Australian Government
Australian Fisheries Management Authority

Southern and Eastern Scalefish and Shark Fishery
Shark Resource Assessment Group (SharkRAG)

Meeting minutes

Date: 29-30 October 2018

Mantra Tullamarine

Attendees

Name	Membership
Mr Sandy Morison	Chair
Mr Brodie Macdonald	AFMA member
Dr Brendan Kelaher	Scientific member
Dr Ian Knuckey	Scientific member
Dr Robin Thomson	Scientific member
Mr Leigh Castle	Industry member
Mr David Stone	Industry member
Mr Kyri Toumazos	Industry member
Dr Miriana Sporcic	Invited participant – scientific (CSIRO)
Mr Ross Bromley	Industry invited participant
Mr James Woodhams	ABARES observer
Dr Tim Emery	ABARES observer
Dr Matt Koopman	Fishwell consulting - observer
Ms Belinda Norris	AFMA observer
Mr Ryan Keightley	AFMA Executive officer

Meeting Minutes

1 Preliminaries

1.1 Introduction and apologies

The Chair opened the meeting and welcomed members, invited participants and observers, and noted apologies from Charlie Huveneers, Anissa Lawrence and Robert Curtotti.

Participants were advised that the meeting was being recorded to assist with the preparation of the meeting minutes as per Fisheries Administration Paper 12.

1.2 Declaration of interests

The Chair noted that at the recent RAG and MAC Chairs meeting it was suggested that each individual RAG resolve how to address declarations of interest, in particular when participants should leave the room for discussions and/or recommendations. After discussion, the RAG agreed members with a declared conflict as a general rule should not contribute to formal advice on the conflicting item, but can remain in the room for the recommendation. It was noted that this should not prevent participants from absenting themselves on a case by case item if they consider it appropriate to do so.

Participants reviewed and updated the Declarations of Interest included at **Attachment A**.

The Chair asked participants to declare any interests in any Agenda Item to be considered by the RAG. Such interests were declared by:

- Dr Sporcic, research interests, in particular stock assessment agenda items.
- Dr Thomson, research interests, in particular in stock assessment and close kin and agenda items.

- James Woodhams, research interests broadly.
- Ian Knuckey, research interests, in particular the discussion regarding data collection and the electronic monitoring discard and length measurement project.
- David Stone, Industry interests in most items through his role representing gillnet and hook industry through the Sustainable Shark Fishing Industry Association.
- Kyri Toumazos, Industry interests in most items as a holder of concessions in the Southern and Eastern Scalefish and Shark Fishery (SESSF).
- Leigh Castle, Industry interests in most items as a holder of concessions in the SESSF.
- Mr Morison, no pecuniary or other interest in the SESSF.
- Ross Bromley, research interests as director of Girella Fisheries Services and contracted by Atlantis Fisheries Consulting Group and the Southern Shark Industry Association (SSIA), and in particular as data manager for the SSIA Industry data collection program.

Each participant declaring an interest left the meeting in turn while the RAG considered their interests. In each case, the RAG noted the conflict of interest and, recognising the participant's knowledge and valuable contribution to the discussions, agreed that the participants should participate in all Agenda Items, but not contribute to any recommendations for items for which there was a declared interest.

1.3 Adoption of agenda

The agenda at **Attachment B** was adopted by the RAG as final.

1.4 Status of actions arising

The RAG was updated on the status of remaining actions arising from previous meetings as per the tabled the paper (**Attachment C**). Items discussed are outlined as follows:

Action item 1 – AFMA to update the action items list with a 'traffic light' system for future meetings

2 Updates

2.1 Managers update

Mr Macdonald presented the managers update as tabled. Mr Toumazos noted his concern over cumulative number of dolphin interactions across the fishery. Mr Macdonald explained that the Gillnet Dolphin Strategy is currently being reviewed after the first 18 month cycle of the Strategy, and the Commonwealth Marine Mammal Working Group (CMMWG) is meeting on 30 October 2018 where the Strategy will be discussed in depth.

Action item 2 – Mr Macdonald to distribute the membership of the CMMWG to the RAG for information.

2.2 Industry updates

Mr Toumazos provided a brief oral update for the South Australian fishery, stating that fishing for gummy shark has been excellent this year. He noted that the nature of the fishery is changing with many owner-operators leaving and more company fishers and investors joining.

Mr Castle stated that gummy shark have been fairly good over winter in Tasmania, however there has been an influx of school shark off South West Tasmania making it impossible to fish in that area. As such he will shift to targeting scalefish for the time being. He also noted that it has been

hard to find deckhands, and they are losing current deckhands, to the salmon aquaculture industry recently.

Mr Stone stated that the weather over winter was poor which have contributed to periods of low catch, and the cost of quota is also restraining effort to when the fishing is good. He has noted a significant change in older operators retiring from the industry to newer skippers who aren't necessarily experienced and may be more inefficient. There has been a return of spider crabs in the Bass Strait so operators are avoiding good fishing areas to avoid the crabs. The market price of gummy shark has fluctuated significantly, particularly where there have been large landings of shark at the same time. He further noted concern with the mental health of fishers of late.

3 Catch and monitoring update

3.1 Catch updates

Mr Macdonald presented the item requesting the RAG notes recent catch and discards of quota species in the GHAT sector.

The RAG questioned whether State or recreational catch was included in the update.
Mr Macdonald confirmed that the paper presents Commonwealth catch and discards recorded in daily fishing logbooks and catch disposal records only, and does not include State or recreational catch.

The RAG discussed where and how these types of data are captured and stored, and noted there does not appear to be a single repository these data in AFMA or CSIRO. Dr Knuckey added that these data are a key component in the harvest strategy and should be readily accessible, including aging and Fishery Independent Survey data that are held by private companies. The RAG requested that this issue be considered by SESSFRAG.

Action item 3 – SESSFRAG to review the appropriateness of how and where data such as State, recreational, aging and FIS data are collated and stored, and provide recommendations on the future collection and storage of these data.

Action item 4 – AFMA provide the RAG with a summary of the e-fish project.

3.2 Monitoring update

3.2.1 Observers

Mr Macdonald presented the paper which summarises observer coverage and data collection in the GHAT. The RAG noted that the quantum of data compared to the number of observed days seems excessively low, and requested the paper be updated for the next meeting.

Action item 5 - AFMA to update the 'Monitoring Paper' to include collection against targets for the current year, break down observer trips by quarter and also include information on other data collected by observers (e.g. seabird observations etc.).

The RAG also suggested that there should be consistency in sampling technique (measuring the same way) if this is not currently the case, and noted there appear to be discrepancies in size composition data between on board and port sampling.

3.2.2 Industry data collection project

Mr Bromley provided an update on the Shark Industry Data Collection project (SIDaC). He noted that a data schema has been developed in conjunction with AFMA and CSIRO, and Fishwell

Consulting have developed an iPad application for port samplers to input industry collected data. The data is then transferred to the cloud where it is accessible to AFMA, and is able to be linked to logbook data submitted by each vessel. The first trial of the project is underway with first samples expected on Thursday.

3.3 CPUE standardizations

Dr Sporcic presented the CPUE Standardizations report, noting the following:

Gummy shark

South Australia – Gillnet

- There has been an increase in SA gillnet CPUE in 2017, noting that the CPUE series is catch by shot, not length.
- Industry members stated that skipper effect has a big impact on standardizations and should be considered if possible when calculating standardized CPUE broadly.
- The RAG noted suggestions that some skippers do not record net length or number of hooks per shot accurately, instead entering the same length/number for every shot. The RAG suggested that a letter be sent to Industry (skippers where possible) reminding them of the importance of accurate reporting.
- The RAG noted that depth distribution in 2016-17 has shifted to deeper water than that historically. Dr Knuckey suggested that this could be due to a skipper reporting in fathoms instead of meters, and this should be investigated and corrected if possible.

Action item 6 – AFMA to confirm whether skipper/authorised agent details are punched into the logbook database, and if so, whether this is/can be provided to CSIRO for CPUE standardization purposes.

Action item 7 – AFMA scrutinise depth of gillnet catch of South Australian Gummy Shark in 2016 and 2017 as there is potentially and operator reporting in fathoms instead of meters.

Action item 8 – AFMA to send letter to Industry Associations for distribution to their members explaining the importance of recording accurately in logbooks, including gear information (net length/no. hooks).

Bass Strait – Gillnet

- CPUE has just dipped below the long term average.

Tasmania - Gillnet

- Industry members noted that we may see an increase in effort in Tasmania with many State operators entering the shark fishery due to low availability of crayfish quota.
- CPUE increased and is just below the long term average.
- Depth distribution is changing through time, with more records of larger catches in the deeper water. The RAG questioned high catches in 10-20m throughout the 2000's, and suggested the data be investigated.

Action item 9 – Dr Sporcic to update the CPUE Standardizations report as follows:

- Add gear type and zone (e.g. ESA, WSA etc.) to table captions.
- Investigate the peaks in larger catch for Tas gummy shark data in 2016-17.
- Investigate data for the large spikes of catches in shallow depths (10-20m) throughout the 2000's for Tas gummy shark.
- Update CPUE graphs to indicate that they are based on the natural log of CPUE.

Trawl

- Fairly consistent catch of 80-100t over the last 10 years, with many small shots <30kg suggesting the species isn't targeted.
- CPUE is increasing well above the long term average. The RAG queried whether it is worth including trawl CPUE as a sensitivity in the next stock assessment.

Action item 10 – Dr Thomson to consider including trawl and Danish seine CPUE as a sensitivity in the next gummy shark stock assessment.

Demersal longline

- Standardized CPUE increasing and is above the long term average.
- The RAG noted that there have been greater catches with this method in recent years. Mr Toumazos explained that Industry are getting better at hook fishing with a shift to using hooks in South Australia due to strict marine mammal management arrangements.

School shark

Trawl

- Standardized CPUE is above the long term average.
- Increase in trawl catches, including those shots <30kg, suggesting the species isn't targeted.
- Depth distribution is bimodal, with a bigger proportion of catch in deeper water compared to gummy shark. The RAG noted that trawl have been catching less in the deeper water in recent years.

Saw shark

Gillnet

- Standardized CPUE decreased slightly, below the long term average. Industry members suggested that market price has a large impact on landings.

Trawl

- Standardized CPUE is stable, increasing towards the long term average

Elephant fish

The RAG decided not to discuss elephant fish standardized CPUE as it did not accept the current CPUE series as an index of abundance.

4 School shark

Dr Thomson introduced the item, noting that the updated close kin mark recapture (CKMR) modelling presented incorporates the recommendations from August SharkRAG workshop. Dr Thomson presented analysis of the following recommendations from the August meeting:

1. explore proportion of comparisons that yield a kin pair
2. re-examine the landed catches (checking for errors)
3. consider excluding catches from New South Wales, western South Australia and further west
4. explore the utility of the available length frequency data
5. revise fecundity parameters used for females, and adopt values for male fecundity
6. extend model further back in time – using catches before 2000
7. (then use animals with >11 rings)
8. calculate CVs for the model estimated increase in recent abundance
9. improve treatment of length within the model

10. include the standardised trawl CPUE index as a sensitivity

The RAG noted the following:

- analysis of kin by distance doesn't show any evidence of a bias towards nearby zones.
- there are distinct depth, gear and region related differences in length frequency. This makes it very difficult to make use of the length data, unless we use a model that models selectivity and availability by area and depth. The previous model had this, but it was overly complex (12 months, eight regions, two stocks and movement between regions etc.).
- it is possible that there are reproductively separate populations that have separate spatial distributions or movement patterns

Dr Thomson presented the range of models and sensitivities, explaining that the new base case (figure 1) includes:

- revised fecundity parameters
- recalculated catch time series, including State catches and discards
- revised length parameters
- revised selectivity (no longer zero for ages 15 and over)
- included fathers in the model for the first time

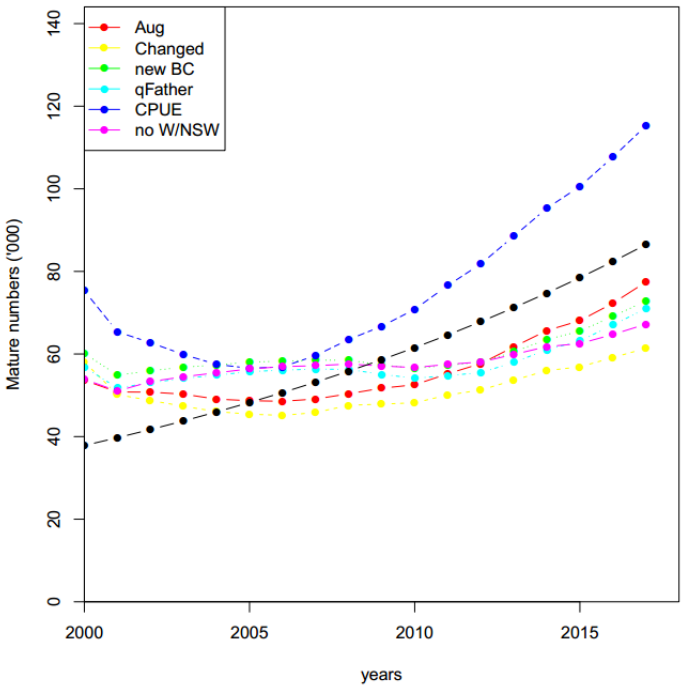


Figure 1: Numbers (thousands) of mature school sharks for each model presented (*Thomson et al* 2018).

The RAG noted that the model does not cope well with including standardized trawl CPUE as it assumes a huge hidden biomass of mature fish that it cannot account for and is not consistent with fit to the length frequencies. Further, the use of CPUE in the model adversely affects the fit to the maternal half sibling pairs (MHSPs) (12.7 expected versus 29 observed), which are likely to be the most reliable and informative data available.

Dr Thomson provided the following conclusions:

- The close-kin mark-recapture method worked, the estimate of absolute abundance is sound, but smaller than that from the last accepted stock assessment (CV 23% for 2001//2).

- Trend is much less certain, but ongoing sampling and analysis will help.
- Stock structure is not straightforward – we have an estimate of overall abundance available to the fishery; future projections and existing age structure are complicated by stock structure.

Dr Thomson noted she is highly confident in the abundance estimate, however, the CVs for the increasing trend in mature abundance are too high to allow confidence in the trend. The RAG noted however that all the presented models opt for an upwards trend which is positive, albeit with high CVs.

Dr Thomson stated with continued sampling we will become more confident in the trend over time. The RAG agreed the weight of evidence ('simple model' based on close kin only, median of base case model, CPUE from trawl and anecdotal information) suggests the school shark population may be increasing.

The RAG agreed that the new CKMR information, and models constructed using that information, should allow for the projection of the likely stock response to various future catch scenarios (constant catch, constant exploitation rate ect), and requested Dr Thomson undertake projections for the next meeting. Dr Thomson stated that she wouldn't have confidence in conducting projections for the next 10 years, but she may be able to conduct longer term projections for the next meeting.

Action item 11 – Dr Thomson to undertake forward, constant catch and constant exploitation rate projections, with zero catch as a baseline for school shark.

The RAG discussed the likelihood that if the school shark population is in fact increasing, it is also likely that the rate of incidental catch will also increase and management should be congnizant of this likelihood when setting incidental catch allowances. In this context, the Commonwealth Harvest Strategy Policy requires that there be no targeted fishing of an overfished stock and the incidental catch allowance should be set consistent with the level of unavoidable catch.

Dr Knuckey emphasised that the close kin model only considers fish caught in the Commonwealth fishery, and questioned whether we should looking at sampling from Western Australia, or even further. The RAG also questioned whether targeted sampling would be beneficial. Dr Thomson noted that the current model assumes a single stock, so these suggestions for sampling from additional areas would not make any difference.

The RAG expressed concern that the model only considers the time period from 2000 to 2017, and there is a chance that the stock from which the close kin samples were taken may not be the stock that sustained high catches prior to 2000. Dr Knuckey noted that if this is the case, it is possible we are trying to rebuild a population to a point that it may never have been. This raises concerns about what reference points are appropriate for school shark, and when we can say the stock is no longer overfished, particularly under the current harvest strategy framework.

The Chair reminded the RAG that we are not in a position to finalise advice about school shark at this meeting, noting we are in a much better place now with an index of abundance. The RAG requested Dr Thomson to provide the following items for discussion at the next meeting:

Dr Thomson provide projections, an ongoing sampling regime and an updated base case document for the December meeting.

Action item 12 – Dr Thomson to:

- update the close kin model paper to include error bars
- include gummy shark numbers from the gummy base case on the base case figure for comparison.
- plot tag recaptures and close kin data by depth looking for separation of stocks by depth (earlier catches were taken by line in deeper water).
- Plot F by fleet

Action item 13 – Dr Thomson to provide a school shark sampling regime for the December meeting with advice on:

- How many samples we need and how often
- What cost
- What is the best size range to collect
- Where samples should come from, and whether we should target areas (e.g. Western Australia, western Tasmania)
- What will we be able to conclude (especially regarding trend and CV)
- How often we need to update the close kin model to give us point estimates.

5 Gummy shark

Mr Macdonald introduced the item explaining that at the last SESSFRAG data meeting there was concern that there:

- is insufficient new data (spatial coverage is very poor) to run an updated assessment in 2019
- are issues with calculation of standardized CPUE by shot, and work is being undertaken on changing this to be calculated by meter of net set in 2019.

As such, SESSFRAG suggested that SharkRAG consider deferring an updated assessment pending improved data.

The RAG investigated the data summary, noting there are very low sampling in recent years following implementation of electronic monitoring. Dr Knuckey suggested he could provide length frequency data from his recent electronic monitoring project to supplement the data available.

Action item 14 – Dr Knuckey to provide AFMA and CSIRO length frequency data from the electronic monitoring project to supplement the data available.

The RAG suggest delaying the assessment to at least 2020 as to incorporate a full year of Industry data collection and the new CPUE standardization work.

6 Elephant fish

6.1 Elephant fish

The Chair opened the agenda item[1], noting that at SharkRAG 1 2018, the RAG rejected the assessments because of concerns about the:

- lack of a recent and reference period discard information, and how discard rates are estimated
- ability to factor discarding appropriately into CPUE
- uncertain estimates of recreational catch, which are a significant proportion of the RBC.

The RAG noted its advice had not changed, and felt that it did not have any new concerns about stock status. The RAG recommended maintaining the TAC at the current level (114 tonnes) until a better method of assessment of this stock could be agreed, noting that elephant fish is not targeted and is not a key economic driver of the fishery. The RAG recommended undercatch and overcatch provisions of 10 per cent.

7 E-monitoring data

7.1 Changes in logbook reporting since the introduction of e-monitoring (EM) and congruence between e-monitoring and logbook data

Dr Timothy Emery presented a summary of his work '*Measuring congruence between electronic monitoring and logbook data in Australian Commonwealth longline and gillnet fisheries*'. The key finding were as follows:

- Congruence between EM and logbook data was compared for Australian fisheries;
- Congruence was higher for retained than discarded catch and in longline fisheries;
- Logbook recorded discards are not yet suitable for discard estimates;
- Evidence of increased congruence through time, particularly for discarded bycatch; and
- Need to review EM program through time to ensure it is fulfilling objectives.

The RAG noted that the EM analysts are grouping species when they can't identify them to species level (e.g. hound sharks for school and gummy shark). It was also noted that there were some discrepancies in the species codes being used by the EM analysts to what are currently used in logbooks (e.g. recording of draughtboard shark (*Cephaloscyllium laticeps*) and draughtboard sharks (mixed)). The RAG therefore recommended that AFMA ensures that AAP are using the same species list/codes that are currently used by fishers in e-logs.

Action item 15 – Mr Macdonald to liaise with AAP to ensure they are using the same species list/codes as those used by fishers in e-logs.

Dr Emery also noted that in some cases there may be increased numbers of retained fish recorded by the EM analyst if they do not see the fish discarded at a later point during the recording (e.g. if discarded outside view of camera).

[1] Mr Stone, Mr Castle and Mr Toumazos left the room for this agenda item as they had declared an interest.

The RAG suggested that the analysis of congruence for protected species reporting should include '0' interaction shots, not just those that have recorded interactions. This would reduce error bars.

The RAG thanked Dr Emery for his presentation, and requested that RAG provide any additional feedback directly to Dr Emery.

Action item 16 – RAG members to provide feedback to Dr Emery on his work '*Measuring congruence between electronic monitoring and logbook data in Australian Commonwealth longline and gillnet fisheries*'.

7.2 Estimating discards and collecting length frequency data using e-monitoring

Dr Koopman presented his work (AFMA project 2017/0803) on estimating discards and collecting length frequency data using e-monitoring, noting the project had the following objectives:

1. Establish a process for obtaining discard weight estimates from piece-counts using electronic monitoring
2. Trial the use of EM cameras as a method for collecting length frequency data on retained (and discarded) shark species and make recommendations for practical implementation by AFMA and industry.

Dr Koopman presented various methodology used to achieve weight estimates from piece counts, stratified by zone and fate (retain or discard). This included combining piece count information from EM review with mean length, median length and kernel density estimate (KDE) sampled lengths that were calculated from historical observer data. The RAG agreed that KDE is most appropriate methodology to use for these analysis.

Dr Koopman presented the methodology for trialling the use of EM for estimating length frequency, noting this involved placing an observer on gillnet vessel that currently has an EM system installed, undertaking measurements and counts of retained and discarded catch, as well utilising calibrated measuring boards near the processing bench to enable an EM analyst to estimate length and sex of fish place on the board. This allowed the comparison of catches estimated from weight converted lengths from observer to logbook weights, as well as comparisons between observer length measurements to those from an EM analyst.

The RAG noted the following outcomes:

- Discards are estimated for 2016 and 2017 which improve the time series of total SESSF discards.
- Measurement of shark length very similar to on board observer despite sub-optimal EM camera location
- Overall discards generally follow size distribution of retained, except for school shark
- Species ID was good between EM analyst and observer, with an exception of saw shark where EM struggled to identify to species level.
- Sex determination is possible through EM where crew are removing claspers while processing

A review of existing EM systems in the fleet was undertaken as part of the project with an objective of determining suitability for obtaining length frequencies witch changing camera setup. The RAG noted that whilst none of the systems were installed with intent to collect length frequency measurements, most of the fleet have EM systems we believe could be used to provide accurate

length measurements with addition of a measuring grid, small changes to the behaviours of fishers and repositioning of cameras in a few cases.

The RAG thanked Dr Koopman for the presentation and very important work. Dr Thomson noted that the methodology is consistent with what CSIRO use, but could benefit from updating the stratum to be in line with the Integrated Scientific Monitoring Program (Bergh et al.).

7.3 Approach for utilising EM data in stock assessments

The Chair noted that AFMA are seeking advice on utilising the methodology and results from the EM projects going forward, and recommended that the length data and estimation of weights methodology be incorporated into our current discard estimates for use in future assessments.

Action item 17 – Dr Thomson to liaise with Dr Koopman to get the EM data analysis code for incorporating into the existing discard estimation process.

The RAG discussed overlap with the industry sampling program if length frequency data collection through EM is approved, and suggested AFMA ensure that a full scoping document be developed, including costings, prior to going ahead. The RAG stated that there is merit in using EM length frequency collection on vessels used for crew sampling for verification purposes.

Action item 18 – AFMA to develop proposal to do cross comparisons between EM retained length and Industry collected lengths for verification and cost.

Action item 19 – AFMA to provide the TAC recommendations paper and TAC calculation spreadsheet to RAG members and invited participants for information each year.

Action item 20 – AFMA to remind operators with electronic monitoring to ensure they discard in view of cameras.

8 Management issues

8.1 100kg trip limit on scalefish hook SFRs

Mr Macdonald introduced the item, emphasising that AFMA are seeking advice on any sustainability concerns with the removal of the 100kg school and gummy shark trip limit on scalefish hook SFRs.

Mr Stone and Mr Castle raised concern that this change could allow potentially 37 additional boats to target shark resulting increased capture and discards of school shark and other deepwater shark species. There was also concern that there are very few scalefish hook vessels that have EM, and hence there is an additional risk with low monitoring or verification of catch and discards from these operators. The RAG also suggested that there may be a change in the depth distribution of the fishery.

The Chair summarised that under a quota managed fishery, and with current management arrangements there is low risk of sustainability issues associated with this change. The RAG agreed that the primary control on the target species in the fishery is quota, but it is hard to predict the scenarios that may happen that might impact on sustainability.

The Industry members noted that, while not a sustainability issue, this change would result in substantial changes to the access right system, in particular a change in value of access rights. Mr Toumazos suggested that AFMA come to the table with the full proposal of access right rationalisation.

Mr Macdonald acknowledged these concerns, and outlined that AFMA are undertaking a project investigating rationalisation of access rights in the GHAT with a view to simplifying to a single GHAT access right. It is likely that an Industry workshop will be held in December discussing this project and the RAG will be kept informed of any progress.

8.2 Calculation of state catches for TAC calculations

Mr Macdonald introduced the item, explaining that AFMA are seeking advice about the best method of accounting for state catch of gummy shark in the Total Allowable Catch (TAC) setting process.

The RAG noted that under the current harvest strategy, State catch is subtracted from the RBC to produce a Commonwealth TAC. State catch is generally calculated using a four year weighted average which is then deducted from the RBC.

For gummy shark, under the Memorandum of Understanding with South Australia, Tasmania and Victoria, State catches are not deducted from the RBC but a proportion of the RBC is allocated to relevant State sectors.

Mr Macdonald noted that South Australia have recently implemented more stringent measures to reduce the catch of gummy and school shark by state fishers to within their allocation.

The RAG noted that Commonwealth operators could lose out if the four year weighted average approach is adopted and the State's overcatch their allocation, but also noted that if they undercatch then it is a positive to Commonwealth operators.

Noting this, however, the RAG agreed that appropriately accounting for State catches is important from a sustainability perspective, and recommended that AFMA adopt the four year weighted average approach which is then deducted from the RBC.

9 Other business and close of meeting

9.1 Review of meetings actions, next meeting and close

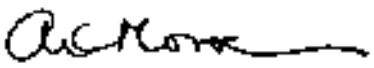
Mr Keightley ran through the draft list of action items for clarification and for input at table 1. Mr Macdonald advised participants the next meeting is scheduled for 3-4 December 2018 with a location yet to be confirmed. The Chair thanked participants for valuable input and closed the meeting.

Table 1: Actions arising from SharkRAG 3 2018.

Action	Item	Description	Responsibility
1.	1.4	AFMA to update the action items list with a 'traffic light' system for future meetings.	Mr Keightley
2.	2.1	Mr Macdonald to distribute the membership of the Commonwealth Marine Mammal Working Group to the RAG for information.	Mr Macdonald
3.	3.1	SESSFRAG to review the appropriateness of how and where data such as State, recreational, aging and FIS data are collated and stored, and provide recommendations on the future collection and storage of these data.	SESSFRAG EO
4.	3.1	AFMA provide the RAG with a summary of the e-fish project.	Mr Macdonald

5.	3.2.1	AFMA to update the 'Monitoring Paper' to include collection against targets for the current year, break down observer trips by quarter and also include information on other data collected by observers (e.g. seabird observations etc.).	AFMA Observer coordinator
6.	3.3	AFMA to confirm whether skipper/authorised agent details are punched into the logbook database, and if so, whether this is/can be provided to CSIRO for CPUE standardization purposes.	Mr Keightley
7.	3.3	AFMA scrutinise depth of gillnet catch of South Australian Gummy Shark in 2016 and 2017 as there is potentially and operator reporting in fathoms instead of meters.	Mr Macdonald
8.	3.3	AFMA to send letter to Industry Associations for distribution to their members explaining the importance of recording accurately in logbooks, including gear information (net length/no. hooks).	Mr Macdonald
9.	3.3	Dr Sporcic to update the CPUE Standardizations report as follows: • Add gear type and zone (e.g. ESA, WSA etc.) to table captions. • Investigate the peaks in larger catch for Tas gummy shark data in 2016-17. • Investigate data for the large spikes of catches in shallow depths (10-20m) throughout the 2000's for Tas gummy shark. • Update CPUE graphs to state they are natural log.	Dr Sporcic
10.	3.3	Dr Thomson to consider including trawl and Danish seine CPUE as a sensitivity in the next gummy shark stock assessment.	Dr Thomson
11.	4	Dr Thomson to undertake forward, constant catch and constant exploitation rate projections, with zero catch as a baseline for school shark.	Dr Thomson
12.	4	Dr Thomson to: • update the close kin model paper to include error bars and include gummy shark numbers from the gummy base case on the base case figure. • plot tag recaptures and close kin data by depth looking for separation of stocks by depth (earlier catches were taken by line in deeper water). • Plot F by fleet.	Dr Thomson
13.	4	Dr Thomson to provide a school shark sampling regime for the December meeting with advice on: • How many samples we need and how often • What cost • What is the best size range to collect • Where samples should come from, and whether we should target areas (e.g. Western Australia, western Tasmania) • What will we be able to conclude (especially regarding trend and CV)	Dr Thomson

		• How often we need to update the close kin model to give us point estimates.	
14.	5	Dr Knuckey to provide AFMA and CSIRO length frequency data from the electronic monitoring project to supplement the data available.	Dr Knuckey
15.	7.1	Mr Macdonald to liaise with AAP to ensure they are using the same species list/codes as those used by fishers in e-logs.	Mr Macdonald
16.	7.1	RAG members to provide feedback to Dr Emery on his work '*Measuring congruence between electronic monitoring and logbook data in Australian Commonwealth longline and gillnet fisheries*'.	SharkRAG
17.	7.3	Dr Thomson to liaise with Dr Koopman to get the EM data analysis code for incorporating into the existing discard estimation process.	Dr Thomson
18.	7.3	AFMA to develop proposal to do cross comparisons between EM retained length and Industry collected lengths for verification and cost.	Mr Macdonald
19.	7.3	AFMA to provide the TAC recommendations paper and TAC calculation spreadsheet to RAG members and invited participants for information each year.	Mr Macdonald
20.	7.3	AFMA to remind operators with EM to ensure they discard in view of cameras.	Mr Macdonald



Signed (Chairperson): Alexander Morison

Date: 15 January 2019

Attachments

Attachment A: Declarations of interest

Attachment B: SharkRAG 3 2018 final agenda

Attachment C: Action item status

Attachment A – Register of interests

Member	Interest declared
Sandy Morison	Director of Morison Aquatic Sciences. Chair of SharkRAG, SERAG and the Tropical Rock Lobster Working Group. Scientific member on SEMAC. Contracted by government departments, non-government agencies and companies for a range of fishery related matters including research and (by SCS Global Services) for MSC assessments of AFMA managed and other Australian and international fisheries. No pecuniary or other interest in the SESSF.
Brendan Kelaher	Scallop Resource Assessment Group Chair and Scallop Management Advisory Committee member. No other interests declared.
Robin Thomson	CSIRO, Assessment scientist. Acquiring funding for research purposes. PI on data services contract and close kin project for school shark.
Ian Knuckey	Director Fishwell Consulting Pty Ltd and Olrac Australia (Electronic logbooks) Range of research interests and research projects in relation to South East fisheries particularly in the SESSF and GABTF. Involved in SESSF and GAB Fishery Independent Surveys. NPFRAG and TRLRAG Chair, Scientific member on NORMAC and GABRAG. Invited Participant of SEMAC and SERAG. Provides research advice to various industry associations, including Atlantis Fisheries Consulting Group, SETFIA, GABIA and SSIA.
David Stone	Executive Officer for Sustainable Shark Fishing Industry Assc. Declared interests in representing hook and gillnet industry member interests. SESSFRAG observer. Declared interest in RBCs.
Leigh Castle	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.
Kyri Toumazos	South Australia/Bass Strait shark fisher, boats fishing with hooks and gillnets. SESSF quota holder. Southern Rock Lobster Board CEO. Declared interests in RBCs.
Brodie Macdonald	AFMA member. No interest pecuniary or otherwise.
Ryan Keightley	AFMA EO. No interest pecuniary or otherwise.
Invited participant	**Interest declared**
Miriana Sporcic	CSIRO, Assessment scientist. A general interest in acquiring funding for research purposes. No interest, pecuniary or otherwise.
Ross Bromley	Undertakes contracts as an independent consultant.
Observers	**Interest declared**
James Woodhams	ABARES. Potential interest in funding for research. No interests, pecuniary or otherwise.
Belinda Norris	AFMA. No interest pecuniary or otherwise.
Timothy Emery	ABARES. Potential interest in funding for research. No interests, pecuniary or otherwise.
Matt Koopman	Research interests as employee of Fishwell Consulting Pty Ltd.

Shark Resource Assessment Group (SharkRAG) Meeting 3 2018

Agenda – 29 -30 October 2018

Mantra Tullamarine, Melbourne

Day 1: 9:00am – 5:00pm

1	**Preliminaries**		**9:00 am**
1.1	Welcome and apologies	Chair	Information
1.2	Declarations of interest	Chair	Action
1.3	Acceptance of agenda	Chair	Action
1.4	Status of actions arising	AFMA	Action
2	**Updates**		
2.1	Management update	AFMA	Information
2.2	Industry update - South Australia - Victoria - Tasmania		Information
	Morning tea		**10:30am**
3	**Catch and monitoring update**		
3.1	Catch updates	AFMA	Information
3.2	Monitoring update - observers - industry data collection project	AFMA	Information
3.3	CPUE standardisations	CSIRO	Discussion
	Lunch		**12:30pm**
4	**School shark**		
4.1	School shark assessment - Close kin assessment model - Changes since last meeting - RAG recommendation of model parameters and preparation of base case	CSIRO	Discussion
4.2	School shark rebuilding strategy annual review		
	Meeting close		**5:00 pm**

Day 2: 9:00am – 4:00pm

	Meeting open		
5	**Gummy shark**		**8:30am**
5.1	Review of data for 2019 assessment - incorporating previous RAG actions	AFMA	Discussion
6	**Elephant fish**		
6.1	Update on timing of next assessment	AFMA	Discussion
	Morning tea		**10:30am**
7	**E-monitoring data**		

7.1	Changes in logbook reporting since the introduction of e-monitoring	Tim Emery	Information
7.2	Congruence between e-monitoring and logbook data	Tim Emery	Information
7.3	Estimating discards and collecting length frequency data using e-monitoring	Matt Koopman	Information
7.4	Approach for utilising EM data in stock assessments	AFMA	Discussion
	Lunch		**12:30pm**
8	**Management issues**		
8.1	100kg trip limit on scalefish hook SFRs	AFMA	Discussion
8.2	Calculation of state catches for TAC calculations	AFMA	
9	**Other business and close of meeting**	Chair	**4:00 pm**
9.1	Review of meetings actions, next meeting and close		

Attachment C – Status of actions

Agenda item 1.4 Actions arising

Purpose: To inform the RAG of the action taken with respect to business arising from previous SharkRAG meetings.

SharkRAG 2 2016

No	Action item	Member to action	Status
1	For the next gummy shark assessment, the assessment scientist to investigate estimating selectivity separately for the three regional stocks and allowing it to be flexible in form. This may allow the differing availability function to be removed from the assessment.	CSIRO Assessment Scientist	**Ongoing** – to be actioned for the 2019 stock assessment.
2	For the next gummy shark assessment, SharkRAG to review how density dependence is incorporated in the model including in the context of the paper 'Population biology and dynamics of the gummy harvested off southern Australia' (Walker 2010).	CSIRO, SharkRAG	**Ongoing** – to be actioned for the 2019 stock assessment.
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	**Ongoing** – AFMA will update the School Shark Rebuilding Strategy following the results of the Close Kin Project and subsequent stock assessment.

GHAT Data Working Group March 2017

No	Action item	Member to action	Status
2	Robin Thomson to investigate the statistical implications of conducting biennial collection of biological data for the GHAT (subject to funding).	Robin Thomson	**Ongoing** – potentially a reasonably large simulation study/MSE and may require funding. To be discussed as a Research Priority.

SharkRAG 1 2017

No	Action item	Member to action	Status
1	AFMA to consult with e-log providers on whether any there are changes required to the logbook schema before 1 July 2018.	AFMA Member	**Complete**, no changes were required to the logbook schemas. AFMA are currently reviewing its e-log program and back end infrastructure with a view to update and simplify the system, and will consult broadly in early 2019 on any changes.
2	AFMA, in consultation with Dr Knuckey and CSIRO, to find a more appropriate location for the released alive field outside of the discard code section of logbooks so that the discard reason is recorded separately from the condition of any discarded fish. AFMA to also ensure that this additional field is transferred to CSIRO with all other logbook data.	AFMA Member	**Ongoing**, AFMA are currently reviewing its e-log program and back end infrastructure with a view to update and simplify the system, and will consult broadly in early 2019 on any changes.
8	Refer the issue to SESSFRAG for it to consider how to deal with CPUE for species with high levels of discarding (large proportion of 100% discarded shots).	SESSFRAG	**Ongoing**, referred to un-assessable species working group.
9	AFMA to investigate potential targeting of school shark.	AFMA member	**Complete**, AFMA will investigate any evidence or suspicions of school shark targeting
11	AFMA to write to concession holders advising of an updated timeline for close kin results, the mini assessment and subsequent updated tier 1 assessment.	AFMA member	**Ongoing**, to be undertaken post this meeting and discussed as part of an industry workshop on school shark management.

SharkRAG 1 2018

No	Action item	Member to action	Status
1	AFMA to report back Industry's comments on observer placements to the AFMA Observer Program, including providing suitable notice to operators and the suggestion to provide operators a longer term plan for observer placements each year.	AFMA member	**No longer required** following commencement of industry data collection program.
2	In relation to 'Strengthening the Tier 1 Gummy Shark Assessment' research priority, Dr Huveneers and Dr Thomson to undertake a scoping exercise and review Walker (2010) to determine the costs if this work can be done in early 2019 prior to the Tier 1 assessment.	Dr Huveneers/ Dr Thomson	**Complete.** No additional research project required.
3	AFMA to investigate removing elephant fish as a quota species in the SESSF	AFMA Member	**Not yet** started, to be considered as part of the SESSF Harvest Strategy review

SharkRAG 2 2018

No	Action item	Member to action	Status
1	Dr Thomson to liaise with Dr Braccini to investigate the availability of further vertebrate samples taken during surveys	Dr Thomson/ Dr Braccini	**In progress**. Fish Ageing Services to confirm availability of samples.