Australian Government

Australian Fisheries Management Authority

Minutes

Meeting	Shark Resource Assessment Group (SharkRAG)		
Meeting Number	1 out of 3	Date	31 July 2025
Location	Online, Microsoft Teams	Time	13:00 – 17:00
Members	Dr Rik Buckworth (Chair) Dr Robin Thomson (Scientific member) Dr Matias Braccini (Scientific member) Dr Charlie Huveneers (Scientific member) Dr Caleb Gardener (Economic member) Mr Kyriakos Toumazos (Industry member) Mr Anthony Harriss (Industry member) Mr Jamie Papas (Industry member) Dr Lianos Triantafillos (AFMA member) Ms Michelle Henriksen (Executive officer – AFMA)		
Apologies	Ms Anissa Lawrence (Conservation member) Mr Leigh Castle (Industry member)		
Invited Participants	Mr Ross Bromley (SSIA[1]) Dr Pia Bessell-Browne (CSIRO[2]) Dr Paul Burch (CSIRO)		
Observers	Mr Kurt Davis (ABARES[3]) Mr James Woodhams (ABARES) Mr Anthony Coggan (AFMA) Mr Dan Corrie (AFMA)		

Agenda Item	Title/Topic/Issue	Notes, Action & Recommendations
1.	Preliminaries	1.1 Welcome and apologies The Chair, Dr Rik Buckworth, opened the meeting with an Acknowledgement of Country and welcomed participants. The Chair also facilitated the

[1] Southern Shark Industry Association
[2] Commonwealth Scientific and Industrial Research Organisation
[3] Australian Bureau of Agricultural and Resource Economics and Sciences

		introduction of meeting participants and noted apologies, which is recorded in the table above. Meeting participants were informed that the meeting would be recorded for the purpose of assisting the preparation of meeting minutes. 1.2 Declarations of interests The SharkRAG noted, in line with Section 15 of *Fisheries Management Paper 1 – Consultative Committees* (FMP1), the requirement for all meeting participants to declare relevant interests, not limited to pecuniary gain, regarding all agenda items proposed for SharkRAG. Declared interests are recorded in the register of interest at **Attachment B**. 1.3 Adoption of agenda The agenda was adopted as final (**Attachment A**). 1.4 Minutes of previous meeting AFMA noted that the minutes from SharkRAG meeting held on 31 July 2025 were distributed to SharkRAG members for feedback prior to finalisation and are available on the AFMA website. 1.5 Actions arising from previous meetings SharkRAG endorsed the status of all action items from previous meetings, except for the item raised in SharkRAG 1 (2023) regarding improving discard reporting and exploring industry-led options to enhance it. Members requested this issue be revisited, with particular attention to assess the congruence between logbook data and EM for key non-target discard species, ETPs, and other bycatch species A summary of actions and recommendations from SharkRAG are at **Attachment C**. **Action 1:** AFMA, CSIRO and ABARES to refocus the action item raised in SharkRAG 1 2023 *"improve discard reporting and the potential options industry can undertake to improve better discard reporting"* to assess the congruence between discards and EM for non-target and bycatch species.
2	Fishery Update	SharkRAG noted updates from AFMA and the RAG memberships regarding current management arrangements and activities in the Commonwealth Shark Fishery. 2.1 AFMA Management • AFMA is preparing a contract for a desktop study proposed by SSIA to assess the implications of allowing automatic baiting in the Bass Strait. The study will examine potential impacts on economic value, Total Allowable Catches (TACs), bycatch species and benthic habitats. A final report is expected by December 2025. • The Fisheries Research and Development Corporation (FRDC) has agreed to fund the second phase of the multispecies harvest strategy project. This research will develop and test harvest strategies tailored for the Southern and Eastern Scalefish and Shark Fishery (SESSF). • The SESSF has been re-accredited as an approved Wildlife Trade Operation (WTO) for a three-year period from 1 July 2025. Key SharkRAG related conditions include: ○ a review of the school shark rebuilding strategy to be completed by January 2028.

		○ engage with state jurisdictions to share management responsibility for stocks subject to overfishing and effectively manage all forms of mortality, particularly for school shark. ○ continued implementation of the gillnet dolphin mitigation strategy. • Five endemic shark and ray species are under consideration for listing under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). AFMA supports a conservation dependent listing but holds concerns about data limitations and the feasibility of rebuilding targets. Misidentification issues (e.g., whitefin swellshark vs. draughtboard shark) were also highlighted. AFMA is continuing discussion with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) and the Threatened Species Scientific Committee (TSSC) regarding these matters. Final advice from the TSSC is expected in October 2025. 2.2 Industry update • Gummy shark fishing has been steady and productive, with yearly improvements across South Australia and the Bass Strait. • There is increasing difficulty in avoiding school shark, including in historically low-interaction areas. Observations suggest a significant increase in school shark abundance, with some operators reporting two to three times more interactions than in previous years. • Economic challenges were reported, particularly due to: ○ difficulty competing with imported products, specifically with New Zealand imports of school shark and gummy shark, which at $18-21 /kg are priced significantly lower than Australian products. ○ reduced processing capacity due competing New Zealand market prices and market saturation. • Concerns were raised about the inconsistency in school shark management across jurisdictions, particularly the impact of potential high school shark catches in Western Australia. 2.3 Scientific update • CSIRO presented a summary of an upcoming research project that aims to complete a spatial analysis to quantify school shark bycatch in the SESSF. Preliminary results will be presented at the next SharkRAG meeting in November 2025, with a final analysis provided at a third meeting due to the scheduled in late 2025/early 2026. The analysis will include: ○ spatial and temporal distribution of school shark bycatch. ○ school-to-gummy shark ratios to assess economic implications. ○ discard estimates across sectors. 2.4 Economic update • No updates were provided by the economics member. 2.5 Conservation update • No updates were provided by the conservation member.
3	Close-kin Mark-Recapture assessments	An update on the close-kin mark-recapture (CKMR) assessment was provided by Dr Robin Thomson (CSIRO). • CKMR is a mark-recapture method used to estimate absolute population abundance and demographic parameters by identifying

		close genetic relationships (e.g., parent-offspring, half-siblings) among sampled individuals. • The technique relies on DNA sequencing to detect kin pairs and uses the frequency and temporal distribution of these pairs to infer population size, survival rates, and reproductive output (although for school shark productivity at length is assumed known from biological investigations). • CKMR is particularly useful for species where traditional abundance indices (e.g., CPUE) are unreliable or unavailable. • The CKMR model is being updated with an additional 3000 samples, collected from 2018 to 2022. The addition of these new CKMR samples is expected to reduce overall uncertainty in population trend and further strengthen the robustness of the assessment. • Genetic sequencing and kin pair identification for the new samples brings the total to 8 POPs, 95 FSPs, and 204 HSPs—an increase of 5 POPs, 61 FSPs and 140 HSPs from the 2019 study. • Vertebral ages are available for the original 3,000 samples from 2019 and for 160 newly sampled individuals involved in new kin pairs. • To address the high uncertainty associated with vertebral ageing, a new statistical method has been developed to estimate age within the CKMR framework. This method uses full sibling pairs to calibrate and improve uncertain age measures such as those from vertebral aging and length measurement and will be incorporated into the updated CKMR model. • Industry is working to collect more samples from Western South Australia and Western Bass Strait to feed into the model. SharkRAG discussed the following: • Concerns were raised about the spatial structure assumed for school shark populations, with industry members suggesting the existence of regional, resident stocks not being fully captured by CKMR sampling. • Eastern Bass Strait was highlighted as a region with high kin-pair density, prompting discussion on juvenile aggregation. • Industry representatives believe there are differences in shark morphology and behavior across regions. • Concerns about the reliability of ageing were noted, with vertebral ageing showing significant error margins. Efforts to improve age estimation using genetic markers were unsuccessful within the budget and timeframe of this project. • The kin pair data show no evidence for regional clustering of related individuals, with the exception of sibling pairs in EBS. • CSIRO requests skippers to inform them if any tag-and-recaptured individuals are found. It was emphasized that these known age individuals could be very helpful in calibrating ageing methods. • The next CKMR assessment is scheduled to be completed by November 2025 and will be presented to SharkRAG 2.
4	Harvest control rule project update	CSIRO, Dr Pia Bessell-Browne, provided an update on the project exploring the use of Spawning Potential Ratio (SPR) as the basis for harvest control rules (HCRs) with Close Kin Mark Recapture data, particularly where estimates of unfished biomass (B_0) are unavailable.

		• Traditional HCRs often rely on estimates of B_0, to determine stock status. • Estimating B_0 accurately is challenging, particularly in dynamic environments where productivity may fluctuate. • The project aimed to develop an HCR for a school shark-like population that can be used without a measure of B_0. • Stock assessments based on CKMR data can accurately estimate absolute abundance from genetic relationships among sampled individuals as well as fishing mortality rate (if known catches are incorporated into the model) SPR (spawners per recruit) is a measure of the expected lifetime reproductive potential of an average fish. SPRR (SPR ratio) is the ratio of SPR in a fished population relative to an unfished one. • Simulation testing was conducted using a school shark-like population model, incorporating close-kin data and age-structured dynamics. • Results showed that SPR-based HCRs produced stable catch recommendations and tracked biomass trends effectively. • The SPR approach may reduce variability in recommended catches compared to traditional HCRs, aligning with harvest strategy performance objectives. • A future project is required to develop HCR parameters tuned for school shark to assess the performance of HCRs under various productivity scenarios. SharkRAG discussed the following: • The SPR approach was also tested on an example teleost species, indicating potential for broader use. However, the performance of the method may be limited for fisheries lacking close-kin data or robust age/length sampling. • While SPR-based HCRs are consistent with harvest strategy policy, the conservation-dependent listing of school shark requires continued focus on recovery objectives that are defined relative to B_0 noting that the project developed an alternate estimate of $B_{unfished}$, which is B_0 under current productivity conditions. Full Management Strategy Evaluation (MSE) testing is required to validate the SPR-based approach and ensure that is will not have unexpected consequences. Ideally this work will include consideration of technical interactions with gummy shark and optimisation of reference point parameters.
5	SPR literature review	SharkRAG noted the presentation by AFMA member Dr Lianos Triantafillos on the evidence for a shift in school shark productivity baselines and the use of SPR based assessments and associated HCRs in the SESSF: • School shark have been classified as overfished and subject to overfishing in the ABARES fishery status report and have been listed as conservation dependent under the EPBC Act since 2009. • The School Shark Rebuilding Strategy has been in place since 2008 and aims to restore the stock to above 20% of unfished biomass over 3 generations by 2074 (66 years since 2008) using a range of

		management measures to constrain school shark catch. This includes setting a minimum incidental bycatch TAC, gear restrictions, mandatory live release rule, and spatial closures.
		• There are signs that this rebuilding strategy is performing as intended, including:
		  ○ an increasing CPUE in the SESSF trawl sector
		  ○ anecdotal reports from industry of high school shark abundance
		  ○ increased state catches and discards in recent years, and
		  ○ changing fleet dynamics to avoid areas of high school shark abundance.
		• There is evidence that the productivity of school shark has changed since the 1990s, including:
		  ○ Punt et al's stock assessment model could not account for the steep decline in catch rates of school shark during the late 1980s – 1990s under a single stock model. The CKMR model could not sustain the high catches of the 1990s given the current low stock abundance.
		  ○ the degradation of critical nursery areas in Tasmania and Victoria in the 1980s and 1990s resulted in a marked decline in the catch rates of pups and juveniles, when these nursery areas were re-sampled in the 1990s. In some areas, pups were no longer present, suggesting that they may no longer function as viable nursery habitats
		  ○ increased juvenile growth rates in less degraded nursery areas, possibly due to reduced competition from lower population density (Stevens and West 1997).
		• Anthropogenic pressures such as climate change and urbanisation are likely to impede the recovery of the nursery areas, making a return to historical abundance levels highly improbable.
		• Current management reference points that rely on the assumption that school shark stocks will return to historical abundances in the absence of fishing are no longer applicable.
		• The CKMR assessment cannot be used to determine the stock status of school shark because it provides an estimate of absolute abundance, without representing population dynamics back to unfished levels, whereas the current harvest strategy policy relies on estimates of abundance relative to B_0.
		• SPR-reference points are robust to plausible levels of life-history variability under environmental change –supporting the use of SPR as a reliable, adaptable tool, even under changing environmental conditions.
		• SPR-based HCRs are inherently precautionary, especially when using an SPR of 40% or higher, and there are no policy or guideline barriers to using SPR-based HCR in Commonwealth fisheries. This approach aligns with the CFHSP emphasis on evidence-based, precautionary, and cost-effective management.
		• The SPR approach is therefore proposed as an alternative method to assess the stock status of school shark and inform a bycatch TAC.
		• The SPR method indicates a suitable method for species such as school shark with slow growth rates and late maturity stages.

		SharkRAG discussed the following: • There was broad support for the view that school shark productivity has changed, and it is no longer applicable to use reference points that rely on B_0. • More discussion is required to determine how a change in productivity can be quantified in an assessment, and whether the productivity change is a removal of the stock or removal of part of the recruitment capacity. • There was an agreement for AFMA to develop a formal document summarising the evidence of school shark productivity change and SPR justification containing citations. • Industry is not looking for substantial changes to be made to the current school shark measures and support maintaining area closures. Industry instead seeks more operational flexibility to reduce discards and improve the harvesting ability of gummy shark. • There was support to adopt the SPR approach, noting that a process will need to be determined in the interim until the method can be MSE tested. It was noted that this work should be considered at the Southern and Eastern Scalefish and Shark Fishery Resource Assessment Group (SESSFRAG) data meeting in August 2025. SharkRAG provided the following advice and recommendations: • Catalogue the evidence for change in school shark productivity into a formal document. • Full MSE testing of the SPR approach to be pursued as a longer-term priority. **Action 2:** The evidence for change in school shark productivity that was presented by Dr Lianos Triantafillos (AFMA) to be released as a formal document. **Recommendation 1:** That a basic SPR approach is used going forward for assessing the stock status and setting the school shark bycatch TAC in the interim until full MSE testing can be completed.
6	Other business	SharkRAG noted the following: • SharkRAG to reconvene in November 2025 to review the CKMR assessment results, with possible follow-up meetings in December and/or January to finalise TAC advice. • Research highlighted as key priorities to be considered for funding by SESSFRAG in August 2025 and the AFMA Research Council (ARC) include: 1. MSE testing of a novel SPR based approach to determine stock status and set the TAC for school shark. • Additional research highlighted by SharkRAG, although lower in priority include: 1. Investigation of discards of logbook reports through a congruence analysis. 2. Understanding the stock structure of school shark

		3. Improving age estimation of school shark (currently part of ongoing updates to the school shark CKMR model). **Recommendation 2:** The following research priorities were highlighted as priorities for the next 12 months to be considered by SESSFRAG in August 2025 and the ARC: 1. MSE testing of a novel SPR based approach to determine stock status and set the TAC for school shark.
Close of meeting		The Chair closed the meeting at 17:33pm

Attachment A – Adopted agenda

Time (AEST): 13:00 pm – 16:45 pm
Location: Online, Microsoft Teams
Chair Name: Dr. Rik Buckworth

Time	Item	Purpose	Presenter
13:00 (15 min)	**Agenda item 1. Preliminaries**		
	1.1 Welcome and apologies	For noting/advice	Chair/Executive officer
	1.2 Declaration of interests		
	1.3 Adoption of agenda		
	1.4 Minutes from previous meeting		
	1.5 Actions arising from previous meetings		
13:15 (30 min)	**Agenda item 2. Fishery update**		
	2.1 AFMA Management	For noting/advice	AFMA/Members of each group
	2.2 Industry updates		
	2.3 Scientific updates		
	2.3 Economic updates		
	2.3 Conservation updates		
13:45 (60 min)	**Agenda item 3. Close-Kin Mark-Recapture assessments**		
	3.1 CKMR assessment approach	For noting	Dr Robin Thomson
	3.2 School shark CKMR update		
14:45 (15 min)	**Break**		
15:00 (45 min)	**Agenda item 4. Harvest control rule project update**	For noting	Dr Pia Bessell-Browne
15:45 (45 min)	**Agenda item 5. SPR literature review**	For noting	Dr Lianos Triantafillos
16:30 (15 min)	**Agenda Item 6. Other business**	For advice	AFMA
16:45	**End of Meeting**		

Attachment B – Register of interests

Table 1. Members', invited participants' and observers' declarations of interest

Member	Position	Interest declared
Rik Buckworth	Chair	Chair of SharkRAG. Director of Sea Sense Australia Pty Ltd Scientific Member – NPRAG Member – Data Working Group for the GABTF Adjunct Professor – Charles Darwin University Current or anticipated projects with government agencies, CDU and fishing industry for projects in the NT, Qld and Commonwealth fisheries. Researcher involved particularly in stock assessment research. No pecuniary or other interest in the SESSF shark fishery.
Robin Thomson	Scientific Member	CSIRO, Assessment scientist. Acquiring funding for research purposes. PI of AFMA-CSIRO co-funded project 'Ongoing monitoring of school shark abundance and rebuilding in the SESSF using close kin mark recapture'. PI of the AFMA-funded project 2022/0806: "CKMR assessment design for selected key and rebuilding species in the SESSF and development of a CKMR tool for bycatch stocks". Co-investigator on FRDC project to develop harvest strategies for CKMR assessments for school shark and scalefish.
Charlie Huveneers	Scientific Member	Associate Professor and research scientist. Potential interest in funding for research. No pecuniary interest or otherwise.
Matias Braccini	Scientific Member	Employed by WA DPI Senior research scientist for the Shark and Ray Sustainability research group Potential interest in funding for research. No pecuniary interest or otherwise.

Member	Position	Interest declared
Caleb Gardner	Economic Member	Institute for Marine and Antarctic Studies. Organisation is known to submit research funding applications for consideration by AFMA Committees
Kyriakos Toumazos	Industry Member	Chief Executive Officer (South Australian Northern Zone Rock Lobster Fishermen's Association Inc.); Director of Southern Sea Eagles Pty Ltd; Director of Southern Fisheries Pty Ltd; Director Health Balance Pharmacies Pty Ltd; Member South Australian Boating Facility Board; Member of Shark Resource Assessment Group (AFMA); Member of South East Management Advisory Committee; Member of AMSA Regional Safety Committee; Director Southern Shark Industry Alliance; Director PACK Investments Pty Ltd; Director Cruickshank's Corner Developments Pty Ltd; Director Cruickshank's Corner Commercial Pty Ltd; Director Seafood Industry Australia;
Leigh Castle	Industry Member	Tasmanian shark hook, scalefish hook and tuna minor line fisher. Owns SESSF quota and vessel statutory fishing rights. Has a declared interest in shark hook items and RBC recommendations
Anthony Harriss	Industry Member	Gillnet fisher and SFR holder.
Jamie Papas	Industry Member	Gillnet fisher and SFR holder. Board Director San Remo Fishermen's Co/Op
Anissa Lawrence	Conservation Member	Director of TierraMar Ltd, registered charity. Independent consultant TierraMar Consulting Pty Ltd Undertakes contracts for a number of Conservation Non-Government Organisations, government departments, non-government agencies and the private sector on a range of fishery related matters. No pecuniary interest. Conservation member on SPFRAG. Conservation member on SEMAC Conservation member on South Australia Rock Lobster MAC and RSC. Conservation member on Spencer Gulf Prawn RSC

Member	Position	Interest declared
		Director and Chair of Ocean Future Fund Inc
Ross Bromley	Invited Participant	Principal of Girella Fisheries Services. Engaged by SSIA as SIDaC manager. Engaged by SETFIA as western orange roughy project manager. Member of Victorian Rock Lobster RAG. EO of Eastrock (Eastern Zone Rock Lobster Industry Association Inc.). Client representative of various MSC Certificates (none are shark *spp*.). No interest, pecuniary or otherwise.
Pia Bessell-Browne	Invited Participant	CSIRO assessment scientist. Acquiring funding for research purposes. PI on FRDC project: Developing a harvest control rule to use in situations where depletion can no longer be calculated relative to unfished levels.
Paul Burch	Invited Participant	Employed by CSIRO, assessment scientist. Acquiring funding for research purposes. Principal investigator on the SESSF stock assessment project.
Lianos Triantafillos	AFMA Member	AFMA member, Manager of the Gillnet, Hook and Trap fishery. No interest pecuniary or otherwise.
Michelle Henriksen	Executive Officer	AFMA EO. No interest pecuniary or otherwise.
Kurt Davis	Observer	Employed by ABARES. No interest, pecuniary or otherwise.
James Woodhams	Observer	Employed by ABARES. No interest, pecuniary or otherwise.
Anthony Coggan	Observer	Employed by AFMA. No interest pecuniary or otherwise.
Sally Weekes	Observer	Employed by AFMA. No interest pecuniary or otherwise.

Attachment C - Summary of Actions and Recommendations

Agenda Item	No.	Action	Agency/Person Responsible	Timeframe
1	1	AFMA, CSIRO and ABARES to refocus the action item raised in SharkRAG 1 2023 *"improve discard reporting and the potential options industry can undertake to improve better discard reporting"* to assess the congruence between discards and EM for quota and ETP species.	AFMA/CSIRO/ABARES	SharkRAG 1 2026
5	2	The evidence for change in school shark productivity that was presented by Dr Lianos Triantafillos (AFMA) to be released as a formal document	AFMA	SharkRAG 2 2025
Agenda Item	**No.**	**Recommendation**	**Agency/Person Responsible**	**Timeframe**
5	1	That a basic SPR approach is used going forward for assessing the stock status and setting the school shark bycatch TAC in the interim until full MSE testing can be completed.	AFMA/CSIRO	SharkRAG 2 2025
6	2	The following research priorities were highlighted as priorities for the next 12 months to be considered by SESSFRAG in August 2025 and the ARC: 1. MSE testing of novel SPR based approaches	AFMA	SESSFRAG data meeting 2025