



Australian Government

Australian Fisheries Management Authority



**Shark Resource Assessment
Group (SharkRAG) Meeting No.1
2014**

Meeting Minutes

Date: 15-16 Oct 2014

Venue: Oaks on Market, Melbourne

Attendance

Name	Membership (type i.e. chair etc.)
Brendan Kelaher	Chairperson
David Power	AFMA member
Anissa Lawrence (day 1 only)	Environment member
Andrew Trappett	Executive Officer
Jason Pettit	Industry member
David Stone	Industry member
Robin Thomson	Science member
Malcolm Haddon	Invited participant – science
Philios Toumazos	Invited participant – industry
Erik Raudzens	Invited participant – management
Nic Marton	Invited participant – science
Miriana Sporic(day 2 only)	Observer – science

Minutes

Item No.	Discussion	Action Items / Rec's
1.1 Introduction and Apologies	<p>The Chair opened the meeting at 09.15 am</p> <p>The RAG noted apologies from:</p> <ul style="list-style-type: none"> • Kyri Toumazos • Jeremy Prince • Colin Simpfendorfer • Anissa Lawrence (apology for the second day) • Dinty Mather from AFMA who had been a recent invited participant. <p>RAG noted the need to engage an economist as a member for the long term.</p>	
1.2 Adoption of Agenda	The SharkRAG adopted the draft agenda (Attachment 1).	
1.3 Actions	<p>The RAG EO updated the RAG on the status of actions arising from the last SharkRAG meetings in 2013 (Attachment 2).</p> <p>Points noted:</p> <p><i>Item 1:</i> - AFMA member advised that quarterly TEP reports have not been circulated to the RAG ahead of the meeting, noting that this would be covered in agenda item 2.1 - fisheries data update. Industry member David Stone noted that the AFMA catchwatch data posted on the website appeared to be lower than normal compared to catch disposal record data presented here.</p>	Action 1: EO to circulate AFMA's new shark handling guide to RAG members once finalised.



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	<p><i>Item 2: AFMA to produce ID guides on high risk species to be distributed to hook sector vessels – AFMA member advised that AFMA has prepared ID guides. AFMA's bycatch and discards team has the draft shark handling guidelines, Richard Reiner – shark post capture mortality work suggests that post capture mortality varies between families of sharks (studies on port jacksons, gummy shark, whaler species) and capture method (longline, trawl, gillnet). AFMA advised that the guide is aimed at maximizing shark survival. Members noted concerns over the content of the guide (pictures unclear and improper inferences that shark fishers were finning which they are not). AFMA advised that member's comments had been considered and that Shark RAG members receive a copy prior to final publication.</i></p> <p><i>Item 4. SESSFRAG and SEMAC to investigate whether B48 is an appropriate target reference point for elephant fish and sawshark - Malcolm Haddon (CSIRO) advised that this had been discussed at SESSFRAG and that the RAG has no sustainability concerns over managing at B40 (due to the species mainly being byproduct) instead of B48. Industry members noted poor beach prices for elephant fish meaning it was not worth landing at some times and advised that the RAG should use trawl catches for the calculation of sawshark CPUE where possible.</i></p> <p><i>(Editorial note: - subsequent OOS RAG email discussions confirm that B40 should be supported by RAGs as a target where appropriate)</i></p>	
1.4 Register of SharkRAG documents	RAG EO informed the group that a Sharepoint page would soon be opened to RAG members which would serve as a repository for past SharkRAG documents and in future meeting documents would be uploaded to this one source rather than sent via email. RAG supported this project.	
1.5 RAG member responsibilities and declaration of interests.	<p>The RAG followed the conflict of interest declarations as outlined in the revised Fisheries Administration Paper 12 (FAP12). A list of the full conflicts of interest declarations made by SharkRAG for the meeting is provided in Attachment 3.</p> <p>The RAG noted revised/new interests declared:</p> <ul style="list-style-type: none"> • David Stone advised he has interests in pursuing acoustic work for dolphins and that has submitted papers to management on behalf of his association on school shark management options. • RAG chair noted the research priorities discussion (agenda 3.1) will involve CSIRO. The RAG agreed that it was fine to CSIRO attend for these discussions. • Nic Marton (ABARES) no interests to declare. <p>Having declared interests, the industry members and invited participants temporarily left the meeting. In their absence the RAG agreed that their comments and industry perspectives (on school sharks, hooks, CPUE work etc.) would be valued and that their</p>	



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	<p>conflicts of interests had been tabled. Industry members were welcomed back to the meeting and were advised their opinions were valuable for discussions.</p> <p>The RAG chair noted relevant points from the revised Fisheries Administration Paper No. 12 on RAG member responsibilities and interests and reminded members to be mindful of document confidentiality and that member were able to engage in media related activities but were not able to make comment on matters as a RAG member.</p> <p>Malcolm Haddon introduced a point recently raised at another RAG: personal liability and/or professional indemnity cover is extended to AFMA MAC member but <i>not</i> to RAG members. RAG noted academic members were likely covered by their institutions but industry members of the RAG members may not be covered. RAG industry members were comfortable with the issue and deemed that there was minimal risk associated with their roles on the RAG.</p>	
<p>2.1 Fisheries data update</p>	<p>AFMA member introduced the data summary (pp. 6-8 of the prepared document) giving an overview of recent catch and discards of quota species in the GHAT.</p> <p>The RAG noted a number of points:</p> <ul style="list-style-type: none"> • 82% of the gummy shark TAC was caught last season not including overcatch amount (with unders/overs 77% was caught). • high catches of gummy shark caught be manual bottom longline hook fishing. Malcolm noted that this goes against expectations that auto-longline would catch a lot more gummy shark. • baseline longline catch of gummy shark and increased gummy shark catches taken from South Australia. • 2013/14 shortfin mako catch was 2t over the 5t catch trigger and requested more spatial and method information for the next meeting. • Wobbegong catches were over the 5t trigger for both 2013/14 and the 2014/15 season to date. RAG was unsure whether this was a sustainability issue and noted that there was likely to be greater hook catches of wobbegong from increased recent hook effort in shallower water. • good survivability of both wobbegong and seven gill shark species with generally not much tonnage being retained. RAG queried whether the table presented included discards or whether it was just retained catch. AFMA was to clarify (action). <p><i>Protected species interactions summary table (pp. 7-8)</i></p> <p>AFMA member updated the RAG on Threatened, Endangered and Protected interactions in the GHAT for the 2014/15 season to date,</p>	<p>Action 2: AFMA to produce a map giving an overview of Shortfin Mako catches to see whether they were spatially aggregated (as this species is +2t over the 5t trigger).</p> <p>Action 3: AFMA to provide the RAG with more data on Boarfish and Wobbegong catch data (method, area, fate) as part of the data summary.</p> <p>Action 4: AFMA to clarify source of data used in table i.e. does the total</p>



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	<p>namely that two dolphins had been caught in Bass Strait, an Australian Sea Lion had been caught in zone B of the ASL management zone (with the bycatch trigger for that zone now revised down to one in that zone for the rest of the season) and that two dolphins had been caught in the area of the Coorong Dolphin Zone on one boat and had triggered the management responses under the Dolphin Strategy.</p> <p>RAG requested that the AFMA Threatened, Endangered and Protected species quarterly report for SEMAC be circulated to SharkRAG at the same time as when it was tabled for SEMAC. The AFMA member agreed to do so.</p> <p>Invited participant Philios Toumazos advised the RAG that the gillnet industry is very interested in investing in acoustic dolphin mitigation technology (such as pingers) and is seeking advice from AFMA and other parties. Philios outlined industry concerns regarding investing in pingers given that the cumulative amount of dolphin interactions across the fishery may potentially close out the gillnet method in future.</p> <p>Industry member David Stone advised that his association had also been investigating this issue and advised that the most likely solution to minimize dolphin bycatch would likely be combination of revised fishing gear, mitigation technology and changed fishing behavior. David Stone warned that the operators currently fishing in the area of the Coorong Dolphin Zone were fishing with gear that was likely to not substantially reduce dolphin interactions and had not significantly changed from the time period prior to the CDZ being closed.</p> <p>Anissa Lawrence, RAG environment member, re-iterated her concerns raised at the last SEMAC teleconference, namely that the individual vessel Dolphin Mitigation Plans need to firmly outline how dolphins are being mitigated. Anissa also stressed that the cumulative impact had to be assessed as the strategy progressed. Anissa also advised on her Oceanwatch work conducted on pingers in northern Australian gillnets in 2008 and surmised that results from these trials had been variable with no one standard pinger setup being 100 per cent effective.</p> <p>The RAG chair noted that these were very important industry issues regarding the implementation of the dolphin strategy and suggested that the Marine Mammal Working Group is the most appropriate forum to see these concerns actioned.</p> <p>Quota species discards table (pp. 8)</p> <p>David Stone advised that some industry members had difficulties reporting discard codes (e.g damaged/ no quota/ undersize etc.) in electronic logbooks (OLRAC software). David also stated that industry collected discard life status (e.g. alive and vigorous/ sluggish/ dead</p>	<p>mortality include discards.</p> <p>Action 5: AFMA to provide the RAG with the SEMAC TEP report on a regular basis.</p> <p>Action 6: AFMA to convene dolphin mitigation subcommittee as soon as possible to discuss gear modifications and research.</p> <p>Action 7: AFMA to provide the RAG with a map of where school shark discards from logs have occurred.</p>



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	<p>etc) was not making its way from logs to the stock assessment meaning that all discards were treated as dead which was not necessarily the case. AFMA advised that OLRAC did not allow for reporting of multiple discard codes and had advised that operators just report the key discard code until this could be resolved. Malcolm Haddon advised that the ISMP was used for the stock assessment discard data. David Stone reiterated previous concerns raised that the abundance of school shark had increased and that school sharks were competing for gummy shark grounds and once established in area could displace gummy shark.</p> <p>AFMA member, David Power, advised that electronic monitoring was not being used at present to audit discards though this would be feasible with the new systems being implemented in 2015. David reiterated that EM was being used as a tool to audit logbooks and that the level and accuracy of reported discards in logs should improve over time following feedback and encouragement given to operators.</p> <p>Philius Toumazos added that the recent 28 day reconciliation measure has distorted the quota market (especially for school shark) which results in increased discarding by operators who cannot land catch as they cannot locate quota at a 'fair' price.</p> <p>SharkRAG noted the high amount of discarded school sharks from the 2014 calendar year to date (45.580 t reported discarded in total with 24.3 t from gillnet). Industry felt that the 24.3 t may not be representative and would like further investigation into details i.e. whether just a few boats are reporting this amount and location of these events (heat maps). AFMA advised that a close watch would be put on school shark catches and discards for the remainder of the season and would advise the RAG on total mortality.</p>	
2.2 Managers update	<p>RAG noted the verbal update given by the AFMA member, GHAT manager David Power. David advised that a revised version of the Seabird Threat Abatement Plan (v. 3) was now in place to mitigate the impacts of hooks on seabirds in all Commonwealth hook fisheries (SESSF Scalefish Hook sector, SESSF shark hook sector, Tuna fisheries).</p> <p>Key changes in the new TAP include:</p> <ul style="list-style-type: none"> • the way in which the bycatch rate is administered (bycatch rate is 1 seabird for every 100,000 hooks observed in each hook sector – scalefish and shark). • AFMA can now take into account conservation status of species when considering management responses. • New measure – boat level response now individual responsibility applies where boats have electronic monitoring. <p>David noted that AFMA has received a request to review the rationale for maintaining the 183m depth closure (i.e. gillnets in shallow, auto-</p>	



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	longline in deep) and will seek RAG comment at the appropriate agenda item.	
2.3 Industry updates	<p>The RAG noted updates given by each industry member and invited participant present:</p> <p>David Stone, industry member, Executive Officer for Sustainable Shark Fishery Association:</p> <ul style="list-style-type: none"> • Level of school shark catch is a significant issue for industry lately, with some operators unable to fish in areas due to high school shark catches. • Poor gummy shark season in the east of Bass Strait so far this season (could be related to school shark interactions/ competition with gummy shark for grounds). • Impacts of 28 days reconciliation and quota availability have been substantial, with some operators unable to acquire quota to cover catches at a fair price due to the new arrangements. • Concerns over dolphin interactions in South Australia and continued usage of gear by operators there that is known to cause dolphin interactions. • Financial viability of some industry members in Lakes Entrance is very uncertain lately with some operators suffering depression due to the perceived dire state of the industry. • Low gummy shark catches in Bass Strait so far this season potentially due to influence of school shark/ gummy shark interactions – noting that October is normally the peak month for gummy shark which has not seen fishers return good catches so far. <p>Jason Pettitt, industry member, Shark Hook Sector fisher, Robe South Australia:</p> <ul style="list-style-type: none"> • South Australian gummy shark catches are down this season compared to historical catches. • Concerns exist among operators over what method to use in future (hooks or gillnets) and how to plan their businesses accordingly. • Industry would like more guidance and research from AFMA on which method (gillnets or hooks) is more efficient in filling the TAC. <p>Philios Toumazos, invited participant, gillnet and hook fishing concessions in South Australia and Bass Strait:</p> <ul style="list-style-type: none"> • Appears to be the biggest year of catches for school shark in SA so far. • Mix of sizes of school sharks have been caught (both sexes with more males which appears opposite to his boats fishing in Bass Strait where more females appear to be caught than males). • Will be hard for boats in South Australia to fish as hard as they did in previous years i.e. boats cannot physically catch more than 50t in South Australia in a year due to closures, dolphins 	



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	<p>and ASL triggers being so low (means that the areas have to be carefully fished as the triggers are too precautionary).</p> <ul style="list-style-type: none"> • There only exists a 7-8 days window for hook fishing in the west of SA per month due to large amounts of line depredation both day and night (ocean jackets, lice damage caused to catch). • Seems eastern SA and western Bass Strait school shark catches are increasing. • NZ school shark tags have been found by his crews in Australia meaning some exchange occurring. • NZ fishers have had problems filling their School shark quota in recent seasons. • Gummy Shark fishery in Bass Strait appears very healthy for the months of Nov-May. 	
<p>3.1 research priorities</p>	<p>SharkRAG was asked to provide comment on the tabled overview of the annual review of research priorities for the GHAT sector in 2015-16 F/Y. RAG noted the broader priorities of SESSF 5 year plan and the three priorities already identified in 2013 by SharkRAG (tabled from page 10 of the prepared material). The RAG was asked whether these priorities were current and whether any additional priorities should be added.</p> <p style="padding-left: 40px;"><i>1) <u>Developing a school shark index of abundance</u></i></p> <p>Robin advised that the school shark close kin genetics project will begin 1 Jan 2015 and gave an overview of the project which includes collection of genetic samples from 2000 sharks over 2.5 years aiming to give a CV of .20. The samples will be spread between TAS, VIC and SA. The project will include ongoing analyses to determine that genetic techniques being applied during the project are suitable. Robin advised that the outcomes of the project, including an index of abundance, are planned to be available in the last 6 months of 2017 and will then be able to be input into the next assessment. Robin noted there would be a review point after 6 months to determine if the project can continue.</p> <p>The chair noted that Shark RAG may need to consider a contingency plan if the close kin genetics project was not able to proceed as planned. David Power noted the close kin genetics project was identified through a peer reviewed process as the most suitable method to independently measure abundance of school shark. Other methods are outlined in the school shark review report with targeted longline fishery independent survey considered the next best option. However, this approach would cost more and take substantially longer to give a useable measure.</p> <p>The RAG considered other indicators and questioned whether a trawl CPUE and hook CPUE could be used. It was noted that these methods could be used but there may not be sufficient trawl data.</p>	<p>Action 8: CSIRO (Robin Thompson) to prepare a short paper to the two shark industry associations on what School Shark data fishers can collect.</p> <p>Action 9: EO to chase up Kyne from FAS on status of extra SS/GS ageing data to be finished and supplied to CSIRO /AFMA.</p> <p>Action 10: EO to circulate Kirsten's Bilgeman paper on dolphin population biology to be circulated to the RAG.</p>



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	<p>Hook data is increasing and could be used over time. However, these indicators will only give information about whether the stock is increasing/ decreasing but not a measure of the stock size.</p> <p>The RAG discussed whether the school shark Assessment could be updated in 2015 using any additional data and an alternative productivity factor. One sensitivity is that model updates productivity (4.4 estimated) itself and the trawl inputs may assist the model in updating this parameter.</p> <p>Support was given for revisiting school shark data in the interim 2015/16 until the close kin genetics project is complete at end of 2017 including the trawl CPUE and extra ageing data.</p> <p>2) <u>Identify population size and trends for dolphins and Australian Sea Lions</u></p> <p>Malcolm Haddon advised that the project to examine ASL population size was now being led by the Dept. Environment.</p> <p>RAG noted that work is underway by Flinders University on estimates of population size for dolphins and also noted work being conducted by Kirsten Bilgmann – a member of AFMA's Marine Mammal Working Group. The RAG noted the important distinction needed to be made in this work between resident and migratory populations of dolphins.</p> <p>3) <u>MMWG to seek research on ASLs from the Marine Mammal Research Centre</u></p> <p>RAG recommended that this 2013 research priority should be removed from the list given that Dept. of Environment is now taking over the role of the Marine Mammal Centre.</p> <p>Other priorities?</p> <p>The RAG identified two additional research priorities for the GHAT sector:</p> <ul style="list-style-type: none"> • Dolphin mitigation measures – a need to invest in further understanding the options available to minimize dolphin bycatch. • Environmental Risk Assessment for the shark hook method (auto-longline) which is to be carried out in 2015/16. <p>The RAG considered the research priorities listed as priorities over the next 5 years across the SESSF and had particular interest in the priority “development and implementation of Fishery independent survey (FIS) and implement index of abundance”.</p> <p>David Power advised that the Ministerial Direction of 2005 included a requirement to have all major species sampled through an independent survey, outlining the need to have a Fishery Independent Survey (FIS) in place to monitor the biomass of the stock and how the</p>	<p>Action 11: EO to circulate Papers from Woods Hole conference. on marine mammal mitigation attended by AFMA to be distributed to RAG if available</p>



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	<p>stock is tracking over time.</p> <p>Currently the trawl FIS is the only independent survey for shark species. The trawl FIS currently provides a trend for Sawshark and Elephant fish with a coefficient of variation (CV) less than 0.3 that is considered useable.</p> <p>However, the RAG noted that despite a useable CV for the two shark species, it is unlikely that this data would ever be used as a measure of stock abundance for the shark species due to limitation in the coverage of the trawl FIS.</p> <p>Malcolm Haddon noted concern that coverage of the FIS was not representative for the shark species and with the current design is unlikely to represent stock abundance.</p> <p>Industry members noted concerns that shark fishers were contributing funding to a survey that was not contributing knowledge to the stocks fished by them.</p> <p>It was noted that the SESSF strategic monitoring and assessment project will attempt to address this issue.</p>	
<p>4.1 to 4.4 Prelim. CPUE standardizations for the four quota species :</p> <p>Gummy Shark, School Shark, Elephantfish, Saw Shark.</p>	<p>The RAG considered the preliminary CPUEs for the four shark quota species prepared and presented by Malcolm Haddon in the tabled document "<i>CPUE Standardization and Characterization for the SESSF Shark Fishery: Data from 1997-2013, October 2014</i>".</p> <p>In examining the document, several queries were raised by the RAG about historic implementation of closures, shift in industry practices and management measures (timing and intent). RAG recommended a timeline of the GHAT be created by AFMA to aid the RAG in being able to ground truth parts of the standardization and for reference more broadly.</p> <p>School Shark key points:</p> <ul style="list-style-type: none"> • The trawl CPUE for school shark is increasing which would be consistent with rebuilding of the stock. • The ISMP data indicates a discard rate of ~14 % for 2013 calendar year. • Efforts to avoid school shark by the gillnet sector appear successful but reported discarding is increasing. • Gillnet fishery CPUE continues to be an inappropriate index of abundance due to avoidance behaviour, area closures, 20 per cent ratio measure etc. • Trawl catch of school shark is not targeted and it appears areas caught in trawl do not seem to change much (noting intensity of catches may change slightly year to year) and CPUE has begun to increase noticeably. 	<p>Action 12: CSIRO to examine the trawl SS CPUE and integrate discards (as per tier 4 methodology) to examine if trend is revised.</p> <p>Action 13: AFMA to work with the RAG to create (and maintain as a live document in AFMA's sharepoint) a time line of major events in the GHAT e.g. move to quota, mgmt. measures,</p>



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	<p>School shark points discussed:</p> <ul style="list-style-type: none"> • RAG consensus that Diana and Ace of Hearts and Kiella auto-longline shark survey should not be included in catch rates from 2011 due to these boats conducting non-commercial fishing. • preliminary analysis still requires WA school shark state catch which should soon be available. • South Australian state school shark catch is consistently reported as being around 10-15t (no method specified from SA), noting the five carcass trip limit in SA state waters which is a combination of school and gummy shark species. • RAG noted catches by area; low Tasmanian catches, overall decline in South Australian school shark catches since Australian Sea Lion management measures were implemented in 2010 and the subsequent implementation of the school shark: gummy shark 20% bycatch ratio management measures. • gillnet sector still takes most school shark but this appears to be decreasing which is likely due to i) less gummy shark being taken and ii) closures affecting catch rates (which may mean that school shark and gummy shark catch rates are perhaps not indicative of the level of the stock) • trawl catch rates of school sharks appear to have increased in 2013. • RAG considered that the movement of school shark from various depths through their life cycle was highly relevant to any review of the 183m depth closure, bearing in mind it was introduced in 2007 the AFMA member enquired of the RAG what the state of knowledge was on how school shark move through depths over their life history? RAG agreed that this was an important point relevant to 183m rule (183m introduced in June 2007 to protect large breeding school shark). • trawl logs consistently report 10-20t of school shark catch over recent years. • ISMP onboard samples (mainly gillnet, with only a few hook trips) of length frequency (retained vs discarded) potentially seems to be a smaller sized cohort observed of around ~65cm mean length. RAG suggested that this could be an artefact of sampling representativeness. <p>Gummy shark key points:</p> <ul style="list-style-type: none"> • RAG noted gillnet catches of gummy shark are still lower than five years ago. • demersal longline catches increased in 2013 (mainly from South Australia). • steep rise on demersal longline and trawl CPUEs (noting reports of high trawl discard rates) whereas all three gillnet regions (Bass Strait, Tasmania, South Australia) have appeared to have had declining catch rates over the past five years. 	<p>environmental fluctuations, buy back implementation etc.</p> <p>Action 14: AFMA to write to PIRSA on behalf of the RAG seeking clarification of School Shark and Gummy Shark data supplied to AFMA.</p>



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	<p>Gummy Shark points discussed:</p> <ul style="list-style-type: none"> • Danish Seine records of school shark discards are not being recorded as reports have been received that many good catches of small school sharks have been made with this method recently. • Industry noted that SA state snapper boats were landing gummy shark under their 10 per day trip limits which cumulatively adds up to many tonnes and the RAGs understanding of the state mortality level is likely to be an underestimate. AFMA has written to SA to remind their operators of the arrangements under the OCS and the need to keep their catches under the allocated proportion of the Commonwealth TAC. • High grading is also likely not being recorded, with an underestimate of state total mortality. • Dramatic drop is apparent in the number of gummy shark positive catch records (from ~5000 down to 1000 post 2010) in South Australia. • Areas around King Island and west of Flinders Island now appear to be predominately school shark catches (industry report school shark are likely to be outcompeting gummy shark for grounds). • Gummy shark catches can see large increase in number trawl reports of gummy sharks are likely due to an increase in reporting rather than an artefact of the stock. • Suggest stable gummy shark trawl catches prior to structural adjustment – could be that structural adjustment has altered fishery dynamics and ‘protected’ gummy shark via reducing number of vessels catching. • RAG noted the need to acquire further data from South Australia to clarify uncertainties, improve model and confidence. RAG recommended that AFMA write to PIRSA on behalf of the RAG seeking further information on gummy shark catches. Seeking any length/frequency observer data, verification of accurate identification of gummy shark etc. <p>Sawshark key points:</p> <ul style="list-style-type: none"> • Preliminary analysis indicates a discard rate of approximately 28% across all methods i.e. of discards + catches, 28% of that amount is discarded. • Gillnets take the majority of saw shark catches and mainly in Bass Strait with a downwards trend evident in CPUE • Trawl and Danish seine methods returning a generally flat catch rate over time with some variability. • Most catch is not-targeted (from shots with less than 30kg of Saw shark caught). 	



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	<p>Sawshark points discussed:</p> <ul style="list-style-type: none"> • Market and economic factors are likely to be impacting the catch series; RAG noted that these trends may be hard to visualise on a long term scale, likely to be weekly/monthly fluctuations). • Industry advised \$0.50 quota price means low profits to be had and the species is generally not worth retaining. • Industry advised that 28% is likely to be an underestimate of discards. <p>Elephant fish key points:</p> <ul style="list-style-type: none"> • More discarded overall than landed (58%) • Danish seine and trawl method elephant fish catch series are hard to analyse as series due to low amounts of consistent catch data. <p>Elephant fish points discussed:</p> <ul style="list-style-type: none"> • Industry advised that discards were so high for this species as there is poor market for it. This is likely because they are not catching enough now to consistently supply a market (should one exist) and consistently poor prices. • Operators don't want to use hold space for such a low value species. • Catches fairly well distributed across the fishery with a concentration in eastern Bass Strait. • Some false records (e.g. Cascade Plateau) likely due to chimeras in deep water being recorded as elephant fish. • Gillnet catches dominate (landed records) from ~100m depth mainly in Bass Strait, seems structural adjustment had little effect on number of vessels. A lot of catch from shots less than 30kg i.e. not targeted. • Gillnet CPUE series for elephant fish appears to have spikes in catch rates which correlate with boom years of gummy shark catches. 	
<p>5.1 School Shark 20 per cent ratio</p>	<p>Shark RAG was asked to review the 20% school shark: gummy shark ratio to identify if it is set at the optimal level to achieve the management objectives i.e. prevent targeting and minimize discarding RAG advise was sought on whether it is the most effective management tool to achieve the objectives.</p> <p>The RAG noted a range of alternative management options in the tabled paper including:</p> <ul style="list-style-type: none"> • Leave 20% gummy shark: school shark ratio in place • Remove ratio entirely • Increase ratio to 30% • Require all live sharks to be released • Require all dead sharks to be landed • Quota pooling with industry access to an additional pool of 	<p>AFMA to work with the RAG to create (and maintain as a live document in AFMA's sharepoint) a time line of major events in the GHAT e.g. move to quota, mgmt. measures, environmental fluctuations,</p>



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	<p>quota that allows fishers to land catch and not discard</p> <p>An industry member noted a concern that quota pooling where fishing businesses pooled their school shark and gummy shark holdings with multiple boats fishing could encourage targeting of school shark.</p> <p>The RAG acknowledged that the status quo was causing industry problems and potentially driving discards higher. It was agreed that a measure to prevent targeting would still be required. The RAG noted the quota concerns raised by industry but agreed that this was more of an issue for SEMAC (i.e. how the fishery complies with the management measure).</p> <p>The RAG noted that given the uncertainty around post capture survival of school shark these measures may not suitable yet but are worth considering when better estimates of post capture survival for both gillnet and longlines are available.</p> <p>The RAG appreciated the industry members initiative to present an alternative option to allow industry members access to a separate 'pool of quota' to land dead school shark that would otherwise be dumped. The AFMA member noted that this option will be considered by management and tabled at the next MAC. However, the RAG noted that whilst minimising discards is one objective, the underlying concern is containing total fishing mortality.</p> <p>There was some support for amending the ratio to 30 per cent ratio as a way forward noting that it appeared to be the best option to alleviate discards whilst maintaining a deterrent to targeting. With understanding that total mortality must be considered and targeting cannot occur.</p> <p>The RAG considered whether there was any merit to re-running the school shark Model. However, the general RAG consensus was that there is limited extra data and it is unlikely to result in a substantial increase in understanding.</p>	<p>buy back implementation etc.</p>
<p>5.2 Revised School Shark rebuilding strategy</p>	<p>The AFMA member updated the RAG on the revised school shark rebuilding strategy now in final draft form. It was noted the core parameters included were based on previous shark RAG advice and included:</p> <ul style="list-style-type: none"> • Interim rebuilding target of B_{20} • Timeframe to rebuilding was set at 3 generations (66 years) • No targeting of school shark – RBC zero with bycatch TAC only (Currently 215t based on 2011 estimated catch plus discard estimate from that year) • Measure to limit a fishers catch of school shark to 20 per cent of their gummy shark holdings to deter targeting <p>The RAG advised that they continued to support these parameters for the School Shark rebuilding strategy noting that it would be reviewed</p>	<p>AFMA to write to PIRSA on behalf of the RAG seeking clarification of School Shark and Gummy Shark data supplied to AFMA.</p>



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	<p>again after three years when the results of the close kin abundance project are available. It is anticipated that the new data from the close kin genetics project will allow the RAG to formally review the rebuilding strategy based on a reliable measure of abundance.</p> <p>The RAG noted its principle concern with the draft rebuilding strategy was how to account for total fishing mortality especially given the recent increases in discards.</p> <p>Robin showed the most recent assessment update (2012) and future catch scenarios. At 275t mortality there is no recovery and a fishing mortality of 250t is considered the limit below which recovery can still take place. However, there is considerable uncertainty surrounding these estimates.</p> <p>RAG noted that there has been a large increase in reported discards with 45 tonnes of discards reported in the 2013-14 fishing season. This is higher than the ISMP estimate of discards at 14% (about 30 tonnes estimate).</p> <p>Discards are likely driven by school shark 20 per cent ratio, 28 day reconciliation and market access to quota. Concerns from industry members that fish are being dumped. Thoughts that discards will increase as fishers improve logbook reporting in general and reporting against the management measure.</p> <p>There is uncertainty over the post capture survival of school shark released alive. David Power noted that research by Dr Richard Reiner at Monash University had investigated post capture survival for gummy shark and a number of other species using highly controlled studies and this was planned for school shark.</p> <p>The RAG noted this would be valuable work and would useful to more accurately estimate total fishing mortality.</p> <p>The chair reminded members that SharkRAG had received very strong advice from SEMAC that a firm rationale is required with justification every year on the RBC.</p> <p>The RAG concluded that AFMA would need to monitor discards and estimates of total fishing mortality closely during the fishing season. AFMA is considering management measures that minimise discarding and keep total fishing mortality below the point where school shark are subject to overfishing.</p>	
<p>6.1 Length Conversion factors of shark:</p>	<p>AFMA onboard observers generally measure sharks by taking total length measurements. As sharks have been trunked once they are landed (minus their head) port sampling can only measure partial length. Last year observer program did some dual lengths and triple lengths of shark species (TL, FL, partial length) to aid CSIRO</p>	<p>Action 18: Observers to continue to collect Partial to Total</p>



Item No.	Discussion	Action Items / Rec's
Total/ Partial/ Fork Lengths	assessments that may have to deal with all three data codes and convert different data sets from one format to a standard measurement. Robin Thomson (CSIRO) updated the RAG on progress on this project, advising that estimated coefficients for Elephant fish for partial to total length could not be obtained because only 10 measurements had been made and asked that observers collect more. The regression for elephant fish for LCF-TOT is surprisingly noisy, as is that for saw shark for PAR-TOT.	elephant fish measurements and AFMA to examine why sawshark PAR-TOL measures appear so variable.
6.2 Size selectivity of hooks for sharks and impacts on assessments	<p>SharkRAG was asked to consider the suitability of the break out rule for the gummy shark Multi-Year Total Allowable Catch (concerning the length frequency of line caught sharks and deviation from trigger points) and how to effectively monitor this rule in years when the assessment is not being run. The RAG examined observed length frequencies of hook caught gummy shark across different fishing methods and was asked to provide comments on when the breakout rule should be assessed.</p> <p>RAG noted that this year the breakout rule for the gummy shark multi-year TAC wasn't triggered but came very close. This break out rule tells us whether or not we got the selectivity pattern right when we last ran the assessment.</p> <p>RAG recommendation:</p> <ul style="list-style-type: none"> • RAG held no strong concerns as the RBC for the last few years has been conservative, the 20% break out rule trigger is set a conservative 'arbitrary' level and also that a long term forward projection is being made with associated amount of variability. • RAG recommended maintaining a watching brief on with ongoing understanding that break out rule is to be revisited and to re-run the model to refine the present 'arbitrary' triggers <p>Points discussed:</p> <ul style="list-style-type: none"> • Break out rules – RAG noted that increased gummy shark catches on hooks (from gillnetters now using hooks) would be likely in future and that if the model assumptions were violated, calculations underlying the existing model would be incorrect. • Scalefish Hook sector appears to catch a smaller group of shark that the other other methods – industry members advised this was as they fish deeper depths and use smaller sized hooks. • RAG noted that the current shark hook observer data series (from the auto-longline trial) was collected in South Australia and has a different length frequency curve compared to the other methods/sectors. Industry members advised that the FV Diana had used #12 hooks and only fished summer months during the trial which both likely contributed to catching smaller gummy shark. 	



Item No.	Discussion	Action Items / Rec's
	<ul style="list-style-type: none"> RAG support was given to running an assessment update for gummy shark in 2015 with a broader set of sensitivity inputs to check the appropriateness of the break out rule. RAG members noted that examining this aspect of the model will not require a full re-assessment and that based on this examination, revision of the review points could potentially occur at the same time (a number of scenarios could potentially be run). 	
<p>7. GHAT sector data monitoring plan</p>	<p>David Power introduced the tabled draft document “<i>SESSF Monitoring and Data Plan 2014</i>” and its objectives.</p> <p>Advising that the data plan will work in conjunction with the existing 5 year research plans and will share the same review periods. The plan outlines a ‘top down’ approach in to define data needs for monitoring commercial stocks and the ecological impacts of fishing on the environment.</p> <p>David Power advised that Electronic Monitoring Systems were being rolled out across the GHAT as a means to cost effectively meet the long term data needs in the GHAT. David advised the intention was to phase out onboard observer coverage with crew member based programs identified as the most cost effective option to provide biological data.</p> <p>David advised that AFMA was seeking RAG comment on:</p> <ol style="list-style-type: none"> any new data required based on logs; what log data should be audited by EM; the provided schematic of data life cycle. <p>Comments/ points discussed:</p> <ul style="list-style-type: none"> Some concerns that smaller boats may not be able to get lengths at sea, with factory boats more suited to a crew based observer program. Some discussion on the technicalities of the camera setups and monitoring requirements across the fishery. Tagging as part of a crew member observer program? Could be done easily but the oversight is expensive and the benefits may not be worth it. Performance standards on timelines for logbook data cycle are important. Current data cycle is a year for fishing data to be supplied to CSIRO. Ideally on EM, eLogs the data will be entered into the system automatically. RAG noted that there is a current bias in number of port sampling records from Lakes Entrance. RAG industry members were supportive of the idea that fishers could conduct length measurements at sea provided it wasn't too much effort Average size of discards and numbers to be collected at sea. RAG scientists advised that it would be advisable to collect at- 	<p>Action 19: AFMA observer program to chase up status of Lakes Entrance Co-Op shark measurements taken by Jeff North.</p>



Item No.	Discussion	Action Items / Rec's
	<p>sea data rather than in-port; it was considered that such data would be able to be integrated into the model.</p> <ul style="list-style-type: none"> RAG felt need to have all three discard codes (damage/undersize/quota) as prompts on logbooks as well as life status. 	
<p>8.</p> <p>Review of gillnet input controls - 6000m update</p>	<p>AFMA management officer Erik Raudzens introduced a preliminary examination of the data set – noting that many different net lengths had been used and that few boats were still using 6000m consistently after initial uptake with many reducing their net length to somewhere between 4200-6000m. RAG noted that according to the analysis discards of non-quota species did not appear to be significantly different between the two treatments when standardised. There also appeared to be no significant difference between the two treatments of discards of quota species.</p> <p>A summary of catch rate per meter was presented. The RAG noted the need to look at catch rate per hour in future analyses incorporating soak time and that 'area fished' was likely to be a confounding variable that needs to be accounted for e.g. need to compare just areas fished with 6000m and compare to 4200m shots just in this area.</p> <p>RAG noted that the data was unclear and a number of confounding variables such as area and skipper effect were likely apparent. RAG recommended mapping data be incorporated into the analysis to examine where 6000m shots have occurred. There was also a shortage of catch data present to enable inferences about snapper or dolphins bycatch to be made.</p> <p>Industry member noted that longer nets are better for 'scouting' for fish and also help fishers to pick up fish with patchy distributions across the sea floor. RAG noted concerns previously raised on school shark catch in longer nets.</p>	<p>Action 20:</p> <p>AFMA to refine the preliminary 6000m analysis based on CSIRO comments and send to RAG for information</p>
<p>9.</p> <p>Review of auto-longline trip limits and trigger limits for School Shark and Gummy Shark</p>	<p>The AFMA member outlined the current arrangements with gillnetting and shark manual longlines permitted within 183m on the shelf (plus auto-longlining for shark with maximum 5000 hooks/day). Outside of 183m on the slope, scalefish auto-longlining with unlimited hooks is permitted with a seasonal trigger of 5t school shark and 10t gummy shark with a trip limit following these triggers being breached. AFMA advised of the broad governmental push for simplified management arrangements and this review is part of a larger red tape reduction project.</p> <p>Industry member questioned the intention of the 183m to which management advised that it had been established to provide protection of larger school shark stocks in deeper water among other</p>	<p>Action 21:</p> <p>EO to advise SEMAC EO to add consideration at the next SEMAC of carryover of any unused portion of the Gummy Shark Auto-longline sector trigger limit (10t) to</p>



Item No.	Discussion	Action Items / Rec's
	<p>reasons. RAG scientist advised that better protection would likely be afforded to the breeding stock by protecting the spawning areas in shallow waters rather than the larger, deeper water animals.</p> <p>Chair advised that MAC members had raised their concern that auto-longline sector should be able to take gummy shark as it is managed under quota which they can access, noting that there may be issues with selectivity of hooks. Feel that they are limited to only 10t and then 100kg trip limit is not equitable in a quota managed fishery.</p> <p>RAG noted that according to Robin's analysis, auto-longline fishers did tend to take a smaller size of gummy sharks.</p> <p>Industry members did not support the removal of the trigger limit due to concerns over boats targeting breeding condition, larger gummy shark in the deeper water and the impacts this may have on increased school shark catch.</p> <p>The RAG noted that school shark bycatch is likely to increase with increased take of gummy shark by the autolongliners, noting there can be no further incentives to take school shark given the stock rebuilding strategy and tight bycatch TAC.</p> <p>Robin showed the observed school shark length frequencies - showing that ALL and Shark Hook catch a cohort of school shark around 150cm and that ALL also caught another smaller cohort of fish smaller than 100cm.</p> <p>RAG tabled a number risks associated with this proposal:</p> <ul style="list-style-type: none"> - Cumulative impact of increased amounts of hook caught gummy shark (SA + deep water) relative to the break out rules of the stock assessment; concern already exists on the selectivity of hooks and if it is indeed different to the values included in the assessment, it will likely impact the TAC. - Still remain unknown aspects of adult gummy shark biology (in deeper water and in general) and that uncertainties still exist about school shark movement patterns - RAG scientists raised uncertainties about what gummy shark catch would likely be and what size classes these fish taken may be (data from the 10 t cap) noting we only have data from certain depths at present (data from observer program that has been examined) - Appears that auto-longliners are catching a smaller size of gummy shark and school shark; meaning that every tonne of shark caught will result in a larger number of sharks taken out of the fishery. 	<p>the next season - to be considered at the next SEMAC (whether operators should be given the capacity to carry over any of the uncaught seasonal trigger).</p> <p>Action 22: RAG members with shark biology experience (Colin and Jeremy) to supply the RAG with a short summary of what is currently known about Gummy Shark movement/size classes in deeper water i.e. deeper than 183m with references.</p>



Item No.	Discussion	Action Items / Rec's
	<p>The RAG noted that no auto-longline member was present at the meeting and that the RAG would prefer having input from the relevant stakeholders in making any recommendation.</p>	
<p>Item 10: Other business</p>	<p>Industry member Mr. David Stone referred to the four tabled papers written by his industry association for the RAG's information and asked members to read through them. Key points discussed on the tabled papers:</p> <p><i>School Shark Quota and Discards</i> The association suggests creating incentives to avoid discarding of school shark such as the establishment of a pool of school shark quota in excess of the TAC to be used to bring home discards and address seasonal fluctuations.</p> <p>RAG members advised that increased school shark catches may be due to a number of different factors such as abundance, as suggested by industry or a change in the availability of school shark to the fishery.</p> <p>AFMA member advised that the school shark TAC of 215t was set at the level of the unavoidable Commonwealth bycatch. Advised that AFMA will closely track how catch and discards are tracking this season year to date and will advise on likely trajectory of total mortality relevant to TAC.</p> <p>Mr. Stone noted the trepidation of some operators in reporting discards as they are concerned that gummy shark TAC might be cut if AFMA were to be suddenly supplied with large reports of school shark catches.</p> <p><i>Dolphin Mitigation</i> Mr. Stone advised that the association had formulated a research proposal seeking support for using Passive Acoustic Monitoring technology in the gillnet sector and are looking to submit this proposal for funding. This research would allow stakeholders to better understand how dolphins were interacting with fishing gear.</p> <p>AFMA member advised that the Marine Mammal Working Group subcommittee would consider this proposal at its next meeting.</p>	

Meeting closed 1:45

Chair thanked all participants for a productive meeting. RAG agreed to meeting again for a one day meeting to discuss RBCs in Melbourne in mid-November.



Signed (Chairperson):

Date:

List of Attachments

- 1) Standing list of declared conflicts of interest
- 2) Actions arising from SharkRAG No. 1, 2014



Attachment 1 - Standing list of declared conflicts of interest

Participant & Membership	Interest declared
Brendan Kelaher Chair	SESSFRAG member. Is currently conducting work on the management plan for upper slope dogfish species. No other interests declared.
Robin Thomson Scientific	Undertakes CSIRO stock assessments. No pecuniary interests
Colin Simpfendorfer Scientific	Has a potential pecuniary interest in research noting research interests are unlikely in particular to this fishery. Currently undertaking work on the research plan for upper slope dogfish.
Jeremy Prince Scientific	No interests declared pecuniary or otherwise.
Anissa Lawrence Conservation	Managing Director TierraMar Consulting. Some collaborative work historically with SA Shark Industry Association. No other declared interests pecuniary or otherwise.
David Stone Industry	Executive Officer for Sustainable Shark Fishing industry. No pecuniary interests or otherwise. Represents hook and gillnet industry interests.
Jason Pettit Industry	SA shark hook operator, SESSF quota holder.
Kyri Toumazos Industry	South Australia/ Bass Strait, shark fisher, boats fishing with hooks and gillnets. SESSF quota holder.
David Power AFMA member	AFMA manager no interests declared, pecuniary or otherwise.
Andrew Trappett AFMA, RAG EO	AFMA management officer and SharkRAG EO, no interests declared, pecuniary or otherwise

Recent RAG Invited participants and observers declarations of interest

Malcolm Haddon CSIRO	Potential scientific research interest. SlopeRAG and SA RAG member. Participant on other RAGs/ Committees e.g. GABRAG.
Miriana Sporcic CSIRO	No interests declared, pecuniary or otherwise.
Philios Toumazos Industry	SA industry license holder, quota holder operating 4 vessels. Executive Officer of South Australian rock lobster industry.
Nic Marton ABARES	No interests declared, pecuniary or otherwise.



Attachment 2 – Actions arising from SharkRAG No. 1, 2014 15-16 October

	Action Item	Responsibility
SharkRAG 1/2014 Action 1	EO to circulate AFMA's new shark handling guide to RAG members once finalised.	RAG EO
SharkRAG 1/2014 Action 2	AFMA to produce a map giving an overview of Shortfin Mako catches to see whether they were spatially aggregated (as this species is +2t over the 5t trigger).	AFMA
SharkRAG 1/2014 Action 3	AFMA to provide the RAG with more data on Boarfish and Wobbegong catch data (method, area, fate) as part of the data summary.	AFMA
SharkRAG 1/2014 Action 4	AFMA to clarify source of data used in table i.e. does total mortality include discards.	AFMA
SharkRAG 1/2014 Action 5	AFMA to provide the RAG with the SEMAC TEP report on a regular basis.	AFMA
SharkRAG 1/2014 Action 6	AFMA to convene dolphin mitigation subcommittee as soon as possible to discuss gear modifications and research.	AFMA
SharkRAG 1/2014 Action 7	AFMA to provide the RAG with a map of where school shark discards from logs have occurred.	AFMA
SharkRAG 1/2014 Action 8	CSIRO (Robin Thompson) to prepare a short paper to the two shark industry associations on what School Shark data fishers can collect.	CSIRO - Robin Thomson
SharkRAG 1/2014 Action 9	EO to chase up Kyne from FAS on status of extra SS/GS ageing data to be finished and supplied to CSIRO/AFMA.	RAG EO + Kyne at FAS
SharkRAG 1/2014 Action 10	EO to circulate Kirsten's Bilgeman paper on dolphin population biology to be circulated to the RAG.	RAG EO
SharkRAG 1/2014 Action 11	EO to circulate Papers from Woods Hole conf. on marine mammal mitigation attended by AFMA to be distrib to RAG if available	RAG EO
SharkRAG 1/2014 Action 12	CSIRO to examine the trawl SS CPUE and integrate discards (as per tier 4 methodology) to examine if trend is revised.	CSIRO - Malcolm Haddon
SharkRAG 1/2014 Action 13	AFMA to work with the RAG to create (and maintain as a live document in AFMA's sharepoint) a time line of major events in the GHAT e.g. move to quota, mgmt. measures, environmental fluctuations, buy back implementation etc.	AFMA (E.Raudzens) with assistance from SharkRAG members
SharkRAG 1/2014 Action 14	AFMA to write to PIRSA on behalf of the RAG seeking clarification of School Shark and Gummy Shark data supplied to AFMA.	AFMA & PIRSA
SharkRAG 1/2014 Action 15	EO to table an agenda item at the next SharkRAG meeting to discuss measures that may further help to reduce SS mortality e.g. best practice fishing method	RAG EO
SharkRAG 1/2014 Action 16	AFMA to provide SharkRAG with a characterisation of School Shark discard data (from ISMP and logs) from across all methods ahead of next RAG meeting.	AFMA



SharkRAG 1/2014 Action 17	AFMA to supply CSIRO 2014 Gummy Shark catches to analyse whether unavoidable bycatch of School Shark is higher in some parts of the fishery.	AFMA - CSIRO
SharkRAG 1/2014 Action 18	Observers to continue to collect Partial to Total Elephantfish length measurements and AFMA (mgmt. and observer team) to investigate why sawshark PAR-TOL measures are so noisy i.e. were all measurers using the same protocol?	AFMA observer team
SharkRAG 1/2014 Action 19	AFMA observer program to chase up status of Lakes Entrance Co-Op shark measurements taken by Jeff North.	AFMA observer team
SharkRAG 1/2014 Action 20	AFMA to refine the preliminary 6000m analysis based on CSIRO comments and send to RAG for information	AFMA - Erik Raudzens
SharkRAG 1/2014 Action 21	EO to advise SEMAC EO to add consideration at the next SEMAC of carryover of any unused portion of the Gummy Shark Auto-longline sector trigger limit (10t) to the next season - to be considered at the next SEMAC (whether operators should be given the capacity to carry over any of the uncaught seasonal trigger).	RAG EO - SEMAC EO
SharkRAG 1/2014 Action 22	RAG members with shark biology experience (Colin and Jeremy) to supply the RAG with a short summary of what is currently know about Gummy Shark movement/ size classes in deeper water i.e. deeper than 183m with references.	Colin Simpfendorfer and Jeremy Prince

