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)

<table>
<thead>
<tr>
<th>Title</th>
<th>Objectives and component tasks</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RESEARCH UNDERWAY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated Scientific Monitoring Program (ISMP)</td>
<td>AFMA observer program, logbooks</td>
<td>$600k (funded by the Fishery, not ARC)</td>
</tr>
<tr>
<td>Fish Ageing for SESSF quota species</td>
<td>Undertake fish ageing for the SESSF to support stock assessments</td>
<td>$262k approx (total project cost over three years 2017-18 to 2019-20 is $786k approx)</td>
</tr>
<tr>
<td>Analysis of Electronic Monitoring Data</td>
<td>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.</td>
<td>$70k</td>
</tr>
<tr>
<td>Title</td>
<td>Objectives and component tasks</td>
<td>Evaluation</td>
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<tr>
<td>--------------------------------------------</td>
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<tr>
<td>SESS Fishery Independent Survey</td>
<td>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.</td>
<td>Did not proceed in 2018 Essential High</td>
</tr>
<tr>
<td>NEW IDENTIFIED RESEARCH FOR 2019-20</td>
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<tr>
<td>Stock assessments for the SESSF 2018-19 to 2020-21</td>
<td>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.</td>
<td>$200k approx. (total project cost over three years - $900k approx.)</td>
</tr>
</tbody>
</table>
| GHAT CPUE calculation methodology | 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:  
  - from catch by shot to catch by metres of net set to better account for zero shots. | $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 |
### RESEARCH UNDERWAY (FOR FULL LIST OF FRDC PROJECTS SEE ATTACHMENT A)

<table>
<thead>
<tr>
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</table>
| Under-caught TACs and lack of stock recovery                        | Determine why some TACs in the SESSF are under caught and propose options to resolve this where possible  
Investigate the decline or lack of recovery of low biomass stocks given periods of low catches and expected recovery (e.g., 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. | Funded 2016/17 ComRAC funding ($250k set aside)                                                        | High – Top priority                                                                                     | High |
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<tr>
<td>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)</td>
<td>Undertake research with the objectives: 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). 2) Develop and quantitatively test options for a fishery-wide harvest strategy, including reference points and decision rules that can applied to the appropriate sub-fisheries and achieve MEY outcomes for the fishery as a whole. 3) Integrate the outputs from 2 and 1 (iii) above to produce a complete tested draft revision of the SESSF Harvest Strategy 4) Conduct a cost-benefit analysis for implementation of a new draft SESSF Harvest Strategy, drawing on SMARP project analyses and recommendations.</td>
<td>High, costs yet to be determined. High. Initial proposal supported by ComRAC 2017. High</td>
</tr>
<tr>
<td>School whiting stock structure and catch composition</td>
<td>Determining the stock structure of eastern school whiting stock and better understanding the species composition mix between eastern school whiting and stout whiting. Recommendations for approaching assessment(s) based on the outcomes of stock structure work.</td>
<td>TBC</td>
</tr>
<tr>
<td>Title</td>
<td>Objectives and component tasks</td>
<td>Evaluation</td>
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<tr>
<td>----------------------------------------------------------------------</td>
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</tbody>
</table>
| 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                               |

**NEW IDENTIFIED RESEARCH FOR 2019-20**
### Research projects identified for inclusion in future research plans

<table>
<thead>
<tr>
<th>Title</th>
<th>Objectives and component tasks</th>
<th>Evaluation</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total cost (approx. only)</td>
</tr>
</tbody>
</table>
| Better understanding of protected species interactions and potential impacts | • Quantitative measure of TEP interactions in the SESSF  
• Assessment of population size for relevant species | 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             | • Identify factors which impact on the profitability of individual operators and the fishery.  
• Improve market dynamics.                                          | Medium                          | Medium (awaiting under-caught TACs) |              |
<table>
<thead>
<tr>
<th>Project Description</th>
<th>Scientific Objective</th>
<th>Funding</th>
<th>Priority</th>
<th>Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase efficiency of vessels.</td>
<td></td>
<td></td>
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<tr>
<td>Post-release survival rates of gummy shark</td>
<td>Investigation of the post-release survival rates of gummy shark (focus on tertiary stress response) caught by either gillnet or longline.</td>
<td>$120 000</td>
<td>Medium</td>
<td>Subject to clarification of rationale from the RAG and application to management.</td>
</tr>
<tr>
<td>Post-release survival rates of school shark.</td>
<td>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).</td>
<td>Medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review of Australian sea lion science</td>
<td>Review the current science on Australian sea lion population dynamics and seek to identify significant sources of Australian sea lion mortality.</td>
<td>Low</td>
<td>Low</td>
<td>Refer to MMWG</td>
</tr>
<tr>
<td>Identification of school shark nursery areas in South Australia</td>
<td>Identify nursery areas for school shark in South Australia for potential future conservation areas. PhD student (Matt McMillan) currently undertaking this work.</td>
<td>Low</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Strengthening the Tier 1 Gummy Shark assessment</td>
<td>In relation to the Tier 1 assessment for gummy shark:</td>
<td>Medium</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>- 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)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>- Investigate age composition data sample design.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Options for data poor assessments</td>
<td>Develop improved assessment methods for low catch and data poor species in the SESSF.</td>
<td>Low</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Species</td>
<td>MYTAC in 2018-19 season</td>
<td>Last assessed and assessment tier</td>
<td>2018</td>
<td>2019</td>
</tr>
<tr>
<td>-------------------------------</td>
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</tr>
<tr>
<td>Alfonsino</td>
<td>4th year of a 3 year MYTAC</td>
<td>2014</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bight Redfish</td>
<td>3rd year of 5 year MYTAC</td>
<td>2015</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Blue Eye Trevalla</td>
<td>Single year TAC</td>
<td>2017</td>
<td>4/5</td>
<td>4</td>
</tr>
<tr>
<td>Blue Grenadier</td>
<td>5th year of a 3 year MYTAC</td>
<td>2013</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Blue Warehou</td>
<td>N/A</td>
<td>2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deepwater Flathead</td>
<td>2nd year of a 3 year MYTAC</td>
<td>2016</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Deepwater shark east</td>
<td>Single Year TAC</td>
<td>2017</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Deepwater shark west</td>
<td>Single Year TAC</td>
<td>2017</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Elephant Fish</td>
<td>Single year TAC</td>
<td>2017 (not accepted)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flathead</td>
<td>2nd of 3 Year MYTAC</td>
<td>2016</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Gemfish - East</td>
<td>N/A</td>
<td>2010</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Gemfish - west</td>
<td>2nd year of a 3 year MYTAC</td>
<td>2016</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Gummy Shark</td>
<td>2nd year of a 3 year MYTAC</td>
<td>2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jackass Morwong</td>
<td>3rd year of a 3 year MYTAC</td>
<td>2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>John Dory</td>
<td>1st year of a 3 year MYTAC</td>
<td>2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mirror Dory</td>
<td>Single year TAC</td>
<td>2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ocean Perch</td>
<td>1st year of a 3 year MYTAC</td>
<td>2017</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Orange Roughy - south</td>
<td>N/A</td>
<td>2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange Roughy - east</td>
<td>1st year of a ? year MYTAC</td>
<td>2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange Roughy - west</td>
<td>N/A</td>
<td>2002</td>
<td></td>
<td></td>
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<tr>
<td>Orange Roughy - Cascade Plateau</td>
<td>N/A</td>
<td>2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Species</td>
<td>Age/Status</td>
<td>Year</td>
<td>Method</td>
<td>Notes</td>
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</tr>
<tr>
<td>Orange Roughy - Albany &amp; Esp</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td>Limited effort, bycatch TAC</td>
</tr>
<tr>
<td>Oreo Smooth - Cascade</td>
<td>Long term TAC (catch dependent)</td>
<td>2010</td>
<td></td>
<td>Limited data</td>
</tr>
<tr>
<td>Oreo Smooth - other</td>
<td>3rd year of a 3 year MYTAC</td>
<td>2015</td>
<td>5?</td>
<td>Consider approach to assessment at SESSFRAG 2019</td>
</tr>
<tr>
<td>Oreo Basket</td>
<td>1st year of a 3 year MYTAC</td>
<td>2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pink Ling</td>
<td>3rd year of a 3 year MYTAC</td>
<td>2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redfish</td>
<td>N/A, bycatch TAC</td>
<td>2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RibaIdo</td>
<td>1st year of a 3 year MYTAC</td>
<td>2017</td>
<td></td>
<td></td>
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<tr>
<td>Royal Red Prawn</td>
<td>1st year of a 3 year MYTAC</td>
<td>2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saw Shark</td>
<td>1st year of a 3 year MYTAC</td>
<td>2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Shark</td>
<td>N/A (Index of Abundance start 14/15)</td>
<td>2012</td>
<td>1</td>
<td>Apply close kin genetics index of abundance</td>
</tr>
<tr>
<td>School Whiting</td>
<td>1st of a 3 year MYTAC</td>
<td>2017</td>
<td></td>
<td>Stock structure work prior to 2020 assessment</td>
</tr>
<tr>
<td>Silver Trevally</td>
<td>1st year of a 3 year MYTAC</td>
<td>2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silver Warehou</td>
<td>3rd year of 3 year MYTAC</td>
<td>2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRDC Project no.</td>
<td>Title</td>
<td>PI</td>
<td>Applicant</td>
<td>Status at 2 July 2018</td>
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<tr>
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</tr>
<tr>
<td>2017-010</td>
<td>A re-examination of underlying model assumptions and resulting abundance estimates of the Fishery Independent Survey (FIS in Australia’s SESSF)</td>
<td>Miriana Sporcic</td>
<td>CSIRO</td>
<td>Progress report was due 16/7/2018</td>
</tr>
<tr>
<td>2016-146</td>
<td>Understanding factors influencing undercaught TACs, declining catch rates and failure to recover for many quota species in the SESSF</td>
<td>Ian Knuckey</td>
<td>Fishwell Consulting</td>
<td>Draft final report imminent</td>
</tr>
<tr>
<td>2016-139</td>
<td>Decadal scale projection of changes in Australian fisheries stocks under climate change</td>
<td>Beth Fulton</td>
<td>CSIRO</td>
<td>Final report received</td>
</tr>
<tr>
<td>2016-059</td>
<td>Adaptation of Commonwealth fisheries management to climate change</td>
<td>Nick Rayns</td>
<td>AFMA</td>
<td>Progress report imminent</td>
</tr>
<tr>
<td>2015-202</td>
<td>Maximising net economic returns from a multispecies fishery</td>
<td>Sean Pascoe</td>
<td>CSIRO</td>
<td>Draft final report in internal review</td>
</tr>
<tr>
<td>2014-203</td>
<td>SESSF Monitoring and Assessment – strategic review</td>
<td>Ian Knuckey</td>
<td>AFMA</td>
<td>Final report achieved</td>
</tr>
</tbody>
</table>