data received from PIRVIC from before 1998. This may have resulted from problems introduced when data were migrated from PIRVIC. The issue is that the data in the AFMA databases does not match the CSIRO database in earlier years (eg discard fields and percentage retained vs discarded)	\$30k	Medium, subject to project scoping being developed by AFMA and CSIRO	Medium

## FRDC funding in 2019-20 - Commonwealth Research Advisory Committee (ComRAC)

Title	Objectives and component tasks	Evaluation		
		Total cost (approx. only)	Priority/rank	Feasibility
<b>RESEARCH UNDERWAY (FOR FULL LIST OF FRDC PROJECTS SEE ATTACHMENT A)</b>				
Under-caught TACs and lack of stock recovery	<p>Determine why some TACs in the SESSF are under caught and propose options to resolve this where possible</p> <p>Investigate the decline or lack of recovery of low biomass stocks given periods of low catches and expected recovery (eg environmental shift, problems with assessment, loss of biomass signal in obtainable data, violation of assumption of stability in biological characteristics of stocks Project should consider incorporation of Atlantis modelling.</p>	Funded 2016/17 ComRAC funding (\$250k set aside)	High – Top priority	High
Re-examination of underlying model assumptions and resulting abundance errors in the SESSF	<ol style="list-style-type: none"> <li>1) Re-examine some of the underlying assumptions of the survey</li> <li>2) Use new techniques to potentially create efficiencies in sampling, and</li> <li>3) Examine the utility of the estimates given the process and sampling errors that have been observed.</li> </ol>	\$92k approx. Accepted by ComRAC (Nov 2016 meeting) for inclusion in FRDC's Dec 2016 call for applications for funding in 2017/18	High	High

Title	Objectives and component tasks	Evaluation		
		Total cost (approx. only)	Priority/rank	Feasibility
<b>RESEARCH BEING CONSIDERED BY FRDC</b>				
Multi-species fisheries: harvest strategy implications of maximising economic yield and implementation options for Commonwealth fisheries, with a focus on the Southern and Eastern Scalefish and Shark Fishery (SESSF)	<p>Undertake research with the objectives:</p> <ol style="list-style-type: none"> <li>1) Consolidation of background information and experience on (i) application of MEY in multispecies fisheries, (ii) the identified SESSF multispecies sub-fisheries and the biological and technical interactions within them, and (iii) the preferred future monitoring and assessment option(s) that have been identified by SESSF Monitoring and Assessment Review Project (SMARP).</li> <li>2) Develop and quantitatively test options for a fishery-wide harvest strategy, including reference points and decision rules that can be applied to the appropriate sub-fisheries and achieve MEY outcomes for the fishery as a whole.</li> <li>3) Integrate the outputs from 2 and 1 (iii) above to produce a complete tested draft revision of the SESSF Harvest Strategy</li> <li>4) Conduct a cost-benefit analysis for implementation of a new draft SESSF Harvest Strategy, drawing on SMARP project analyses and recommendations.</li> </ol>	High, costs yet to be determined.	High. Initial proposal supported by ComRAC 2017.	High
School whiting stock structure and catch composition	<p>Determining the stock structure of eastern school whiting stock and better understanding the species composition mix between eastern school whiting and stout whiting.</p> <p>Recommendations for approaching assessment(s) based on the outcomes of stock structure work.</p>	TBC	High. Initial proposal supported by ComRAC 2017.	High

Title	Objectives and component tasks	Evaluation		
		Total cost (approx. only)	Priority/rank	Feasibility
Quantifying discards and bycatch reduction strategies GABTF and SET	Quantify the performance of discard and bycatch reduction strategies in the GABT Sector and SET Sector.  Recommendations for reducing discards and increasing NER and boat level profits in the trawl fisheries.	TBC	High. Initial proposal supported by ComRAC 2017.	
<b>NEW IDENTIFIED RESEARCH FOR 2019-20</b>				

## Research projects identified for inclusion in future research plans

Title	Objectives and component tasks	Evaluation		
		Total cost (approx. only)	Priority/rank	Feasibility
Better understanding of protected species interactions and potential impacts	<ul style="list-style-type: none"> <li>Quantitative measure of TEP interactions in the SESSF</li> <li>Assessment of population size for relevant species</li> </ul>	High	Low	Med
Changes in fishing power	Literature review/meta-analysis of changes to fishing power over time. Relates to under-caught TAC project. Commence with desktop study looking at available information. Note work already done on mesh sizes on the Danish seine fleet.	Low	Low	High
Review of SESSF catch history	Document catch history of key SESSF species which would be available for use in assessments.	Low	Medium	High
Orange roughy (non-eastern) stock status update	Investigate options for updating stock status understanding of non-eastern orange roughy. Work for 2018/19 FY includes exploration of existing data, including ageing of otoliths. Future work under the proposed Workplan (not for 18/19 FY) includes additional sampling and a Tier 1 stock assessment.	\$60k	Low (currently based on concession holder advice)	High
Updating knowledge of key species biology	Update species biology information for selected key SESSF species which would be available for use in assessments.	Medium	High (not FRDC).	High
How to account for discards in CPUE analysis	In relation to CPUE analysis, assess levels of discards and consider the impact of discarding quota and non-quota species and possible responses. Eg determining how to deal with discards of all or part of catch in a shot.	Low	Medium (may become more important with revised HSP)	High
Maximising economic returns for the Australian community	<ul style="list-style-type: none"> <li>Identify factors which impact on the profitability of individual operators and the fishery.</li> <li>Improve market dynamics.</li> </ul>	Medium	Medium (awaiting under-caught TACs)	



	<ul style="list-style-type: none"> <li>• Increase efficiency of vessels.</li> </ul>			
Post-release survival rates of gummy shark	Investigation of the post-release survival rates of gummy shark (focus on tertiary stress response) caught by either gillnet or longline.	\$120 000	Medium, subject to clarification of rationale from the RAG and application to management.	Medium
Post-release survival rates of school shark.	Investigation of the post-release survival rates of school shark. Noting school shark survival is relevant for management of school shark (focus on immediate and post-release morality <sup>1</sup> ).	Medium Not supported by ARC in March 2017	Medium	High
Review of Australian sea lion science	Review the current science on Australian sea lion population dynamics and seek to identify significant sources of Australian sea lion mortality.	Low	Low Refer to MMWG	High
Identification of school shark nursery areas in South Australia	Identify nursery areas for school shark in South Australia for potential future conservation areas. PhD student (Matt McMillan) currently undertaking this work.	Low	Medium	High
Strengthening the Tier 1 Gummy Shark assessment	In relation to the Tier 1 assessment for gummy shark: <ul style="list-style-type: none"> <li>• Investigate how density dependence is incorporated into the stock assessment model including a review of 'Population biology and dynamics of the gummy harvested off southern Australia' (Walker 2010)</li> <li>• Investigate age composition data sample design.</li> </ul>	Medium	Medium To be undertaken prior to 2019 assessment	High
Options for data poor assessments	Develop improved assessment methods for low catch and data poor species in the SESSF.	Low	Medium	High

# ATTACHMENT 1

Species	MYTAC in 2018-19 season	Last assessed and assessment tier	2018	2019	2020	2021	2022	2023	AFMA management comment
Alfonsino	4th year of a 3 year MYTAC	2014		3			3		SESSFRAG advice to push back because of low catches
Bight Redfish	3rd year of 5 year MYTAC	2015			1				SESSFRAG requested GABRAG to review the GABFIS and catch rates during the MYTAC period
Blue Eye Trevalla	Single year TAC	2017	4/5			4		4	Tier 4 for slope, Tier 5 for seamounts
Blue Grenadier	5th year of a 3 year MYTAC	2013	1			1			Under-caught and above target
Blue Warehou	N/A	2014							
Deepwater Flathead	2nd year of a 3 year MYTAC	2016		1			1		
Deepwater shark east	Single Year TAC	2017	4			4			SESSFRAG recommended a revised CTARG not including catch from inside the closures
Deepwater shark west	Single Year TAC	2017	4			4			SESSFRAG recommended a revised CTARG not including catch from inside the closures
Elephant Fish	Single year TAC	2017 (not accepted)		?					SESSFRAG recommended postponing this assessment pending further advice on assessment approach.
Flathead	2 <sup>nd</sup> of 3 Year MYTAC	2016		1			1		
Gemfish - East	N/A	2010			1			1	
Gemfish - west	2nd year of a 3 year MYTAC	2016		4			4		Advice from GABRAG is to move to a Tier 4 for the CTS component of the stock. Move assessment to SERAG
Gummy Shark	2nd year of a 3 year MYTAC	2016		1?			1		SESSFRAG advice for SharkRAG to consider moving the assessment back by 2 years
Jackass Morwong	3rd year of a 3 year MYTAC	2015	1						
John Dory	1st year of a 3 year MYTAC	2017			4				SESSFRAG advice to consider how to assess this and other species with conflicting data
Mirror Dory	Single year TAC	2017	4	4	4	4	4	4	Annual assessment given the cyclical nature of stock abundance
Ocean Perch	1st year of a 3 year MYTAC	2017			4			4	
Orange Roughy - south	N/A	2000							
Orange Roughy - east	1st year of a ? year MYTAC	2017			1			1	
Orange Roughy - west	N/A	2002							Limited effort, bycatch TAC
Orange Roughy - Cascade Plateau	N/A	2009							Limited data

## ATTACHMENT 1

Orange Roughy - Albany & Esp	N/A	N/A							Limited effort, bycatch TAC
Oreo Smooth - Cascade	Long term TAC (catch dependent)	2010							Limited data
Oreo Smooth - other	3rd year of a 3 year MYTAC	2015		5?					Consider approach to assessment at SESSFRAG 2019
Oreo Basket	1st year of a 3 year MYTAC	2017			4				
Pink Ling	3rd year of a 3 year MYTAC	2015	1			1			
Redfish	N/A, bycatch TAC	2017			1			1	
Ribaldo	1st year of a 3 year MYTAC	2017			4			4	
Royal Red Prawn	1st year of a 3 year MYTAC	2017			4			4	
Saw Shark	1st year of a 3 year MYTAC	2017			4			4	
School Shark	N/A (Index of Abundance start 14/15)	2012	1			1			Apply close kin genetics index of abundance
School Whiting	1 <sup>st</sup> of a 3 year MYTAC	2017			1			1	Stock structure work prior to 2020 assessment
Silver Trevally	1st year of a 3 year MYTAC	2017			4			4	
Silver Warehou	3rd year of 3 year MYTAC	2015	1			1			
			2018	2019	2020	2021	2022	2023	

## Attachment A FRDC funded projects (June 2018)

FRDC Project no.	Title	PI	Applicant	Status at 2 July 2018	Comment
2017-010	A re-examination of underlying model assumptions and resulting abundance estimates of the Fishery Independent Survey (FIS in Australia's SESSF)	Miriana Sporcic	CSIRO	Progress report was due 16/7/2018	Update of progress of underlying model assumptions.
2016-146	Understanding factors influencing undercaught TACs, declining catch rates and failure to recover for many quota species in the SESSF	Ian Knuckey	Fishwell Consulting	Draft final report imminent	
2016-139	Decadal scale projection of changes in Australian fisheries stocks under climate change	Beth Fulton	CSIRO	Final report received	Findings used to inform 2016-059
2016-059	Adaptation of Commonwealth fisheries management to climate change	Nick Rayns	AFMA	Progress report imminent	Findings from 2016-139 used to inform this project (2016-139 caused delays to delivery of this project)
2015-202	Maximising net economic returns from a multispecies fishery	Sean Pascoe	CSIRO	Draft final report in internal review	
2014-203	SESSF Monitoring and Assessment – strategic review	Ian Knuckey	AFMA	Final report achieved	Upload to FRDC website imminent