Australian Government
Australian Fisheries Management Authority

Sub-Antarctic Resource Assessment Group (SARAG)

FINAL MINUTES

SARAG 65

5 MAY 2022

SUB- ANTARCTIC RESOURCE ASSESSMENT GROUP (SARAG)

CHAIR: Dr Malcolm Haddon

Date: 5 May 2022

Venue: Teleconference and Australian Antarctic Division

Attendance

Members	Observers
Dr Malcolm Haddon, Chair	Ms Fiona Hill, AFMA
Dr Rich Hillary, CSIRO	Dr Heather Patterson, ABARES
Dr Philippe Ziegler, AAD	Dr Rachel Baird, SouthMAC Chair
Dr Dirk Welsford, AAD	Mr Martijn Johnson, Industry
Mr Malcolm McNeill, Industry Member	Mr Brad Milic, Industry
Mr Rhys Arangio, Industry Member	Dr Jaimie Cleeland, AAD
Dr Nigel Abery, AFMA	Dr Genevieve Phillips, AAD
Ms Claire Wallis, Executive Officer, AFMA	Dr Cara Miller, AAD
	Dr Ryan Downie, CSIRO *

* Participated for Agenda Item 15 only

Introduction

Agenda item 1 - Preliminaries

The sixty fifth meeting of the Sub-Antarctic Resource Assessment Group (SARAG 65) was opened at 9:30am on 5 May 2022 by the Chair, Dr Malcolm Haddon. Dr Haddon welcomed members and observers to meeting.

1.1 Acknowledgment of Country

The AFMA Member, on behalf of all members and observers, acknowledged the Traditional Owners of the land on which we met and paid respects to Elders past, present and emerging.

1.2 Declaration of interests

The Chair asked members and observers to state their name and profession and declare any conflict of interest that they may have on specific agenda items.

Dr Haddon advised that he is a consultant and is currently involved in two Fisheries Research and Development Corporation (FRDC) projects on abalone. He declared he has no pecuniary or other interests in the sub-Antarctic fisheries.

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Dr Hillary advised that he is employed by CSIRO and is the Principal Investigator of the Macquarie Island Toothfish Fishery (MITF) stock assessment. Noting no changes to prior declarations, he is a member of AFMA's Southern Bluefin Tuna Management Advisory Committee (SBTMAC) and Tropical Tuna RAG. Dr Hillary advised that he has no pecuniary interests in the sub-Antarctic fisheries.

Mr McNeill advised he is the Managing Director of Australian Longline Fishing Pty Ltd (ALFPL) which holds various fishing rights in, and operates vessels in, the sub-Antarctic fisheries and New and Exploratory fisheries under the jurisdiction of Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). Mr McNeill noted one change since the last meeting of SARAG, in that he is now the Chair of the Ross Sea Industry Client Group. Mr McNeill remains a member of Sub-Antarctic Management Advisory Committee (SouthMAC) and Board member of the Coalition of Legal Toothfish Operators (COLTO). Mr McNeill was not aware of any investigation or prosecution action by AFMA against his Company or of any legal action taken by his Company against AFMA.

Mr Arangio advised that he is employed by Austral Fisheries P/L (Austral Fisheries) as the Senior Manager of Environment and Policy. Austral Fisheries owns Statutory Fishing Rights (SFRs) in the Australian sub-Antarctic fisheries and waters under the jurisdiction of CCAMLR. Noting no changes since the last meeting, Mr Arangio is the Executive Officer of COLTO, as well as being a member of SouthMAC. He was not aware of any investigation or prosecution action by AFMA against his Company or of any legal action taken by his Company against AFMA.

Dr Ziegler advised that he is employed by AAD and is the Fishery scientist responsible for Heard Island and McDonald islands Fishery (HIMIF) work, including the HIMI stock assessments. Dr Ziegler has no pecuniary interest in the sub-Antarctic and his salary is not connected to any research grants noting that he is a co-investigator on a current FRDC project and future FRDC projects.

Dr Welsford advised that he is employed by the Department of Agriculture, Water and the Environment and is the Chair for the Scientific Committee of CCAMLR and Department's Science Convenor. Dr Welsford advised that he holds no pecuniary or other interests in the sub-Antarctic fisheries.

Dr Abery advised he is employed by the Australian Fisheries Management Authority (AFMA) as the A/g Manager for sub-Antarctic fisheries at AFMA. Dr Abery advised he has no pecuniary or other interests in the sub-Antarctic fisheries.

Ms Wallis advised she is employed by AFMA as a Senior Management Officer on sub-Antarctic Fisheries and advised that she is also the Executive Officer for SouthMAC. Ms Wallis advised that she has no pecuniary or other interests in the sub-Antarctic fisheries.

Dr Patterson advised she is an employee of the Department of Agriculture, Water and the Environment and is the Editor of the Australian Bureau of Agricultural Resource Economics

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and Sciences (ABARES) Fishery Status Reports. Dr Patterson noted that she had no pecuniary interest in the sub-Antarctic fisheries.

Ms Hill advised she is employed by AFMA as the Senior Manager of Tuna and International fisheries. Ms Hill advised that she has no pecuniary or other interests in the sub-Antarctic fisheries.

Mr Johnson advised he was attending as an observer to SARAG and an employee of Australian Longline Fishing Pty Ltd (ALFPL). Noting no changes, Mr Johnson is the Sustainability and Operations Coordinator of ALFPL which holds various fishing rights in, and operates vessels in, the sub-Antarctic fisheries and New and Exploratory fisheries under the jurisdiction of CCAMLR. Mr Johnson is not aware of any investigation or prosecution action by AFMA against ALFPL or any litigation entered in to by ALFPL.

Mr Milic advised he was attending as an observer to SARAG and is the General Manager, Operations, at ALFPL which holds various fishing rights in, and operates vessels in, the sub-Antarctic fisheries and New and Exploratory fisheries under the jurisdiction of CCAMLR.

Dr Phillips advised that she is a fisheries scientist at the AAD and had no pecuniary interest in the sub-Antarctic fisheries.

Dr Cleeland advised that she is a fisheries scientist at the AAD investigating skate bycatch assessment. Dr Cleeland advised of no changes to her declaration, including that she holds no pecuniary interest in the sub-Antarctic fisheries.

Dr Miller advised that she is a fisheries scientist at the AAD and had no pecuniary interest in the sub-Antarctic fisheries.

Dr Baird advised that she is the Chair of SouthMAC, a lawyer with experience in UNCLOS and that she has no interest pecuniary or otherwise in sub-Antarctic Fisheries.

1.3 Apologies and observers

SARAG noted an apology from Dr Jemery Day.

1.4 Agenda

SARAG adopted the agenda with the following amendment:

- Agenda Items 7 and 8 were reversed to allow the skate and ray bycatch study results to better inform discussion of bycatch limit settings for 2023/24.

The agenda can be found at Attachment A.

Agenda item 2 – Adoption of minutes from SARAG 64

The draft minutes from SARAG 64 held on 18 August 2021 were circulated for comment on 20 April 2022. Comments were received from Mr Rhys Arangio, Mr Malcolm McNeill and Dr

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Philippe Ziegler. Members noted that the minutes from the SARAG 64 meeting are now finalised.

Agenda item 3 – Actions arising from SARAG 64

Actions arising from SARAG 64

Item	Action arising	Status
1	**Longline survey –** AAD to keep SARAG up-to-date regarding a longline survey in the HIMIF (SARAG 62 Agenda Item 7).	Members noted a verbal update will be provided under Agenda Item 11.
2	**Skate stock assessment –** AAD to present skate stock assessment to SARAG 65 (SARAG 63 Agenda Item 9).	Members noted that this item will be discussed under Agenda Item 8.
3	**Electronic monitoring trial –** Industry agreed to discuss with AAD how footage collected might support skate and ray data collection (SARAG 64 Agenda Item 12).	Members noted that this item will be discussed under Agenda Item 8.

Agenda item 4 – Correspondence

SARAG noted the following correspondence which had been received out-of-session since the last meeting in August 2020:

- An email dated 11 August 2021 from Sarah Kirkcaldie circulating the agenda and papers for SARAG 64;
- An email dated 12 August 2021 from Sarah Kirkcaldie circulating the Patagonian Toothfish stock assessment paper for SARAG 64;
- An email dated 13 and 16 August 2021 from Sarah Kirkcaldie circulating the Skate Assessment paper for SARAG 64;
- An email dated 16 October 2021 from Sarah Kirkcaldie circulating a milestone report for the FRDC funded project 2019-169 titled 'Environmental and ecosystem drivers of catch efficiency within Australia's subantarctic Patagonian Toothfish (*Dissostichus eleginoides*) fisheries';
- An email dated 16 December 2021 from Sarah Kirkcaldie seeking comments on Research proposals submitted to AFMA's Research Committee for funding;
- An email dated 27 January 2022 from Sarah Kirkcaldie circulating a letter from Anna Willock, A/g Chief Executive Officer, AFMA regarding the management of conflicts of interest;
- An email dated 3 March 2022 from Sarah Kirkcaldie informing members that AFMA was seeking applications to become a member on SARAG;

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- An email dated 3 March 2022 from Sarah Kirkcaldie proposing a new date for SARAG 65;
- An email dated 28 March 2022 from Sarah Kirkcaldie reminding members that AFMA was seeking member applications for SARAG; and
- An email dated 7 April 2022 from Sarah Kirkcaldie seeking comments on the draft agenda for SARAG 65 scheduled for 5 May 2022; and
- An email dated 22 April 2022 from Claire Wallis seeking comments on the draft minutes from SARAG 64.

Agenda item 5 - Fishing operations update

Mr Arangio and Mr McNeill provided SARAG with verbal updates on fishing operations in the HIMIF, MITF and CCAMLR Exploratory fisheries.

Mr Arangio noted that since the last RAG Austral Fisheries had a successful summer with icefish, noting that the icefish TAC for the current and next seasons is the largest in quite some time. The RAG heard that Austral Fisheries vessels had minimal catch of icefish over 3-4 days in December, but icefish were abundant on their return to the fishing grounds in mid-February. The industry member reported that two vessels targeted icefish between mid-February and late March, taking an average of 25t per day and approximately ~900t in total, in addition to 70t caught during the RSTS.

Members noted the challenges to market access in Eastern Europe, which has historically been the primary market for icefish. Austral Fisheries expect to supply 200-300t to the domestic market for the first time in many years. SARAG heard that these changes in conditions coupled with efforts to avoid market saturation have led Austral Fisheries to pause icefish fishing with a view to resume later in the season. This effort management approach to market conditions is anticipated to extend into the 2022/23 season.

SARAG heard that Austral Fisheries have all longline vessels deployed to the fishing grounds, reporting good catches for April compared to previous years. The group heard that Cape Arkona recently completed the RSTS survey, and that approximately 40t of toothfish was caught - a reduction compared to recent years but still above the long-term average. High catches of icefish in the RSTS were considered to support survey and assessment discussions for the current season. Members heard reports of a few sperm whales following vessels, and that the whales usually migrate northwards by the end of May. SARAG also noted reports of minor bird interactions with no captures.

Mr McNeill provided an update on ALFPL and reminded SARAG that due to the Antarctic Aurora catching three birds in the 2020/21 season extension, the vessel ceased fishing in the HIMI in mid-September. Following the exclusion of the Antarctic Aurora, the Antarctic Discovery moved from the MITF into HIMI and the Antarctic Aurora moved to the Ross Sea for the remainder of the season. This season (2021/22) in HIMI the Antarctic Aurora started fishing in mid-April and reported sighting a few whales at that time. The vessel steamed away from any whales seen to reduce the risk of predation on the catch. SARAG noted reports that

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the start of the MITF season has had low catch rates, and industry views that conditions seemed to be different to previous seasons. ALFPL advised SARAG that its skippers reported stronger tides and current patterns were impacting gear differently to usual, resulting in increased gear losses.

In the Ross Sea New and Exploratory fisheries, the Antarctic Aurora fished in 88.1 but did not fish 88.2. Catch in this region was reported as below average, Mr McNeill thought that this was due in part to a high number of vessels in small area.

SARAG noted that ALFPL had access to 58.4.2 and the recent establishment of a second more western research box. The group heard that research lines were set in the new box by ALFPL and a French vessel, and that due to bycatch levels the French vessel left the area early and the remaining research shots were carried out by the Antarctic Aurora. SARAG noted that catch rates in the initial research block were comparable to previous years with a potential minor reduction in average size. Furthermore, the skipper reported positive signs from the new research block while setting lines under direction, despite difficult environmental conditions.

The group also heard that Australian vessels continue to not have access to fish 58.4.1. Mr McNeill confirmed that ALFPL is interested in returning to 58.4.2 next season and would also seek to access 58.4.1, if allowed, going forward.

SARAG noted the introduction of the Antarctic Aurora into the fishery and that the effect of the moon pool in reducing loss of fish at the surface may impact CPUE calculations going forward as fewer larger fish are lost in the East Antarctic fisheries. Members noted that it is too early to comment on actual numbers.

Dr Welsford asked whether industry had received any government support due to Russian trade impacts. Industry reflected that they had not fully explored seeking government assistance on this matter. The RAG noted that government assistance so far has been related to the impacts of covid on trade and has included levy relief and freight assistance (IFAM), which has been available to all fisheries. Industry noted that they are engaging with Austrade to assist with market access and identification.

Dr Welsford, in response to Mr McNeil's update on the high numbers of vessels fishing in the Ross Sea, asked whether the Ross Sea Client Group was in a position to allocate effort in the Ross Sea. Members noted that the ability of CCAMLR to agree to effort limitation is likely very low. Mr McNeill advised SARAG that a significant proportion of operators are not yet Ross Sea Client Group members, though the market benefits of group membership is increasing interest. Industry reflected that while voluntary coalitions are valuable, CCAMLR based allocation discussions would have a real impact on limit setting, noting that directing efforts on the water has not yet been discussed by members. The role of COLTO was also raised, due to its wider membership.

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SARAG also noted the update provided by the AFMA observer section, noting that Covid-19 continues to present challenges for observer deployment. The RAG noted the expectation some of these challenges will reduce throughout 2022 as covid restrictions are relaxed.

Observer deployments

During the 2020/21 fishing season AFMA deployed an observer on 17 voyages, achieving observation of 843 fishing days spread across HIMI, MITF and Exploratory fisheries.

- Thirteen HIMI voyages, (664 fishing days)
- Two MITF voyage, (129 fishing days); and
- Two CCAMLR exploratory fisheries (1x Ross Sea and 1x East Antarctic) voyages (50 fishing days).

Tagging summary for 2020/21 season

During the 2020/21 fishing season there was a total of 7,454 Toothfish tagged (1,966 recaptured)

- 6,086 toothfish were tagged at HIMI (1693 recaptured).
- 686 skates were tagged at HIMI (30 recaptured).
- 939 toothfish were tagged at Macquarie Island (237 recaptured).
- No skates were tagged or recaptured at MITF.
- 429 toothfish were tagged in Exploratory fisheries (36 recaptured).
- 376 skates were tagged in Exploratory fisheries (one recaptured).

Heard Island and McDonald Islands Toothfish Fishery

Agenda item 6 – Patagonian toothfish Fishery summary 2020/21 season

Dr Ziegler provided a verbal update to the group on the 2020/21 season supported by a presentation. SARAG noted the spatial footprint of the fishery in 2021 and previous years and noted how this change in footprint can affect the stock assessment. The group noted an increase in footprint between 2018 and 2019, a decrease in 2020 and then expansion in 2021. The AAD described a grid cell-based approximation of the annual footprint relative to the total historical fished area, noting a maximum of 60% overlap occurring annually between 2016 and 2018. SARAG noted seasonal variation in depth distribution of effort with the most recent season showing deeper targeting than previous years.

The group heard a summary of annual tagging results and subsequent seasonal recaptures. In 2017 and 2018 recaptures were higher, with lower recaptures in 2020 and an increase again in 2021. Members noted that the same locations may be fished repeatedly in

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subsequent years and considered the impacts this might have on mark-recapture rates, catch per unit of effort (CPUE) calculations and stock assessment outputs. Industry reflected that effort had been spread in 2021 compared to 2020, following guidance from SARAG in the previous year. Industry members suggested that part of the contracting footprint is linked to the TAC reducing in recent years, which may result in a higher overlap of effort between years with vessels fishing areas with high catch rates which are likely to have more tagged fish, and expected this to continue in the coming seasons. Industry also discussed its recent fishing effort spread to areas where no or little tagging had occurred to help improve the data for the stock assessment, however members noted that there would need to be a balance between broad coverage and profitable fishing operations.

SARAG heard that the stock assessment generates Chapman biomass estimates for each tag release cohort based on total tags and estimated recaptures over time. Given the fishing footprint and its links to the tagging program, Members discussed whether a spatially explicit approach to tagging is relevant and heard from Dr Ziegler on the potential role of a Random Stratified Longline Survey (RSLS) to inform this aspect.

Members also noted that RSLS does not need to occur all at once in the beginning of the season and could be used to spread effort throughout the season by moving through blocks. Given restrictions around privacy, the group suggested that, if amenable, industry could communicate amongst themselves to coordinate a seasonal fishing activity footprint. If requested, the AAD identified they could explore communicating within season summarised C2 data upon industry request.

With the introduction of newer vessels and updated gear configurations to the sub-Antarctic fleet, SARAG noted that differences in fishing gear may impact tag returns and could be considered part of heterogeneity with weighting, as an alternative to spatial approaches.

SARAG discussed whether the stock assessment model has shown increasing uncertainty in more recent years, and how this has affected forward model projections. Dr Hillary provided advice that weighting approaches can account for some uncertainties. Dr Zeigler advised that he could further explore the issue, noting that the current levels of uncertainty may not be reflected strongly in the stock assessment. Members heard that one response by the model may be a downward adjustment of B_0 from previous releases, though the likelihood of this is difficult to predict.

Agenda item 7 – Skate and Ray Assessment

Dr Cleeland presented an update on her paper *Bycatch assessment for skates (Bathyraja spp.) in the Heard Island and McDonald islands fisheries*, which included 2021 data.

SARAG noted that the population assessment approach had been updated to reflect new data, that the fishery has multiple gear types, the finalised growth parameters, and the removal of low recruitment scenarios. The RAG also heard that post release mortality estimates were tested in the current assessment. The group heard that a paper on vertebral growth parameter estimates is currently under review for publication. SARAG noted that for

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B. eatonii and *B. murrayii* sample sizes used to estimate growth parameters were very low (n=20). Because of the low sample sizes a literature review of other deepwater skate species was undertaken and conservative growth parameters, avoiding implications of high productivity, from similar species were used and tested in the model.

Members noted the figures describing size-based gear selectivity by species and gear type, and advice from Dr Cleeland that differences in selectivity may be lower than originally anticipated. The SARAG heard that the model assumed full access to the population and discussed whether skate size impacted injury rates and post capture survival depending on gear type.

SARAG noted the calculation of yield and its application to updated biomass estimates to provide a precautionary bycatch recommendation. *B eatonii* broadly showed increases in recommended precautionary yield when compared to previous modeling, which Dr Cleeland suspected was linked to selectivity parameter settings. *B. murrayii* showed a decrease in recommended precautionary yield, which may be linked to an increase in recent catch rates. The group noted that the recent increased interactions were anecdotally small individuals, which may reflect a recruitment event.

Industry asked whether the impact of bait type on catch rate had been investigated and received advice that while this had not been explicitly investigated, recent research undertaken in France has clarified differences in preferred diet between the species, with *B. irrasa* preferring a benthic diet of polychaete worms, crustaceans and octopus while *B. murrayi and B. eatonii* have a more pelagic diet including squid and small fish. SARAG heard that Dr Cleeland intends to have this data presented at a skate and ray bycatch workshop. SARAG discussed the publicly available information on bait use and skate and ray bycatch rates in Southern Ocean fisheries. Industry requested that changes in Australian use of bait types be identified and compared to bycatch rates where possible.

SARAG recalled that SARAG64 endorsed an industry workshop on skate bycatch which the AAD would like to see progressed with the aim of exploring options on avoiding, mitigating and limiting skate bycatch. SARAG heard that the workshop, estimated to take up to a day and a half, should include academics that have recently produced relevant work, as well as French and Australian industry representatives and gear experts, including skippers. SARAG recommended that the AAD, in consultation with industry and AFMA, set a date and develop an agenda for this workshop (**Action Item 1**).

SARAG heard that the average precautionary maximum yield for each species varied, between 98t (*B. eatonii*) to 26t and 34t (*B. murrayi* and *irrasa* respectively), and that accurate estimation of this yield is very challenging. Dr Cleeland clarified that the two areas with greatest uncertainty at this time are growth parameters, and post-release survival. SARAG noted that the paper concluded that the 120 tonne bycatch limit is currently suitable, noting this will continue to be reviewed by SARAG annually.

Members received advice that the AAD is carrying out research with elasmobranch specialist veterinarians to estimate survivability of a range of common injuries. AAD hopes that this

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qualitative approach will shed some light on post release mortality rates while providing updated advice that can be implemented by fishers and observers. SARAG noted that this work will be complemented by a concurrent satellite tagging project.

Noting that trawl net gear trials for skate mitigation will be discussed under the following agenda item 9, Members heard that in 2021, 59 icefish trawls were undertaken with the Champion net (old net) and 57 with the new net design. SARAG noted that the new net is larger with a greater horizontal (50%) and vertical opening, lighter, and can be trawled faster resulting in shorter tows covering a greater footprint.

The RAG received an update on an AFMA Observer Workshop to progress products aiming to improve species ID and condition assessment by observers and fishers, including the development of an app. The key issue raised by observers was condition assessment and handling protocols, noting the impact of rough weather on implementation and the value of simplifying protocols where possible. The process for releasing skates via the moonpool was discussed by the RAG, considering approaches that reduce exposure to weather, bird depredation, and fouling. In discussing the differences between releasing via the moonpool and the side door, Members reflected that the infrequent use of the side door for skate release reduces the risk of seabirds acclimating to it as a food source.

SARAG thanked Dr Cleeland for her presentation and recommended that a summary of her findings is distributed (Attachment B).

ACTION ITEM 1 – AAD to set date and develop agenda for industry workshop in June/July 2022 (1-2 days).

Agenda item 8 – Bycatch limits for the 2022/23 season

Bycatch Limits

SARAG supported the proposal from AFMA that bycatch limits from the current fishing season be maintained at the same level for the coming fishing 2022/23 season. SARAG noted that the results of the updated skate and ray assessment supported the bycatch limit for that species group. Furthermore, no new assessments have been conducted for the other bycatch since the bycatch limits were previously set.

Heard Island and McDonald islands Fishery bycatch species:

Macrourus caml and *M. whitsoni*	409 tonnes
M. halotrachys and *M. carinatus*	360 tonnes
Unicorn icefish (*Channichthys rhinoceratus)*	1 663 tonnes
Skates and rays (*Bathyraja spp.)*	120 tonnes

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Grey rockcod (*Lepidonotothen squamifrons*)	80 tonnes
All other species (each)	50 tonnes

Members noted that the recommended bycatch limits for the 2022/23 season will be provided to SouthMAC before being considered by the AFMA Commission.

Noting the current limits to species-specific data availability, the ongoing work by Dr Cleeland and others, and the anticipated skate and ray bycatch workshop, the scientific members of SARAG expressed an interest in returning to this item in more detail in the future.

SARAG supported the proposed bycatch triggers for the 2022/23 season.

Skate and Ray Sub-Limit Triggers

SARAG discussed how best to implement the agreed sub-limit triggers (50t and 80t), noting that when 50t of retained skates was recently reached a meeting was held between AFMA and the AAD, and the industry representative of the trawl sector was advised of the outcome. Industry requested that going forward, all companies be included in this correspondence. (**Action item 2**).

AFMA sought input from SARAG on what management action might be appropriate at 80t, and how this might be impacted if it occurs during the RSTS period, noting that shutting down the RSTS is undesirable. Members heard that skate bycatch is relatively low in the RSTS and noted advice from industry that the soft triggers were viewed as specifically applying to management of commercial icefish catch only.

The point was made that the triggers were initially discussed in response to an increase in icefish TAC, with increased effort expected to have a correlated increase in skate bycatch. An industry participant proposed that once 80t of retained skate bycatch had been reached, commercial icefish fishing should pause until a reasonable proportion of toothfish TAC had been caught, rather than wait until longline fishing had ceased.

The group discussed whether icefish fishing should pause until the toothfish quota has been completely caught and considered that a hard closure to icefish trawl at 80t would be undesirable. Industry proposed that a stakeholder discussion should occur if the 80t trigger is reached, which would include exploring options to restart icefish fishing at an agreed time where feasible.

Scientific members and observers noted that post release mortality and species composition of bycatch for different methods may need to be considered in developing management responses to soft triggers in the future. Members noted that the agreed 120t for the 2022/23 season is based on the best currently available information and may be adjusted as new information comes to hand in future.

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SARAG discussed ownership of bycatch monitoring around approaching trigger limits, and possible communication pathways and frequencies if the 80t trigger is reached, noting the range of factors that might impact a recommendation about when to resume icefish fishing. SARAG recommended that when the trawl fishing industry representatives wish to recommence icefish fishing, a Working Group comprising AFMA, AAD, and both industry representatives should discuss how to proceed within the affected season. (**Action Item 3**). The discussion may be informed by analysis of historical catch rates and reporting frequency will need to be considered.

ACTION ITEM 2 –	**when retained skate bycatch approaches 50 t, AFMA to inform industry. When retained skate bycatch reaches 50 t AFMA and AAD to discuss and advise industry of any outcomes of the discussion.**
ACTION ITEM 3 –	**when retained skate bycatch approaches 80 t, AFMA management to inform industry. Once 80 t is reached, icefish fishing to cease until otherwise agreed. Industry to advise if they wish to recommence icefish fishing, and workshop convened to discuss how to proceed.**

Agenda item 9 – Trawl Gear Modification Trial (Skate Bycatch Reduction)

Mr Rhys Arangio, industry member, presented a paper on the outcomes of a trawl gear modification trial undertaken by Austral Fisheries under scientific permit in the 2021/22 season.

Members heard that SARAG first discussed the trial in 2019, with industry's goal being to develop a gear configuration that reduces skate and ray bycatch and increases trawl efficiencies. Noting the update provided by Dr Cleeland under Agenda Item 7, the group heard that industry considers sufficient evidence has been provided to demonstrate this. Industry requested that the RAG agree to recommend to SouthMAC that the *Fisheries Management (Heard Island and McDonald Islands Fishery) Regulations 2002* be amended to allow for greater flexibility on gear parameters.

The group agreed that the relevant CCAMLR Conservation Measure (Conservation Measure 22-03 (1990)[1] Mesh size for *Champsocephalus gunnari*) is very old and the RAG requested that AFMA confirm that the trial is in accordance with all relevant trawl Conservation Measures (CM) (**Action Item 4**).

Dr Cleeland had reviewed 12 paired hauls and found that the bycatch CPUE was lower in the new net, which has an improved icefish:skate ratio. Interrogation of species composition found that *B. irrasa* presence was substantially lower in the new net compared to the Champion net. Industry commented that the retained skate volume was reduced overall, advising that the average catch per shot in the new net was 11.5t icefish and 400kg retained skates compared to 7t icefish and 470kg retained skates. SARAG noted that skate condition is of interest, in addition to species volumes, and that the proportion of released skates was

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similar between the two nets, and that the condition of those skates was poorer in the new net, potentially as a function of net dimensions.

Referring to previous advice that the trial should comprise a minimum of 40 tows, that more fulsome analysis of the results was pending, and not wanting to discourage innovation, SARAG recommended that the trial continue and noted that further information would enhance understanding of the performance of the new net (**Action Item 5**).

Appreciating the timeframes associated with amendments to the Regulations, SARAG recommended that AFMA pursue an amendment to relocate trawl gear specifications to a more appropriate legislative instrument (**Action Item 6**).

SARAG requested that a presentation on performance of the new net be provided to the mid-year Skate bycatch workshop (**Action Item 7**)

ACTION ITEM 4 – AFMA to check trawl gear CM to see if Scientific Permit is in alignment
ACTION ITEM 5 – Austral Fisheries to apply for a new Scientific Permit to allow continued use of the new net
ACTION ITEM 6 – AFMA to pursue amending the Regulations to remove trawl gear specifications.
ACTION ITEM 7 – AAD to provide a presentation on performance of the new net to the mid-year bycatch workshop.

Agenda item 10 – Random Stratified Trawl Survey review (3:53:00)

Dr Ziegler provided a verbal update to the group. Due to competing demands, a full presentation was not available on this item. SARAG agreed that the AAD would provide an update at SARAG 66 (**Action Item 8**).

SARAG noted interest by industry for a future review of the number of RSTS shots, to explore the effect of a reduction in particular within “low information” strata. SARAG recommended this be considered in future work (**Action Item 9**).

ACTION ITEM 8 – AAD to present a paper on the RSTS review at SARAG 66.
ACTION ITEM 9 – AAD to consider number of shots and whether the stratification change from five years ago has been effective and provide an update for the future information needs to inform the RSTS.

Agenda item 11 – Random Stratified Longline Survey Draft Proposal

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Dr Miller led a discussion on a draft proposal to undertake a random stratified longline survey (RSLS) in the HIMI fishery. SARAG heard that the goal is to develop a fishery independent survey using commercially aligned longline gear to simulate the depths and selectivity of current effort. Noting the broad approach of the background paper, SARAG was asked to provide advice to refine the survey design.

Dr Miller proposed a 500-2000m depth profile as a representative and feasible sampling area. Dr Miller sought feedback on areas that may not be suitable for the survey in this depth strata due to weather, topography, or other reasons.

SARAG noted the differences in approach between Simple Random Sampling (SRS), Balanced Random Sampling and the proposed RSLS approach, which takes an SRS approach within "strata". The group noted a bimodal distribution of CPUE depth modelled for HIMI (500-1000, 1000-2000m). SARAG noted that this can be used to inform cut off points between depth classes when developing strata and considered how the impact of variable choice could be incorporated in survey design. SARAG also heard that Dr Miller had started to explore using CPUE to inform proportionate sampling approaches and were encouraged to reflect on the relationship between spatial effort and tag recapture CPUE.

SARAG was asked to consider whether the proposed geographic boundaries are appropriate and to reflect on the effort and resources available for a randomised survey including time, distance, RSLS time-frame preferences and feasibilities. The group was also asked to consider broader opportunities to improve data-based understanding of HIMI, such as the creation of long-term monitoring sites, biological sampling, or other data collection matters.

Industry reflected that while some fishing effort occurred deeper than 2,000m, they were comfortable with the explanation that the proposed profile covers up to 90% of effort. A question was raised regarding three banks that have not been surveyed in the RSTS recently. SARAG heard that these surveys were stopped based on advice that they constituted rough ground and locations of high VME value. Additional advice was that toothfish don't have a strong correlation with complex habitat, reducing the value of sampling these habitats. Members discussed the value these areas may have to informing an upper depth profile limit, and considered that this may require additional tests, rather than incorporation into the core of an RSLS. SARAG discussed that some survey designs try to incorporate both long term sites as well as an SRS approach, and noted that this approach might be asking a slightly different question.

The scientific members discussed the strengths of a stratification approach compared to post survey data modelling and means of incorporating additional factors such as oceanographic variables. SARAG noted the importance of survey design, particularly in avoiding a lopsided approach. SARAG heard that it is possible to undertake standard SRS, including stratification, through post survey modelling. The scientific members identified a need to know how long it would take for the RSLS to start providing meaningful information and noted that current RSTS data can provide a lower bound of juvenile abundance quite quickly based on q (catchability) values.

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SARAG heard that rather than providing q values, the proposed RSLS would develop a Chapman abundance index in a similar manner to the tagged cohorts informing the stock assessment. The goal of the study is to, over an extended period, supplement and perhaps eventually replace the fishery-dependent tag-recapture data, to give a new index of abundance to inform the model. Members discussed the differences in "mixing effect" between fishery dependent tagging and survey-based tagging. SARAG also noted the role of gear standardisation in the development of a relative abundance index and the advice that it is not a concern for the development of the RSLS itself.

Industry members sought clarification on the timing of a proposed RSLS, potential commitment, and the value of undertaking an additional survey. SARAG heard that survey timing and shot numbers may be limited by season extension considerations (including seabird and whale impacts), and available TAC. Industry asked if a longline survey could be carried out throughout normal operations.

Members discussed the potential of an additional survey to improve estimates of stock biomass and the spatial distribution of longline vulnerable fish, by improving understanding of the relative abundance and spatial distribution of mature toothfish, complementary to the information on recruitment and relative abundance of juvenile toothfish provided by the RSTS. Industry indicated that they would like to see RSTS stations reduced alongside a reduction in frequency of this survey while an RSLS is phased in at an annual or biennial frequency.

In light of these concerns, industry members requested that a business case be developed for them to consider before committing to any financial buy in. In development of the business case, it was also requested that consideration be given to excluding April for data collection in an RSLS due to an increased risk of interaction with seabirds and whales. The AAD agreed to develop a paper to be presented that would describe 3 RSLS options including a summary of the costs and benefits of each approach (**Action Item 10**) and considered the future role of an RSLS Sub Working Group.

ACTION ITEM 10 – AAD to develop a paper with 3 RSLS options and cost/benefits for each approach for discussion OOS.

CCAMLR & Exploratory Fisheries

Agenda Item 12 – CCAMLR New and Exploratory Fisheries Applications

The AFMA member provided an update to participants on an application for the 2022/23 season of CCAMLR New and Exploratory Fisheries. SARAG noted that the application had been discussed in April by the CCAMLR Interdepartmental Committee (IDC) and CCAMLR Consultative Forum (CCF) and accepted with no amendments, and that the AAD would submit the application on behalf of Australia to the CCAMLR Secretariat in advance of the June 1 2022 deadline. SARAG noted the supporting Research Plan is currently under development.

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Agenda item 13 – Update from WG-EMM and WG-SAM

SARAG noted that the 2022 CCAMLR Working Group on Acoustic Survey and Analysis Methods will be held online from 29 May to 2 July, the Statistics, Assessments and Modelling (WG-SAM) will be held online from 27 June to 1 July and Ecosystem Monitoring and Management (WG-EMM) will be held online from 4 to 11 July 2022.

AAD has indicated that the following papers will be submitted to **WG-ASAM:**

- Krill TEMPO Acoustic Biomass
- Review of procedures for acoustic krill biomass surveys

AAD has indicated that the following papers will be submitted to **WG-SAM**:

- Integrated Stock assessments - Conversion of 48.3, Ross Sea, Kerguelen Island and HIMI models to Casal2 (lead: NZ)
- East Antarctica (EA): Progress Report 2022
- EA: Paper on stock hypothesis and spatial research design
- EA: Updated research plan for 58.4.1 and 58.4.2
- Grym Workshop Report

AAD has indicated that the following papers will be submitted to **WG-EMM**:

- Krill TEMPO superwarm analysis
- Krill: Bacterial epibiont communities of panmictic krill (Clarke et al. 2021)
- Krill Ageing Workshop Report
- SKAG Annual Meeting Report
- Role of cetacean science in CCAMLR's ecosystem approach

Members noted the verbal update provided by the AAD on papers expected to be submitted to CCAMLR in 2022.

Agenda item 14 – Papers to WG-FSA, SC & Commission

AAD have indicated that the following papers will be submitted to the 2022 CCAMLR Working Group meeting on Fish Stock Assessment (**WG-FSA**) (dates to be confirmed):

- HIMI Report of the Random Stratified Trawl Survey
- HIMI Updated icefish assessment
- HIMI Update of toothfish fishery
- Skate condition assessment and handling protocol (with France)
- East Antarctica (EA): Report on ageing & growth and updated toothfish assessment

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- EA: Summary of collected environmental data
- EA: Update estimation of spatial distribution, relative abundance, and life history of main bycatch species (lead: France)
- EA: Updated research plan for 58.4.1 and 58.4.2

Members noted that the research plan for 58.4.1 and 58.4.2 is written with the aim that Australia would be able to fish in statistical division 58.4.1 again but anticipate this this is unlikely to be successful.

Research

Agenda item 15 – Recent research

a. Electronic monitoring trial

Members noted that following SARAG 63 an e-monitoring working group was established. The first e-monitoring working group meeting was held on 11 June 2021. A range of actions were agreed and currently being progressed including:

1. AFMA to advise on types of EM cameras used.
2. AFMA to share EM footage with working group members
3. AFMA to investigating using an identifier in the data to link catch items with logbooks and observer data.
4. AFMA to work on developing program objectives
5. AFMA to distribute observer data collection tasks to identify tasks that can be undertaken using EM.
6. AFMA to share images from the four boats with EM with CSIRO, to ensure that handling practices/camera views etc are compatible with image recognition software.

SARAG heard that the AAD, AFMA and CSIRO comprised EM Working Group is anticipated to convene again in the second half of 2022.

b. Annual Research Statement

The AFMA member informed SARAG that the sub-Antarctic fisheries' five-year strategic research plan (2019—2023) is due for renewal, in addition to development of the 2023-2024 Annual Research Statement. Members noted that the ARC deadline in 2022 is earlier than in previous years, and development of the two documents will need to occur out of session.

SARAG noted that the process this year (for funding in 2023/24) will be as follows.

- July 2022 – ARC to meet with RAG Chairs to discuss strategic direction/priority needs and AFMA's Five Year Strategic Research Plan

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- By early-August 2022 – RAGs and MACs to identify priorities – this includes the development of an annual research statement for each fishery and accompanying scopes for priority projects. These will need to be submitted, alongside the fishery's five-year strategic research plan, to the ARC for their consideration.
- Late August 2022 – ARC considers priorities/scopes submitted as well as strategic issues and agrees on priorities to include in AFMA call for proposals
- Early September 2022 – the ARC's call for applications is published, with proposals due mid-October 2022
- Late October 2022 – proposals submitted are provided to RAGs and MACs and AFMA Management for comment, with comments due by mid-December 2022.
- February 2023 – ARC meets to assess and recommend research proposals for funding to AFMA CEO for 2023-24 financial year

The RAG noted that in order to be considered at the August meeting of the ARC, both the fishery five-year strategic research plan and the annual research statement will need to be submitted by no later than 4 August 2022, along with research gap identification and scope forms. Members discussed the earlier than usual cut-off and the 2023 end of the current research documents and agreed to develop both the 2024-2028 Sub Antarctic Fisheries Research Plan and the 2024 Sub Antarctic Fisheries Annual Research Statement out of session, by the 4 August deadline (**Action Items 11-14**).

Action Item 11 – AFMA to distribute 2023 research statement to members and seek suggestions for 2024 research priorities (including BAU), for development of draft annual statement for distribution OOS.
Action Item 12 – AFMA to draft new annual research statement and seek comment from members OOS for approval prior to submission on 4 August.
Action Item 13 – AFMA to circulate previous 5-year research plan for comments on areas for update/ improvements OOS.
Action Item 14 – AFMA to draft new 5-year research plan and distribute to members OOS for approval prior to submission on 4 August.

c. Other Research

Southern Ocean IPA

SARAG heard an update from Dr Ryan Downie on recent milestones from their FRDC Project 2019-169, *Southern Ocean IPA: Environmental and ecosystem drivers of catch efficiency within Australia's subantarctic Patagonian Toothfish* (Dissostichus eleginoides) *fisheries*.

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SARAG was reminded of the objectives of the projects and heard about progress against objectives 1 to 3.

1. Develop a high-resolution oceanographic tool to map historical oceanographic data on the HIMI and Macquarie Ridge regions, utilising data from all available sources.

Using a range of data sources including Argo floats, satellite altimetry and SST, and CTD from marine mammals and longline sources, data products were developed to be fed into the BRAN 2020 and Blue Maps tools. Outputs from both these tools were assessed to be fit for purpose, and the first iteration of the Blue Maps temperature, salinity and sea level data products are now available online.

Participants were shown a model of a NS section passing through the middle of the HIMI fishing grounds, and heard that three dominant water masses were identified, with the water mass predominantly fished being the Circumpolar Deep Water, which showed interannual temperature variability. In contrast, at Macquarie Island, it appears that the water masses fished are primarily the Antarctic Surface Water and Antarctic Intermediate Water, which showed interannual salinity variability. Next steps include characterising drivers of variation in these water masses in the two regions, and to extend Blue Maps to include phytoplankton.

2. Define toothfish foraging habitats from historic bio-acoustic data collected on-ground and surrounding waters by the IMOS Bio-Acoustic Ships of Opportunity Program (BASOOP)

SARAG heard that Austral Fisheries and Australian Longline both contributed significantly to this program over the prior decade, and that mesopelagic and bathypelagic micronekton communities underpin toothfish productivity. The study identified three water masses between 30ºS and 65ºS, and that the next steps are to model acoustic backscatter and characterise temporal and spatial variation of backscatter in the HIMI and MI regions. Members heard that these datasets will improve understanding of how prey vary seasonally and interannually, and eventually will be used with oceanographic data to characterise variations in toothfish catchability.

3. Investigate how historic bio-acoustic data collected on-ground can be used for seabed habitat classification on the Kerguelen Plateau and Macquarie Ridge

Participants heard that investigations comparing first and second seafloor generated echo information, which are validated by video, will be used to generate regional habitat maps. Acoustic data from the MI region were obtained from a multibeam survey by the RV Investigator in 2020, and will be used to create base products of Depth, Slope and Backscatter to identify and map seafloor hardness in the region. A similar exploration is being undertaken at HIMI, using fishing vessel acoustic data.

SARAG noted that the outputs of these three components will eventually form the basis of meeting objective 4, which seeks to combine environmental, ecological and economic covariates and catch histories to characterise variations in catchability. Members also heard

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that the project has been deploying additional Argo floats in the HIMI region, with the support of fishing vessels.

Members discussed the intended media releases following completion of the project, noting the first is intended to be a general notification outlining the background of the study and notification of its conclusion, and the second release is intended to provide the results of the analysis.

SARAG thanks Dr Downie for the presentation and expressed appreciation for the importance and value of the work.

Close-Kin Mark-Recapture sampling

SARAG heard an update from Mr Arangio on the close-kin mark-recapture (CKMR) sampling program underway as a collaboration between CSIRO, industry and AFMA. CKMR sampling was initially tested through a pilot study using samples from the Antarctic Discovery at Macquarie Island, which resulted in development of more appropriate sampling tools which have now been provided to HIMI fishing vessels. The group heard that each HIMI vessel had a sampling kit with supplies to collect approximately 1000 samples each. Mr Arangio advised that the AFMA observers were briefed at the start of the season and have been supporting crew to undertake sampling which so far has been applied to juveniles captured during the RSTS, in addition to subadults and adults caught via longline methods. While still early days, industry is looking forward to feedback from CSIRO on the success of the sampling protocol as it becomes available.

Dr Hillary advised that CSIRO is currently working on a project proposal to address the sampling and genetic aspects of the project and the analysis component. Dr Hillary proposed that CSIRO provide an update to the next meeting of SARAG on the project, including a discussion of hypotheses to be tested and the next steps of developing abundance indices (**Action Item 15**). The group noted the importance of avoiding cross contamination in genetics studies, particularly the potential impact of providing a dataset indicating high relatedness in the population.

Industry requested that they be included on any communications from CSIRO advising observers or crew on updates or changes to sampling procedures (**Action Item 16**).

Toothfish Response to Environmental Variability (TREV)

SARAG heard that Dr Nicole Hill from UTAS is seeking to meet with stakeholders in relation to the TREV project in late May. Members agreed that an update from Dr Hill would be valuable, and suggested that an invitation to SARAG 66 in August be extended (**Action Item 17**)

Action Item 15 – CSIRO to present a project update on close kin sampling project results at SARAG66
Action Item 16 – CSIRO and AFMA to ensure communications on sampling protocols include industry emails in addition to vessel and observer contacts.

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Action Item 17 – AFMA to invite Dr Hill to provide an update on the TREV project at SARAG 66

Environment

Agenda item 16 - Environmental interactions and gear loss

SARAG noted that during the 2020/21 HIMI Fishery fishing season eight seabirds and eight seals have died as a result of interactions with fishing gear (since 1 December 2020):

- on 13 December 2020 a white chinned petrel was found deceased in the trawl net;
- on 2 April 2021 a black browed albatross was hooked on longline gear when setting and drowned;
- four white chinned petrels were hooked on longline gear when setting and drowned on 5 April 2021, 8 April 2021, 17 April and 5 November 2021.
- on 15 June 2021 a grey petrel was hooked on longline gear when setting and drowned; and
- on 3 August a Southern giant petrel was hooked on longline gear when setting and drowned.
- eight southern elephant seals were found dead after being hooked on longline gear on 3 June, 30 June, 5 July, 23 July, two on 10 August, 25 August and 28 August 2021.

Members noted that during the 2020/21 seasons of the MITF and CCAMLR Exploratory Fisheries there were no marine mammal or bird interactions with fishing gear. Members noted that there were ten porbeagle shark killed due to interactions with fishing gear in the MITF.

SARAG noted that the recent spread of effort at HIMIF had resulted in an increase in gear loss last season and that industry were aiming to attempt to recover gear towards the end of this season. In 2020/21 the exploratory fisheries also had a significant increase in gear lost when compared to the previous season. Industry advised that stronger tides and greater frequency of poor weather impacted gear loss rates. These environmental factors were also reported as impacting gear recovery success, despite regular attempts.

AFMA Reconciliation Action Plan

Agenda Item 17 – AFMA RAP

AFMA provided an update on its Reconciliation Action Plan, noting the development of an Agency specific plan is in line with WOAG approach to reconciliation. The SARAG noted that

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there is no current recreational or Indigenous membership of the group. The group suggested that Indigenous representation might be well placed within the MAC, if interest is present.

Other

Agenda item 18 – Other business

MSC Certification Process

Members heard an update from the Industry Members on the ongoing full MSC reassessment processes of the HIMI Toothfish, Macquarie Island Icefish and the Macquarie Island Toothfish fisheries. Members noted that the criteria have been updated to a higher standard, and that the outcomes were mostly positive, with almost all criteria assessed as exceeding SG80. The remaining additional MSC recommendations were reported as primarily administrative in nature and included updates to the discard and bycatch work plan updates, the development of some short-term habitat objectives for the fishery, and that the Macquarie Island ERA be updated.

The industry members advised that a draft report had been made available, with the report to be refined in the coming weeks. The final draft is expected to be provided in a month, and the final assessment report available by the end of the year. Of note, industry advised that no external stakeholder feedback was received during the consultation phase. If no points of contention or technical oversight issues emerge, then industry expects that the certification will be issued successfully.

Updates to Membership Arrangements

SARAG noted the recent call for members, and the expiry of current arrangements in June. Members heard this was the final SARAG meeting for Dr Dirk Welsford and Mr Malcolm McNeill, as well as the final meeting as Chair for Dr Malcolm Haddon. The RAG thanked all three members for their significant contributions to the working of the group and the management of Australia's Sub Antarctic fisheries.

Agenda item 19 – Next meeting

SARAG agreed to hold the next SARAG meeting in the second or third week of August 2022.

The meeting closed at 4:50 pm on Thursday 5 May 2022.

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Australian Government
Australian Fisheries Management Authority

Sub-Antarctic Resource Assessment Group (SARAG) Meeting 65

Final Agenda

Thursday 5 May 2022

Australian Antarctic Division – Channel Highway, Kingston

9:30am – 5:00pm, Mawson Conference Room 2

Introduction (9:30-10:45)

1.	Preliminaries			
	1.1	Acknowledgement of Country	AFMA	For Information
	1.2	Declaration of interests	Chair	For Discussion
	1.3	Apologies	AFMA	For Information
	1.4	Adoption of Agenda	Chair	For Decision
2.	Minutes from SARAG 64		AFMA	For Comment
3.	Actions Arising		AFMA	For Discussion
4.	Correspondence		AFMA	For Discussion
5.	Update on fishing operations (HIMI, MITF, Exploratory, observers)		All	For Information

Heard Island and McDonald Islands Fishery (11:00-13:00)

6.	Patagonian toothfish Fishery summary 2020/21 season	AAD	For Discussion *
7.	Skate and ray assessment	AAD	For Discussion
8.	Bycatch limits for the 2022/23 season	AFMA/AAD	For Recommendation
9.	Trawl gear modification trial to reduce skate bycatch	Austral	For Recommendation
10.	Random Stratified Trawl Survey review	AAD	For Discussion *
11.	Random Stratified Longline Survey draft proposal	AAD	For Discussion

CCAMLR & Exploratory Fisheries (13:30-14:30)

12.	CCAMLR new and exploratory applications	AFMA	For Information
13.	Papers to WG-EMM & WG-SAM	AAD	For Discussion
14.	Papers to WG-FSA, SC & Commission	AAD	For Discussion

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Research (14:30 – 15:30)

15.	Recent research		
a.	Electronic monitoring	AFMA	For Information
b.	Annual Research Statement	AFMA	For Discussion
c.	Any other research	All	For Discussion

Environment (15:45 – 16:30)

16.	Environmental interactions and gear loss	AFMA	For Information

Other (16:30 – 17:00)

17.	AFMA's Commencement of a Reflect Reconciliation Action Plan (RAP)		For Discussion
18.	Other Business	Chair	For Discussion
	MSC Certification	Austral	For Discussion *
19.	Next Meeting	Chair	For Discussion

* Verbal update, no agenda paper provided

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