Shark Resource Assessment Group (SharkRAG) Meeting 1 2022

Meeting minutes

July 7 and 8 2022

Agenda item 1. Preliminaries

1.1 Welcome and apologies

1. The chair opened the meeting at 1300 hrs with an Acknowledgement of Country and welcomed members and observers.
2. Members and participants noted the meeting was being recorded.
3. **Membership**

   Sandy Morison Chair

   Robin Thomson Scientific member

   Andrew Penney Scientific member

   Charlie Huveneers Scientific member

   Julian Morison Economic member

   Kyri Toumazos Industry member

   Jamie Papas Industry member

   Craig Harris Industry member

   Anissa Lawrence Conservation member

   Lara Ainley AFMA member

   Roshan Hanamseth Executive officer
4. **Invited participants**

   James Woodhams ABARES
5. **Presenters**

   Tim Emery ABARES

   Don Bromhead ABARES

   Ian Knuckey Fishwell Consultancy
6. **Observers**

   Anna Willock AFMA

   Nastaran Mazloumi AFMA

   Phebe Rowland AFMA
7. **Apologies**

   Leigh Castle for 07/07/2022 and 08/07/2022

   James Woodhams for 07/07/2022

   Anna Willock for 07/07/2022

   Nastaran Mazloumi for 07/07/2022

   Phebe Rowland for 07/07/2022

   Jamie Papas for 08/07/2022

1.2 Declarations of interest

8. The chair invited SharkRAG members to discuss attendee declarations of interest.
9. SharkRAG members followed the declarations of interest procedure as outlined in Fisheries Administration Paper 12, updating the table included at Attachment A.
10. The following conflicts of interest were declared with specific agenda items:
    i. Industry member, Mr Toumazos noted conflicts of interest for agenda item 5, Transition of gillnet boats to longline fishing in Bass Strait.
    ii. Dr Thomson, Dr Huveneers, Mr Morison and Dr Penny noted conflicts of interest for agenda item 6, 2023-24 Research Priorities and SESSF Annual Research Statement.
11. The chair noted that the above individuals will leave the meeting to discuss the approach for the respective agenda items. SharkRAG members agreed, consistent with the approach taken in previous meetings, that members with conflicts of interests were welcomed to be part of discussion but not take part in the formulation of advice.

1.3 Adoption of agenda

12. The SharkRAG adopted the draft agenda (Attachment B) as final.

1.4 Minutes of previous meeting

13. The SharkRAG noted that the minutes of the SharkRAG meeting of November 2021 are available on the AFMA website.

1.5 Actions arising from previous meetings

14. The SharkRAG noted the action items from previous meetings and the updates provided by the AFMA member at Attachment C.

ACTION: Andrew Penney to be invited to present his work on the relationship between CPUE and net length to the next SharkRAG meeting in October 2022. Ensure that Miriana Sporcic (CSIRO) is also invited to attend this meeting.

ACTION: Andrew and Miriana to discuss the feasibility of combining LLS and LLA methods into a single CPUE time series.

ACTION: AFMA and ABARES to discuss the EM congruence analysis with Miriana to determine if there are any findings that would contribute to the CPUE standardisations work.

Agenda item 2. Fishery Updates

2.1 AFMA Update

15. The AFMA member provided an update on the management of the Gillnet, Hook and Trap (GHAT) sector of the Southern and Eastern Scalefish and Shark Fishery (SESSF) since the last RAG teleconference November 2021.
16. The SharkRAG noted and discussed the following points:
    a. There have been several AFMA management staff movements recently. Notably, Lara Ainley is currently managing the GHAT sector; Roshan Hanamseth is the Senior Management Officer for the GHAT sector; and Dan Corrie is the Senior Manager for the Demersal and Midwater Fisheries.
    b. The determinations of total allowable catch (TAC) made by AFMA Commission for the SESSF quota season were discussed, noting key decisions from the Commission:
        i. For gummy shark, the determined TAC was maintained at 1,672 tonnes rather than "stepdown" following a three-year MYTAC.
        ii. By maintaining the gummy shark TAC at 1,672 tonnes, the Commission noted that the best estimate of a true bycatch of school shark would be 250 tonnes, which deviated from advice provided by the RAG and MAC.
        iii. Based on concerns for the sustainability of several at-risk and associated species within the Commonwealth Trawl Sector (CTS), the Commission recognised the need for other measures and significant spatial closures. The measures will be primarily focussed on the CTS sector of the SESSF.
    c. AFMA has revised the logbook determination which now mandates the use of electronic logbooks regardless of the number of days fished.

2.2 Industry Update

17. The industry member Mr Toumazos updated SharkRAG, noting the following key points:
    a. Smaller operations are finding it harder to operate with current escalating costs of fishing.
    b. The last 24 months has been as good as any other time in the gummy shark fishery.
    c. School shark stock appear to have increased. Saw shark and gummy shark stocks are harder to determine as fishers tend to move away from areas where they catch them.

2.3 Scientific Update

18. The scientific member Dr Huveneers updated SharkRAG that a PhD student is currently investigating the life history of school shark.

19. The scientific member, Dr Thomson updated SharkRAG that some historical samples of school shark vertebrae were recently located and will be used in bomb radiocarbon analyses for a pilot project to investigate the development of a calibration set for age estimates from the new DNA based method.

2.4 Economic Update

20. The economic member updated SharkRAG that fuel costs, labour and labour availability in the current circumstances make it difficult.
21. There is a senate inquiry into the individual transferable quota (ITQ) system that started in December 2020 which is due to be finalised in October 2022. The aim of the inquiry is to analyse the way in which ITQ influences a fishery including its ecological, social and economic outcomes.
    a. To consider the fisheries quota system and examine whether the current 'managed microeconomic system' established around a set of individual transferable quotas (ITQs) results in good fishing practice, with particular reference to:
        i. good fishing practice that is ecologically sustainable with an economic dynamic that produces good community outcomes;
        ii. how the current quota system affects community fishers;
        iii. whether the current system disempowers small fishers and benefits large interest groups;
        iv. the enforceability of ecological value on the current system, and the current system's relationship to the health of the fisheries;
        v. whether the current system results in good fishing practice that is ecologically sustainable and economically dynamic, and produces good community outcomes; and
        vi. any other related matters.

Agenda item 3. EM logbook comparison analysis

22. Introductions were made by Dr. Tim Emery, Dr. Don Bromhead and Dr. Ian Knuckey. Industry members Mr. Jamie Papas and Mr. Craig Harris joined the meeting. The presenter Dr. Emery acknowledged fellow ABARES members that participated in the making of this report. They then presented the EM logbook comparison analysis.
23. SharkRAG noted the following key points:
    a. AFMA introduced electronic monitoring (EM) into the Eastern Tuna and Billfish Fishery (ETBF) and the Gillnet, Hook and Trap (GHAT) sector of the Southern and Eastern Scalefish and Shark Fishery (SESSF) in 2015. The AFMA EM program audits a minimum 10% of shots from each vessel and a minimum of one shot per hard drive for each vessel.

b. EM audits are conducted for analysis of catch composition, discards, and interactions with TEP species.
c. The objective of the current analysis is to provide an updated and expanded evaluation of the reliability of electronic monitoring and logbook data for informing fisheries science and management in the GHAT. Specifically, the analysis aims to:
    i. Compare both fishery level and individual vessel level similarity between logbook and EM data for commercial, bycatch and TEP species;
    ii. Determine if similarity has changed through time;
    iii. Identify, where possible, factors contributing to any differences between EM and logbook data; and
    iv. Make recommendations to improve management and fishery data collection.
d. The key results presented by Dr. Emery:
    i. In general, key commercial retained species (gummy shark, school shark, elephantfish and sawsharks (grouped)) in the gillnet sector had high congruence, while the results for other retained byproduct species had low congruence.
    ii. In the auto-longline sector and to a lesser extent the set-longline sector, the findings again highlight the importance of considering results at both the individual year and vessel level, rather than simply across the entire fleet and time period. While EM and logbook reporting of key commercial species appeared to be relatively similar when comparing mean differences across the entire time period, in many instances, examination of frequency distributions and "violin-plots" of differences highlighted that congruence differed significantly between years and between individual vessels, with some vessels having higher logbook counts and others having higher EM counts.

26. The SharkRAG considered the presentation and results, and discussed the following key points:

a. The numbers of whitefin swell shark recorded in logbooks may have been mis-identified as whitefin swell sharks rather than the more common draughtboard sharks. Species misidentification remains a primary concern, particularly for discards, bycatch and protected species. The chair noted this as an issue that should be investigated further.
b. Catch of gummy shark and school shark may be mis-identified as draughtboard sharks. This could be an EM or an onboard reporting identification issue.
c. The RAG noted that there is no difference to the way live and dead discarded school sharks are reported in the logbook and this could be an issue while setting the TACs.
d. Seabird interactions were picked up more in EM than in logbooks. The RAG recommended to flag the issue of under reporting of seabirds by industry as most of the reporting is being

picked up by EM and not by industry for the upcoming SEMAC. This applies to the white fin swell sharks as well. The definition of a seabird interaction on a vessel is uncertain and this needs to be put forward for further discussion.

e. Sharks are not being identified at taxonomic level, the conservation member noted that it is vital to improve shark ID.
f. The chair recommended that AFMA follow up on checking how seabird interactions in the longline sector are recorded against the EM coverage.
g. The RAG suggested that Individual vessels that are pulling the entire fleet down are the key target areas to fix up, and that efforts should focus on improvements that were important to the stock assessment and management.
h. A key recommendation of the analysis was to think about the use of tolerance standards.
i. Providing feedback to individual vessels is an important factor to be considered moving forward.
j. If AFMA changes the EM coverage reporting from 10% to 5%, it changes the incentives around fishers reporting. In addition, 5 % will have ramifications to TEP reporting when the standard is around 20%.

27. ABARES offered to participate in any further work especially in the prioritisation process of the project.
28. AFMA will consider the outcomes of the analysis and consult as necessary.
29. SharkRAG made the following recommendations:
    a. The RAG suggested that some work could be done to compare the quantities reported as piece counts and kilograms in logbooks to check for inconsistencies or biases as it was the reported weights that were used in the stock assessment model. The chair noted this should be considered as a suggestion for future research work. The scientific member Dr. Thomson suggested that ABARES should do this work as they are best placed to do it as they currently work with most of the data required, as well as with comparative statistics.

Agenda item 4. AFMA Reconciliation Action Plan and First People Acknowledgement Guide

30. The AFMA member presented the AFMA Reconciliation Action Plan and provided the opportunity for SharkRAG to discuss the inclusion of traditional knowledge and perspectives with feedback moving forward.
31. SharkRAG discussed the following:
    a. The recognition of indigenous shares in fisheries quota is an example of how traditional knowledge, perspectives and rights can be included in fisheries management. This is being done already through some states such as South Australia.

b. The scientific member Dr. Huveneers updated the SharkRAG that there is a group named First Nation Sea Country Research Alliance that works closely with first nation people.
c. A short video was circulated after the RAG about an indigenous owned fishing business Kuti Co Pipi fishing business.
d. The SharkRAG should consider consulting indigenous people in the commonwealth fishery.
e. The conservation member suggested that AFMAs engagement needs to go beyond just showing photos of ghost net art but also the engagement they have with Indigenous fishing businesses and fishers etc as it looks tokenistic to just show pictures of ghost net art.
f. Our Mobs training is an online training which gives information on history and culture.
g. Intellectual property and rights training called True Tracks, deals with traditional knowledge in terms of fisheries.

Agenda item 5. Transition of gillnet boats to longline fishing in Bass Strait: potential and implications

32. The chair and the AMFA member introduced the guest speaker Dr. Ian Knuckey. The guest speaker presented results of the project 'Potential transition of gillnet boats to longline fishing in Bass Strait- ecological, cross-sectoral and economic implications'.
33. The SharkRAG noted the following background:
    a. Trials of auto-longlining for Gummy Shark were conducted in Bass Strait with a commercial vessel equipped with a purpose-built Mustad auto-longline system able to set and retrieve ~ 6,000 hooks per day. Three trips were undertaken in specific areas of Commonwealth waters during 2020: two in Autumn/Winter and one in Spring. A total of 120 shots was undertaken with shots focused on likely concentrations of Gummy Shark in Bass Strait (< 183m depth).
34. Dr Knuckey presented the transition of gillnet boats to longline fishing in Bass Strait and SharkRAG noted the following:
    a. The trials of auto-longlines were limited spatially and temporally. Accordingly, the results of the trials should be treated cautiously when extending the findings to broader areas of Bass Strait and to other times of the year. In particular, catches and catch rates of commercial and bycatch species, and interactions with protected species may vary from those observed in the trials. Thus, it is recommended by Dr. Knuckey that any potential expansion of commercial longline fishing to target Gummy Shark in Bass Strait is contingent on an initial phase of robust monitoring, data collection and analysis, in conjunction with adequate management measures to ensure that there are no adverse ecological impacts or cross-sectoral interactions, and this was supported by SharkRAG.
35. The SharkRAG considered the presentation and results, and discussed the following key points:

a. The SharkRAG discussed issues of bycatch and catch of protected species. They specifically noted that there was no whitefin swell shark taken within Bass Strait as these are typically a deeper water species.
b. Elephant fish and saw shark discards were minor.
c. The survival and fitness state of the release of draught board sharks were noted to be likely to be high.
d. The Melbourne skate is listed as vulnerable in the IUCN red list. The inclusion of this was discussed. There were 8 kilos in the spring and 2 tons in the winter autumn discards.
e. Humane Society International (HSI) are focusing on endemic species such as eastern angel shark, whiten swell shark and Melbourne skate. Hence, listing these species for our reference and their impacts could be a recommendation for further work in this report.
f. Redoing the baseline assessment done by Terry Walker et al and the RAG agreed that this would be considered at a later date i.e. not a priority for the next research plan. This is important to gather the data to understand impacts. The RAG also noted that re doing the survey to how it was done previously would be very costly so an alternate approach would be needed.
g. The report presented an economic analysis on the feasibility of transitioning gillnet to hook boats but the RAG noted that this analysis was compromised by the trial forcing vessels to move.
h. There are no issues such as catching flat head and snapper.
i. Based on the economic analysis, this is only a snapshot and not necessarily a reflection of what commercial fishery will look like. This will change spatially and temporally. The presenter has focused on areas where fishers would target gummy shark but only as a snapshot. This would also affect the financials of the commercial fishery.
j. Based on the economic analysis, some of the sensitivities presented are not sensitivities as they are scenarios.
k. The lack of observers on gillnet vessels will hamper the type of comparison to TEP species level.

36. **Action item**: SharkRAG requested that the next gummy shark assessment include a sensitivity that conders a proportion of the catch from BS coming from line gear, using the apparent selectivity from the BS trial.
37. Industry members and the presenter left the room for the SharkRAG to provide advice.
38. The SharkRAG agreed and supported to the commercial trial should industry further pursue an application to continue this trial.
39. The SharkRAG noted the following recommendation as additional points:

a. The SharkRAG suggested that interaction rates must be considered along with the identification of areas that need to be closed i.e., pupping grounds, or reduced fishing pressures.
b. ERA for species of certain interest must be considered along with recording standardisation for stock assessment implications and EM congruence work used to provide feedback to vessels from AMFA.

Agenda item 6. 2023-24 Research Priorities and SESSF Annual Research Statement

40. The AFMA member introduced the agenda item noting its purpose was to seek the advice of the SharkRAG regarding research priorities to be included in a draft Southern and Eastern Scalefish and Shark Fishery (SESSF) Annual Research Statement 2023-24 which was discussed by SESSFRAG at the April 2022 Chair's meeting. From SharkRAG, this will go to the SEMAC and then the ARC.
41. An industry member Mr Toumazos pointed out that more work needs to go into the financial viability and how that fits into the fisheries.
42. In determining the research priorities, the AFMA Member noted that where resourcing is limited, consideration should be made for strategic research needs of the fishery in addition to the essential "business as usual" research needs such as stock assessments.
43. The SharkRAG noted several currently funded and ongoing research projects that were presented by the AFMA member.
    a. Shark Industry Data Collection (SIDAC) Program – three-year co-management contract ending 2024-25. Ongoing.
    b. Continued Close Kin Mark Recapture sampling and analysis for school shark, project ending 2024-25. Ongoing.
    c. Integrated Scientific Monitoring Program (ISMP data services that supports stock assessments) for SESSF in 2022. Funded.
    d. Stock assessments for SESSF in 2022 and 2023. Funded.
    e. Developing a harvest strategy for school shark as a case study for species where depletion can no longer be estimated against B_0 (FRDC). This project was funded and expanded to include a teleost species.
    f. Blue-eye Close Kin scoping study. Ongoing
    g. Research to support the Upper Slope Dogfish Management Strategy. Ongoing.
44. The AFMA member presented the newly identified projects to be included in the 2023-24 Annual Research Statement:
    a. Fish ageing for SESSF quota species three-year project ending 2025-26. This was previously put forward and supported by the ARC, but is included again this year to align with the timing of the work.

i. The SharkRAG confirmed that this is a vital piece of work.

b. Stock assessments for SESSF quota species for the 2024-25 and 2025-26 financial years (including preparatory work in 2023-24).
    i. The SharkRAG confirmed that this is a vital piece of work.

c. ISMP data services. An additional year of funding is requested for 2023.
    i. The SharkRAG confirmed that a very small component of this project to relevant to the GHAT.

d. Improving CPUE standardisations for sharks. This was previously put forward and supported by the ARC, but wasn't released in the September 2021 call for research due to a lack of funding available. SharkRAG provided continued support for this research priority to be included again this year, noting that the auto and manual longline data should be combined to produce the CPUE time series if possible.

e. Evaluating contributing factors to CPUE standardisation in the SESSF. Changes to CPUE standardisations This project was included in AFMA's call for strategic research (November 2021). The expression of interest (EOI) received was not supported by the ARC for development into a full proposal as it lacked a novel approach, and the ARC recommended including this project in a future call for research.
    i. A member pointed out that the RAG considers outcomes for the EM/logbook congruence work.

f. Close Kin Mark Recapture for key species in the SESSF, including gummy shark. SESSFRAG supported this work across a range of species within the SESSF, including gummy shark. Given support from SharkRAG, SESSFRAG suggested that this may be better placed as an FRDC project.
    i. CSIRO is currently working on a document that focusing on a more thoughtful look at how this fishery will be managed.
    ii. The RAG recommended to purse a scoping study to understand which species may benefit from CKMR model.

45. The scientific members and the invited participant left the room for the prioritisation of the research topics.
46. The SharkRAG discussion and prioritisation of research projects to be included in the draft 2023-24 Research Statement is provided in Attachment D.

Agenda item 7. Other business

47. Shark RAG noted that there was no other business to discuss.

Agenda item 8. Next meeting

48. The next meeting will be in the Oct/Nov with a face-to-face option in Melbourne. The EO will conduct a doodle poll to lock in dates.

Close of meeting

49. The chair thanked the RAG, AFMA member and the EO for their contribution and closed the meeting at 1410 pm.

July 2022

Attachment A

Member	Position	Interest declared
Alexander (Sandy) Morison	Chair	Director of Morison Aquatic Sciences. Chair of SharkRAG. Contracted by government departments, non-government agencies and companies for a range of fishery related matters including research and for MSC assessments of AFMA managed and other Australian and international fisheries. Have undertaken work for SETFIA in 2021 reviewing a report on matters unrelated to the shark fishery. 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 AFMA-CSIRO co-funded project' Scoping study for application of Close-Kin-Mark-Recapture to blue-eye trevalla caught in the SESSF'. Research interest declared and interest in agenda item 6
Andrey Penney	Scientific Member	Scientific member on GAB RAG Research interest declared
Charlie Huveneers	Scientific Member	Associate Professor and research scientist. Potential interest in funding for research. No pecuniary interest or otherwise. Potential interest in agenda item 6
Julian Morison	Economic member	Director, Kuti Co Pty Ltd – SA Pipi quota holder Director, BDO Advisory (SA) Pty Ltd - current contracts with SA & Qld state governments collecting fisheries economic data Member, SA Snapper Management Advisory Committee (PIRSA) Economics member, Scallop Fishery Resource Assessment Group (AFMA) Member, Economics Working Group (AFMA) Member, Human Dimensions Research subprogram (FRDC) Principal & co-investigator on several FRDC research projects Research interest declared
Kyri Toumazos	Industry Member	South Australia/Bass Strait shark fisher, boats fishing with hooks and gillnets. SESSF quota holder. Southern Rock Lobster Board CEO. Declared interests in RBCs. Declared interest in agenda item 5
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 interests and RBC recommendations
Craig Harris	Industry Member	Gillnet fisher and SFR holder. Declared interest in agenda item 5
Jamie Papas	Industry Member	Gillnet fisher and SFR holder. Board Director San Remo Fishermen's Co/Op Declared interest in agenda item 5

Anissa Lawrence	Conservation Member	Director of TierraMar Ltd, 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 South Australia Rock Lobster MAC Conservation member on SEMAC Conservation member on SPFRAG Director and Chair of Ocean Future Fund Inc
Lara Ainley	AFMA Member	AFMA member, manager of the Gillnet, Hook and Trap fishery. No interest pecuniary or otherwise.
Roshan Hanamseth	Executive Officer	AFMA EO. No interest pecuniary or otherwise.
Tim Emery	Presenter/Observer	Employed by ABARES. No interest, pecuniary or otherwise. ABARES potentially may conduct shark research in the future
Ian Knuckey	Presenter/Observer	Fishwell Consulting
Don Bromhead	Present/Observer	Employed by ABARES. No interest, pecuniary or otherwise. ABARES potentially may conduct shark research in the future
James Woodhams	Invited participant	Employed by ABARES. No interest, pecuniary or otherwise. ABARES potentially may conduct shark research in the future
Anna Willock	Observer	Employed by AFMA. No interest pecuniary or otherwise
Nastaran Mazloumi	Observer	Employed by AFMA. No interest pecuniary or otherwise

Attachment B

Agenda

Time (ACST): 07/07/2022- 12:00-16:15
08/07/2022- 0900- 14:10

Location: Rydges South Park Adelaide
1 South Terrace, Adelaide SA 5000

DAY 1 - 07/07/2022 - 12:00 - 16:15

Approximate time	Item	Purpose	Lead presenter
13:00 (60 min) [13:30 AEST]	**Agenda item 1. Preliminaries**		
	1.1 Welcome and apologies	For action	Chair
	1.2 Declaration of interests	For action	Chair
	1.3 Adoption of agenda	For action	Chair
	1.4 Minutes from previous meeting	For noting	Chair
	1.5 Actions arising from previous meetings	For noting	EO
14:00 (30 min) [14:30 AEST]	**Agenda item 2. Fishery updates**		
	2.1 AFMA Management	For noting	AFMA member
	2.2 Industry	For noting	Industry members
	2.3 Scientific	For noting	Scientific members
	2.4 Economic	For noting	Economic Member
14:30 (90 min) [15:00 AEST]	**Agenda item 3. ABARES logbook and EM data congruence analysis**	For advice	Tim Emery
16:00 (15 min) [16:30 AEST]	**Agenda item 4. AFMA Reconciliation Action Plan and First People Acknowledgement Guide**	For advice	AFMA Member
16:15 [16:45 AEST]	**Close**		

DAY 2 - 08/07/2022 – 09:00 - 14:10

Approximate time	Item	Purpose	Lead presenter
09:00 (15 min)	**Tea and Coffee**		

Approximate time	Item	Purpose	Lead presenter
09:15 (60 min) [09:45 AEST]	**Agenda item 5. Transition of gillnet boats to longline fishing in Bass Strait: potential and implications**	For advice	Ian Knuckey
10:15 (120 min) [10:45 AEST]	**Agenda item 6. 2023-24 Research Priorities and SESSF Annual Research Statement**	For advice	AFMA member
12:15 [12:45 AEST]	**Lunch**		
13:00 (60 min) [13:30 AEST]	**(Agenda item 6. continued)**	For advice	AFMA member
14:00 (5 min) [14:30 AEST]	**Agenda item 7. Other business**	For noting	AFMA member
14:05 (5 min) [14:35 AEST]	**Agenda item 8. Next meeting**	For noting	AFMA member
14:10 [14:40 AEST]	**Close**		

Attachment C

Complete/Redundant	Underway	Yet to start	Need further advice

	Agenda item	No.	Action	Agency/Person Responsible	Timeframe	Progress
	SharkRAG 2 2021	4	Dr Thomson to present the resultant diagnostics of the incremental improvements made to the gummy shark model to illustrate the impacts of the changes for SharkRAG's consideration at its October 2022 meeting. Dr Sporcic to present investigation of a CPUE series combining manual and autolongline to the same meeting	CSIRO (Dr Thomson/Dr Sporcic)	October 2022	Need further advice- CPUE series is important work but unlikely to be critically informative for the next assessment. SharkRAG to discuss if it should be put forward as a separately funded research priority. Suggestion- combing manual and longline note for discussion in research priorities complete make note- Andrew Penny's net length report for industry from AFMA Miriana part of that discussion
	SharkRAG 2 2021	5	AFMA to liaise with CSIRO (Dr Burch) to include a summary of previous SharkRAG advice regarding historical catches be included into a paper they are working on that captures historical decisions.	AFMA		Yet to start – CSIRO to present catch history report to SESSFRAG Chairs meeting in April 2023. Robin- sharks are not included as per Burch

						Negotiated through SeRAG only Trawl sps. AFMA follow up with CSRIO
	SharkRAG 2 2021	8	AFMA to provide SharkRAG advice to ABARES for its consideration in finalising the logbook/EM analysis.	AFMA		Complete- This was done in November and ABARES have since revised the analysis. Final results are being presented at agenda item 3.
	SharkRAG 2 2021	8	ABARES to present the final logbook/EM analysis to SharkRAG in 2022	ABARES		Underway- This will be presented at Agenda Item 3.
	SharkRAG 2 2021	7	CSIRO to include the logbook reported discards for school shark in the metier analysis for SharkRAG consideration in October 2022	CSIRO (Dr Burch)		Underway- Will continue to do metier report for shark species – to be presented to SharkRAG in October 2022 Note
	SharkRAG 2 2021	9	CSIRO to finalise the analysis estimating discards for shark quota species using EM piece counts for consideration by SharkRAG in October 2022	CSIRO (Dr Burch)		Underway- CSIRO to present findings at the SESSFRAG Data meeting or SharkRAG in October. Robin- remove, no need for this action item

	SharkRAG 2 2021	9	AFMA to prepare a paper regarding options for accounting for discards for the October SharkRAG meeting	AFMA		Yet to start live release-- Out of session meeting to clarify what this is ?
	SharkRAG 1 2021	2	AFMA to summarise existing sources of information on school shark and gummy shark discard rates for all sectors (trawl, gillnet, autolongline and manual longline) through time including interannual variability	AFMA		Need further advice - AFMA suggests revisiting these actions after the RAG has considered the comparison analysis of logbook versus EM data at agenda item 3, and whether logbook discard data can be used to estimate annual discards from the gillnet and hook sectors. Robin - Drop this action item! With the move to logbook discard data Closed !
	SharkRAG 1 2021	3	AFMA to summarise existing sources of information on school shark and gummy shark discard size composition for all sectors (trawl, gillnet, autolongline and manual longline) through time – including interannual variability	AFMA		
	SharkRAG 1 2021	4	AFMA to work with SSIA and industry to review need for EM piece counts and review EM audit rate (currently 10%)	AFMA/SSIA		Underway – SSIA have requested a review of EM review rates in the GHAT. The ABARES logbook vs EM analysis presented under agenda item 3 will inform this discussion, and AFMA are considering developing a framework under which similar decisions can be applied to other fisheries with EM. Come back after agenda item 3
	SharkRAG 1 2021	7	AFMA to create a comparison of EM data versus logbook data regarding	AFMA/SIDAC		Need further advice – This may potentially have been captured through

			sawshark composition including a summary table for the RAG to consider. 8 SIDaC to look at feasibility of including sawshark species composition in their data program 9 AFMA to consider observer data including trawl data in the sawshark summary table for SharkRAG – related to SharkRAG1 2021 action item 7			the ABARES EM and logbook congruence work under agenda item 3. AFMA asks the RAG to reconsider this action item. That's been done! Subject to outcomes of SharkRAG1 action item 7 "AFMA to create a comparison of EM data versus logbook data regarding sawshark composition including a summary table for the RAG to consider. Go back to SIDAC managers Underway- Not complete, related to SharkRAG1 2021 action item 7. Come back after agenda item 3
	SharkRAG 2 2016	3	The School Shark Rebuilding Strategy to be updated to reflect research showing there is some genetic connectivity between Australian and New Zealand school shark stocks.	AFMA	2019	Underway- The review of the School Shark (*Galeorhinus galeus*) Stock Rebuilding Strategy is underway and will include updating information concerning latest research relevant to the species. Haven't done this yet Sebastian Fernandes work-- CK finding stock much smaller Will stay in – till the update rebuilding shark
	SharkRAG 7 September 2020	7	AFMA and CSIRO to discuss additional analysis to determine the relationship between net length and	AFMA/CSIRO	Prior to October 2020 intersessional meeting of SharkRAG	Complete

			CPUE before the next meeting of SharkRAG			
	SharkRAG 7 September 2020	12	SharkRAG to determine the weighting of each method to be included in the gummy shark assessment at the next meeting of SharkRAG	SharkRAG	November 2020	Underway- Included in the Gummy Shark work plan to be discussed under Agenda Item 4. Not discussed today
	SharkRAG 7 September 2020	13	AFMA to modify the contract with fish aging services to allow shark vertebrae to be sectioned on an annual basis	AFMA/FAS	December 2020	Need further advice – is this action still required? Underway- AFMA will discuss alterations to the contract with fish aging services.

Attachment D-

Southern and Eastern Scalefish and Shark Fishery Annual Research Statement for 2023-24

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 2023-24 and will be presented to the AFMA Research Committee (ARC) for consideration as part of the 2023-24 funding round.

AFMA funding in 2023-24 - AFMA Research Committee (ARC)

Title	Objectives and component tasks	Evaluation		
		Total cost ($) (approx. only)	Priority/ ranking	Feasibility
APPROVED RESEARCH (UNDERWAY OR RECENTLY COMPLETED)				
Integrated Scientific Monitoring Program (ISMP) (funded by the fishery) (200823) Project ending 2021/22	AFMA observer program, logbooks	$600k Appoprtioned across SESSF Sectors	Essential	High
Shark Industry Data Collection (SIDaC) Program – 3 year co-management contract Project ending 2024/25 (funded by the fishery)	Crew-based data collection program	Total project cost around $491k (excl. GST) over three years (funded by the fishery, not ARC)	Essential	High
Fish ageing for SESSF quota species (190840), 3 years Project ending 2022/23	Undertake fish ageing for the SESSF to support stock assessments for the period 2020/21 to 2022/23.	Total project cost around $770k over three years Apportioned across SESSF Sectors	Essential	High
Continued Close Kin Mark Recapture sampling and analysis for school shark (190841). Commenced in July 2020 and scheduled to end 2024/25	Continue close kin sampling and analysis for school shark as the primary indicator of abundance for this species.	Total project cost about $300k	Essential	High
Research to support the Upper-Slope Dogfish Management Strategy (200820) Project ending 2022/23	Undertake an initial baseline survey, which will underpin a long-term monitoring plan to measure the relative abundance and recovery of Harrisson's dogfish and southern dogfish.	~$450k Apportioned across SESSF Sectors	High	High

	The survey is to be conducted in accordance with 'Option 1A with DeepBRUVS identified in the report 'Research to support the upper slope dogfish management strategy: Options for monitoring the recovery of southern dogfish and Harrisson's dogfish (Williams *et al*. 2018)'			
Orange roughy (Cascade) Acoustic Survey 2022 (200819) Project ending 2022/23	Submitted to the AFMA Research Committee in January 2021 – was not considered by SERAG or SESSFRAG. This research will provide an acoustic based biomass estimation for orange roughy (Cascade) for the 2022 fishing season. It also includes the collection of biological samples including length, weight, sex, spawning stage and otolith extraction.	$96k	High	High
Stock assessments for SESSF quota species in the SESSF in 2022 (using data to 2021) and 2023 (using data to 2022) (210800) Project ending 2023/24	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.	$737k (22/23) $415k (23/24)	Essential	High
Integrated Scientific Monitoring Program (ISMP) Data services in the SESSF 2022 (210801) Project ending 2022/23	Manipulate and analyse all applicable SESSF data to produce stock summaries that include Commonwealth and State catches, estimated discards, length and age information for all applicable SESSF species. These are presented in three reports, SESSF Data Summary, ISMP for the SESSF Discards in 2021 and SESSF Catches and Discards for TAC purposes using data to 2021. Undertake targeting analyses and estimate companion species catches for John Dory, Silver Trevally, School Shark, eastern Redfish, eastern Gemfish, Blue Warehou, Deepwater Shark and eastern Jackass Morwong. This work is presented in the report An investigation of the bycatch of rebuilding and other selected species in the SESSF.	$178k Apportioned across SESSF Sectors	Essential	High
Acoustic biomass estimates and monitoring metrics for Blue Grenadier, 2022 surveys (210806) Project ending 2023/24	Conduct structured acoustic surveys through the 2022 winter spawning aggregation of blue grenadier to provide a comprehensive view of the fishery and robust estimates of biomass to input into future Tier 1 stock assessments.	$110	High	High
NEW IDENTIFIED RESEARCH NEEDS FOR 2023-24				

Application of Close-Kin Mark-Recapture assessments for key and rebuilding species in the SESSF.	Use Close Kin-Mark Recapture (CKMR) methods to produce fishery dependent abundance data for species where Catch Per Unit Effort (CPUE) data are not available (e.g., gummy shark). CMKR abundance indices are more reliable than traditional CPUE methods, especially for species that can no longer be estimated against B_0. This is important because of factors that cannot be effectively accounted for in the standardisation process and recent structural adjustments in the SESSF.	Medium to High Might be funded by FRDC	High	High
Non-extractive survey methodology for establishing Eastern Gemfish index of abundance	Alternative approaches to establishing an index of abundance, including a targeted fishing survey during the winter spawning aggregation. An earlier project showed that stereo cameras on nets are effective at sampling gemfish, including length frequencies and biomass estimates (pending outcome of the close kin project – Application of Close-Kin Mark-Recapture assessments for key and rebuilding species in the SESSF.	High	Low	Low
Blue grenadier acoustic survey 2023	Conduct structured acoustic surveys through the 2023 winter spawning aggregation of blue grenadier to provide a comprehensive view of the fishery and robust estimates of biomass to input into future Tier 1 stock assessments. $12,000 has been included in the 2022/23 FY research budget, for preliminary work for the 2023 survey to be commenced in May/June 2023.	$100k	High	High
Acoustic Optical Surveys (AOS) of the Eastern Zone orange roughy stock	Conduct structured acoustic surveys through the 2023 winter spawning aggregation of the Eastern Zone orange roughy spawning aggregation using towed body AOS equipment to provide robust estimates of biomass to input to future stock assessments. $30,000 has been included in the 2022/23 FY research budget, for preliminary work to commence in May/June 2023.	$300k	High	High
Acoustic Optical Surveys (AOS) of the Cascade Plateau orange roughy stocks	Conduct structured acoustic surveys through the 2023 winter spawning aggregation of the Cascade Plateau orange roughy spawning aggregation using towed body AOS	$300k - $500k	Medium	Low

	equipment to provide robust estimates of biomass to input to future stock assessments. Industry has indicated the high costs associated with this survey and while acknowledging the significance of the research, noted less appetite for conducting it. If this research does not take place, there is capacity through Fish Ageing Services to collect age data from otoliths roughy collected from Cascade Plateau over the last decade.			
Improving CPUE standardisations for sharks	Improve standardisations: a. Incorporate the relationship between CPUE and net length. b. Effects of Australian Sea Lion and other closures on CPUE. c. Account for changing dynamics of fleet with new entrants. d. Combine manual and auto hook CPUE time series if feasible This project (~$80k) was supported by the AFMA Research Committee (ARC) for 2022-23 however there was insufficient funding.	Low	High	High
Evaluating contributing factors to catch per unit effort (CPUE) standardisation in the SESSF	Noting the uncertainty associated with fishery dependent Catch Per Unit Effort (CPUE) data, application to develop a project to examine: 1. What are the likely drivers of uncertainty in fishery dependent CPUE data (fishing efficiency, environment, fishery dynamics) and what empirical data do we have to quantify these drivers? 2. How can we use this information and data to better standardise CPUE data for key species in the SESSF, including novel approaches? E.g. inclusion of fishing power time series or environmental data in CPUE analyses.	Uncertain	High (Data dependent – not to be pursued in 2023-24)	Medium Potential incorporation of environmental data in CPUE standardisation

	3. What data should be collected in the future to enable these factors to be included as a factor in CPUE standardisations.			
Integrated Scientific Monitoring Program (ISMP) data services in the SESSF. Single year contract for 2023-24, then consider combining with SESSF stock assessment contract for the 2024-25 and 2025-26 financial years (below).	Detailed deliverables are subject to advice from the relevant RAGs and AFMA management, previously: - Manipulate and analyse all applicable SESSF data to produce stock summaries that include Commonwealth and State catches, estimated discards, length and age information for all applicable SESSF species. These are presented in three reports; SESSF Data Summary, ISMP for the SESSF Discards and SESSF Catches and Discards for TAC purposes. - Undertake targeting analyses and estimate companion species catches for school shark only.	$140k	Essential	High
Stock assessments for SESSF quota in the SESSF for the 2024-25 and 2025-26 financial years (including preparatory work in 2023-24) Preparatory work required in May/June 2024, so this will need to go out in 2023/24 call.	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.	High	Essential	High
Fish ageing for SESSF quota species 3 year project ending 2025/26	Undertake fish ageing for the SESSF to support stock assessments for the period 2023/24 to 2025/26.	High	Essential	High

- High: >$200,000
- Medium: $100,000 - $200,000
- Low: <$100,000

- Essential
- High
- Medium
- Low

- High
- Medium
- Low

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FRDC funding in 2023-24 - Commonwealth Research Advisory Committee (ComRAC)

Title	Objectives and component tasks	Evaluation		
		Total cost (approx. only)	Priority/ ranking	Feasibility
APPROVED RESEARCH (UNDERWAY OR RECENTLY COMPLETED)				

FRDC Investigator survey	This project is currently funded and underway. AFMA will work with the FRDC to refine the objectives of this project, which will be circulated amongst SESSFRAG members.	TBA	High	High
Development and evaluation of multispecies harvest strategies in the SESSF (FRDC project 2018-021)	1. To develop and evaluate multi-species harvest strategies, including reference points and decision rules. 2. To evaluate future monitoring and assessment options identified in the SESSF Monitoring and Assessment Research Project. 3. To develop a process and set of design principles for multi-species harvest strategies.	$464,973 Commenced October 2018, the project is anticipated for completion in 2022.	High	High
An updated understanding of Eastern School Whiting stock structure and improved stock assessment for cross jurisdictional management (FRDC project 2019-030)	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.	$420,285 3 year project commencing in Sept 2019 and ending in May 2022	High	High
Revisiting biological parameters and information used in the assessment of Commonwealth fisheries: a reality check and workplan for future proofing. (FRDC project 2019-010)	1. Identify the origin of current biological information used in assessments of species (including empirical stock assessments and ecosystem modelling efforts) carried out under the Commonwealth Harvest Strategy Policy, including the pedigree of the information (provenance, age, appropriateness of methods used). 2. Assess the implications and risks associated with using dated and borrowed information in assessments currently used for informing fisheries management, including the scale of any risks and the species for which a change in biological parameters used in assessments has the greatest impact. 3. Identify the methods that might be applied to update priority biological parameters, including a review of the efficacy and applicability of novel methods and approaches developed in recent years. 4. Articulate a work plan including appropriate sampling regimes required for updating priority biological parameters used in assessments for those species identified as being at most at risk.	$189K	High	High

Improving and promoting fish trawl selectivity in the SESSF and GABTS (FRDC project 2019-027)	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.	High ($776,376 total SESSF and GAB)	High	High
Implementation of dynamic reference points and harvest strategies to account for environmentally-driven changes in productivity in Australian fisheries (FRDC project 2019-036)	Develop understanding of dynamic reference points, and those species for which they can be used, that can account for shifts in productivity to inform stock assessments and harvest strategies. Primary outcomes include: • Identified candidate fish stocks that may utilise dynamic reference points • Make recommendations for future implementation of dynamic reference points • Develop and improve approaches to stock assessments with regard to productivity • Evaluate options for effective harvest controls rules	Low	High	High
Developing a Harvest Strategy for school shark as a case study for species where depletion can no longer be estimated against B_0	Investigate development of a harvest strategy for species where depletion can no longer be estimated against B_0 (absolute estimate is only available), using school shark as a case study. To be informed by the multi-species harvest strategy project (MSHSP), and dynamic reference points project. The project scope was expanded to include a teleost species.	High	High	High
NEW IDENTIFIED RESEARCH FOR 2023-24				
Collecting oceanographic data on commercial fishing vessels in South East Australia	Increase the spatial resolution of oceanographic data collected in Australia's inshore, shelf, upper-slope, and offshore waters by fitting commercial fishing vessels, or fishing gear, with environmental sensors and/or data loggers. Data transfer and processing could potentially be managed through the 'Ships of Opportunity' Facility within the Integrated Marine Observing System (IMOS).	TBA	High	High

Research projects identified for inclusion in future research plans

Title	Objectives and component tasks	Evaluation		
		Total cost (approx. only)	Priority/ ranking	Feasibility

Obtaining discard data and fish lengths using electronic monitoring	Investigate implementation issues, cost and solutions to adopt electronic monitoring to collect length frequency information for key commercial species on hook and gillnet vessels to support Tier 1 assessments. Previously not supported for funding.	Low	High	High
Establish ecosystem indicators to inform species management	Scope possible ecosystem indicators for important species captured by the BETH index as part of the Multi-species Harvest Strategy (MSHS) project, then use these indicators to establish environmental triggers for management purposes. This project may be considered for funding in the future subject to the results of MSHS Project. Ideally, the integration of dynamic B0, MSHS results, CKMR and environmental indicator results will inform changes to the Harvest Strategy.	TBA	Low	Low
Economic data collection	Improve the collection of fishery related economic data to inform better modelling and availability of information for the fisheries. More regular and accurate, industry-supported provision of economic data, including fixed and variable costs of running fishing vessels, and quota trading and lease prices, is required to support management of primary species under an MEY goal as stipulated in the Commonwealth Harvest Strategy Policy.			

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SESSF stock assessments schedule

Species	MYTAC in 2022-23 season[1]	Last assessed	2020	2021	2022	2023	2024	2025	AFMA management comment
Alfonsino	9th year of 3-year MYTAC	2013							Future assessment subject to periodic review of data.
Bight redfish	3rd of 5-year MYTAC	2019			1				Stock assessment brought forward to 2022 due to ongoing concerns around abundance estimates in the GABFIS.
Blue eye trevalla	Single year TAC	2021	4 (slope)	4 (slope) 5 (S/M)	4 (slope)		4 (slope) 5 (S/M)		Tier 4 for slope stock only updated in 2021 – single year MYTAC for 2022-23 season. To be updated in 2022. * CKMR being investigated.
Blue grenadier	Sing-year TAC	2021		1	1			1	Single-year TAC for 2022-23 season to allow acoustic indices to be incorporated in 2022 assessment.
Blue warehou	N/A (rebuilding species)	2013							Schedule subject to annual review of fishery indicators
Deepwater flathead	3rd of 3-year MYTAC	2019			~~1~~		1		Scheduled for 2022 but moved to 2024 to allow Bight redfish assessment in 2022. Discount factors will be considered by GABRAG in 2022.

Deepwater shark east	1st of 3-year MYTAC	2021		~~5~~	5			5	Tier 5 could not be completed in 2021 due to uncertainties in the data. Work planned for 2022 to support Tier 5.
Deepwater shark west	1st of 3-year MYTAC	2021		~~5~~	5			5	Tier 5 could not be completed in 2021 due to uncertainties in the data. Work planned for 2022 to support Tier 5.
Elephant fish	2nd of 3-year MYTAC	2020	WOE			WOE			
Flathead	3rd of 3-year MYTAC	2019		Update	1			1	Partial update completed in 2021 showed no concerns with indicators.
Gemfish - east	N/A (rebuilding species)	2009			~~1~~				SESSFRAG (April 2022) agreed to not undertake the 2022 assessment due to lack of data. Application CKMR is a priority for this species.
Gemfish - west	3rd of 3-year MYTAC	2019			4			4	
Gummy shark	2nd of a 3-year MYTAC	2020	1			1			Model updates to be completed in 2022 to support 2023 assessment.
Jackass morwong	Single year TAC – eastern stock rebuilding species	2021		1 (eastern)			1		SERAG discussed the western jackass morwong stock at their October 2021 meeting. Noting the low catches, and the management changes resulting from the eastern jackass morwong assessment, AFMA are not proposing to undertake a western jackass morwong assessment in 2022. Future approaches to assessments and TAC setting process for western jackass morwong will be considered in the context of both stocks.
John dory	N/A (rebuilding species)	2021	WOE[2]	4					
Mirror dory	Single year TAC	2021	4	4	4	4	4	4	Annual assessment given the cyclical nature of stock abundance
Ocean perch	2nd of 3-year MYTAC	2020	4			4×			SESSFRAG (April 2022) agreed to postpone Tier 4 assessment to allow for funding to be redirected to higher prioriy research.
Orange roughy - south	N/A (rebuilding species)	2000							The Pedra Branca portion of the orange roughy was assessed as part of the eastern stock in 2021.
Orange roughy - east	1st of a 3-year MYTAC	2021		1			1		
Orange roughy - west	N/A (rebuilding species)	2002							

Orange roughy - Cascade Plateau	Single year TAC	2009					1*		Subject to AOS being completed in 2023
Orange roughy - Albany & Esperance	N/A (rebuilding species)	N/A							
Oreo smooth - cascade	Long term TAC (catch dependent)	2010							
Oreo smooth - other	Single year TAC	2021	WOE	WOE	WOE	WOE	WOE	WOE	
Oreo basket	2nd of a 3-year MYTAC	2020	4			4×			SESSFRAG (April 2022) agreed to postpone Tier 4 assessment to allow for funding to be redirected to higher prioriy research.
Pink ling	1st of a 3 year MYTAC	2021		1			1		
edfish	N/A (rebuilding species)	2020	1			~~1~~			SESSFRAG agreed to not undertake the 2024 stock assessment due to lack of data. CKMR has been prioritised for this species.
Ribaldo	2nd of a 3 year MYTAC	2020	4			4×			SESSFRAG (April 2022) agreed to postpone Tier 4 assessment to allow for funding to be redirected to higher prioriy research.
Royal red prawn	2nd of a 3 year MYTAC	2020	4			4×			SESSFRAG (April 2022) agreed to postpone Tier 4 assessment to allow for funding to be redirected to higher prioriy research.
Saw shark	2nd of a 3 year MYTAC	2020	4			4×			SESSFRAG (April 2022) agreed to postpone Tier 4 assessment to allow for funding to be redirected to higher prioriy research.
School shark	N/A (rebuilding species)	2018					1		
School whiting	2nd of a 3 year MYTAC	2020	1			~~1~~			SESSFRAG (April 2022) agreed to postpone this assessment to 2023. This will be revisited at the August Data meeting once CPUE and other indicator data have been reviewed.
Silver trevally	Single year (TBC)	2021	4	4	4				CSIRO and NSW DPI to determine assessment approach for 2022.
Silver warehou	1st of 3 year MYTAC	2018		1			1		
Species	**MYTAC in 2022-23 season**	**Last assessed**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	