



Australian Government

Australian Fisheries Management Authority



**Sub-
Antarctic
Resource
Assessment Group
(SARAG)**
FINAL MINUTES
SARAG 63

5 – 6 MAY 2021

SUB- ANTARCTIC RESOURCE ASSESSMENT GROUP (SARAG)

CHAIR: Dr Malcolm Haddon

Date: 5 – 6 May 2021

Venue: Lenna of Hobart Hotel

Attendance

Members

Dr Malcolm Haddon, Chair
Dr Rich Hillary, CSIRO
Dr Jemery Day, CSIRO
Dr Philippe Ziegler, AAD
Mr Malcolm McNeill, Industry Member
Mr Rhys Arangio, Industry Member
Mr Brodie Macdonald, AFMA
Ms Sarah Kirkcaldie, Executive Officer, AFMA

Observers

Mr Trent Timmiss, AFMA
Dr Heather Patterson, ABARES
Mr Martijn Johnson, Industry
Mr Brad Milic, Industry
Mr Michael Dylewski, ABARES
Dr Jaimie Cleeland, AAD
Dr Genevieve Phillips, AAD
Mr Dale Maschette, AAD
Mr Ryan Downie, CSIRO*

*Agenda item 15b only

Introduction

Agenda item 1 - Preliminaries

The sixty third meeting of the Sub-Antarctic Resource Assessment Group (SARAG 63) was opened at 9am on 5 May 2021 by the Chair, Dr Malcolm Haddon. Dr Haddon welcomed members and observers to meeting.

1.1 Acknowledgment of Country

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

1.2 Declaration of interests

Dr Haddon 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 both a CSIRO Honorary Fellow and an Adjunct Professor with the University of Tasmania, and is currently involved in two Fisheries Research and



Development Corporation (FRDC) projects. He declared he has no pecuniary interest in the sub-Antarctic fisheries.

Dr Hillary advised that he is employed by CSIRO and is the Principal Investigator of the Macquarie Island Toothfish Fishery (MITF) stock assessment. He also advised that 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.

Dr Day advised that he is employed by CSIRO and works on the MITF stock assessment. Dr Day advised that that he has no pecuniary interest 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 further advised he is 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. Mr Arangio further advised he is the Executive Officer of COLTO, as well as being a member of SouthMAC and AFMA's Commonwealth Fisheries Marine Mammal Working Group. 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 Ziegler informed members that he is also a member of SouthMAC.

Mr Macdonald advised he is employed by the Australian Fisheries Management Authority (AFMA) as the Manager for sub-Antarctic fisheries at AFMA. Mr Macdonald advised he has no pecuniary interests in the sub-Antarctic fisheries.

Ms Kirkcaldie advised she is employed by AFMA as a Senior Management Officer and advised that she is also the Executive Officer for SouthMAC and SBTMAC. Ms Kirkcaldie advised that she has no pecuniary 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 and Sciences (ABARES) Fishery Status Reports. Dr Patterson noted that she had no pecuniary interest in the sub-Antarctic fisheries.

Mr Timmiss advised he is employed by AFMA as a Senior Manager, Tuna and International fisheries and that he is also the member on the Tropical Tuna MAC (TTMAC) and SBTMAC. Mr Timmiss advised that he has no pecuniary interests in the sub-Antarctic fisheries.



Ms Hannam advised she is employed by AFMA as a graduate and has no pecuniary interest in the sub-Antarctic fisheries.

Mr Dylewski advised he is an employee of the Department of Agriculture, Water and the Environment and an author of the ABARES Fishery Status Reports. Mr Dylewski noted that he had no pecuniary interest in the sub-Antarctic fisheries.

Mr Johnson advised he was attending as an observer to SARAG and 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.

Mr Neville declared that he was the Principal of a fisheries consulting business (P.J.Neville & Associates) and Chair of the Fisheries Research and Development Corporation's recreational fishing sub-program and SouthMAC. Mr Neville advised that he has no pecuniary interest in the sub-Antarctic fisheries.

Mr Maschette advised that he is a scientist at the University of Tasmania. Mr Maschette advised that he has no pecuniary interests in the sub-Antarctic fisheries.

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

Dr Cleeland advised that she is a fisheries scientist looking at skate bycatch assessment at the Australian Antarctic Division and had no pecuniary interest in the sub-Antarctic fisheries.

1.3 Apologies and observers

SARAG noted an apology from Dr Dirk Welsford.

1.4 Agenda

SARAG adopted the agenda with the addition of the following agenda item:

Agenda item 8a – Alternative hockey-stick harvest control rule for managing Toothfish fisheries.

Agenda item 2 – Adoption of minutes from SARAG 62

Members noted that the draft minutes from SARAG 62 will be circulated to members shortly for comment.



Agenda item 3 – Actions arising from SARAG 62

Actions arising from SARAG 62

Item	Action arising	Status
1	Skate stock assessment – AAD to prepare work on a skate stock assessment and present it to SARAG 63 (SARAG 61 Agenda item 9).	AAD advised that the skate stock assessment will be discussed under Agenda item 9 and noted that it is expected that the stock assessment will be presented at the next SARAG meeting by Dr Cleeland.
2	Longline survey – AAD to keep SARAG up-to-date regarding a longline survey in the HIMIF (SARAG 62 Agenda item 7).	Members noted that AAD had discussed the longline survey but no progress had been made since the last meeting.
3	Electronic monitoring trial – Members agreed to form a small sub-committee to discuss the protocols for conducting an electronic monitoring trial (SARAG 62 Agenda item 12).	Members noted that the sub-committee had not been formed yet and electronic monitoring would be discussed under Agenda item 15a.
4	Electronic monitoring trial (grenadier) – CSIRO, AFMA and Archipelago Asia Pacific agreed to meet and discuss ways to progress the grenadier trial (SARAG 62 Agenda item 15b).	Members noted that this action item would also be discussed under agenda item 15a.

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 24 November 2020 from Sarah Kirkcaldie circulating the final FRDC report for the project titled 'Bottom fishing Impact assessment (BFIA) for proposed fishing activities by Australia in the Southern Indian Ocean Fisheries Agreement (SIOFA) Area – 2020 update';
- An email dated 18 January 2021 from Sarah Kirkcaldie seeking comments from members on the redesigning of the AFMA website;
- An email dated 1 March 2021 from Sarah Kirkcaldie circulating the final FRDC report for the project titled 'Development of robust assessment methods and harvest strategies



for spatially complex, multi-jurisdictional Toothfish fisheries in the Southern Ocean' (FRDC project no. 2013/013);

- An email dated 7 April 2021 from Sarah Kirkcaldie circulating information regarding AFMA seeking applications for Chairs for three Management Advisory Committees; and
- An email dated 9 April 2021 from Sarah Kirkcaldie seeking comments on the draft agenda for SARAG 63 scheduled for 5-6 May 2021.

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 McNeill advised that the vessel *Antarctic Discovery* had only fished in the statistical division 88.1 in the 2020/21 CCAMLR exploratory fishing season as ice conditions in division 88.2 were not favourable. Members noted that the vessel remained in the Ross Sea until the area closed and that there were two New Zealand observers on board the vessel.

Mr McNeill further noted that the new vessel *Antarctic Aurora* fished in East Antarctica (CCAMLR exploratory fishery division 58.4.2). Members noted that the vessel could fish on shallower ground this season as the sea ice moved, all research requirements were met, and the total catch allocation was taken.

Members noted that the vessel *Antarctic Discovery* is now fishing in the MITF with one Capfish observer on board. Mr McNeill indicated that fishing in the 2021/22 season started well on the Aurora Trough but has now slowed down probably due to bad weather. Members noted that there has been some Porbeagle sharks sighted with some associated depredation on the lines.

Mr McNeill noted that the *Antarctic Aurora* is now fishing in the HIMIF but unfortunately took three seabirds in April and is unable to fish the season extensions for the remainder of the 2020/21 season. Members noted that 12 killer whales and some sperm whales of varying ages had been sighted and they had been depredating on the lines. Mr McNeill advised that the vessel moved away from the whales, however, when the vessel went back to grapple for some lost gear the whales were still there. Members noted that the *Antarctic Aurora* had been granted a high seas fishing permit in April to do sink line trials to attempt to find out why the seabirds were caught. Members noted that the *Antarctic Discovery* will be fishing in the HIMIF once they have finished at MITF as the *Antarctic Aurora* is unable to fish after 14 September 2021.

Mr Arangio noted that Austral Fisheries Pty Ltd new vessel, the *Cape Arkona*, started fishing in November using longline, trawl and trap methods. The vessel then moved to William's Ridge in December and fished for a week before all the available grid cells were fished noting that the Spanish were also fishing there. The *Cape Arkona* then did some trap fishing in the HIMIF but the catch rates were low. Members noted that the vessel then fished for Mackerel Icefish in December and January, however, catch rates were also low.

SARAG noted that all Austral Fisheries vessels were in Fremantle before the start of the 2020/21 season. Industry noted that it was difficult to get crew for the new season and the *Isla Eden* had to go to Mauritius to get a full crew. Members further noted that it was also difficult to get observers, but all vessels had 2 observers on board during April.

Mr Arangio noted that the March/April 2021 catch rates for Mackerel Icefish were high for both the *Atlas Cove* and *Cape Arkona*. Members noted that the *Cape Arkona* and *Isla Eden* are



currently still fishing in HIMIF, however, the *Atlas Cove* has had to return to Port due to mechanical issues. Mr Arangio further noted that Patagonian Toothfish catch rates had been standard for April.

Mr Arangio advised that under the new Export Control Act if a vessel is unloading in a foreign port an AFMA observer needs to sign off on the amount of catch on-board before leaving the HIMI Fishery and then again when landing in the foreign port. Members noted that given the difficulty in getting AFMA observers on some boats this requirement may not be possible to meet, and as such would either have to freight product back to Australia for re-export, or unload the vessel in Australia. Industry stated that they are discussing options with the Department of Agriculture, Water and the Environment (DAWE) but it may result in more vessel unloads in Australia. Industry noted that there is significant additional costs to unloading in Australia and increased risk of operational delays due to WA Government COVID-19 controls, and that they were seeking an exemption if an AFMA observer cannot be deployed on the *Atlas Cove*.

SARAG also noted the update provided by the AFMA observer section.

Observer deployments in Southern Ocean Fisheries Update

Due to the ongoing COVID 19 pandemic the AFMA Observer Program has faced considerable logistical challenges in deploying AFMA Observers onboard Southern Oceans vessels. The program sought to deploy AFMA observers while carefully considering the risks to the observers and ensuring compliance with various governments COVID-19 related border closures and quarantine measures. At times it was unfeasible to place two observers on vessels operating in the Southern Ocean. In response, AFMA amended the HIMI Fishery SFR conditions to allow those vessels to fish with a single observer. The MITF SFR conditions were amended to allow the vessel to fish with an e-monitoring system and one observer.

To ensure the health and wellbeing of the single observer on some voyages and to ensure priority data is still collected, AFMA and AAD Technical Coordinators modified the observer duties to account for the reduction in coverage. This ultimately has an impact on the amount of tagging, biological sampling, catch composition, wildlife/ line observations, otolith removal, gonad staging, and conversion factor tests undertaken by the observer.

Where a Capfish or NZ DCO was unable to be deployed with an AFMA Observer, the opportunity to deploy two AFMA Observers was taken. This allowed a less experienced observer to be paired with an experienced observer.

Members noted that four out of the five vessels currently operating in the Southern Ocean have electronic monitoring systems on board so that, if needed, observer duties can be modified to ensure that all important data is collected.

SARAG noted that tagging in the MITF was lower last year due to no observers on the first trip and only one on the second trip. Members noted that the crew on the *Antarctic Discovery* did length frequency on first trip and SARAG thanked the company and crew for the quality of data.



Macquarie Island Toothfish Fishery

Mr McNeill, Mr Arangio, Mr Milic and Mr Johnson declared their interest under all remaining agenda items. The members left the room. SARAG discussed whether the members needed to leave the room for any agenda items; it was agreed that, as their input was essential to the agenda items, they should remain in the meeting room for all discussions but not recommendations. It was further agreed that at any time if members felt that Industry should not be in the room they would be asked to leave.

Agenda item 6 – Macquarie Island stock assessment

CSIRO presented two papers to members:

- Updated biological relationships for 2021 stock assessment of Macquarie Island Toothfish; and
- Integrated stock assessment for Macquarie Island Toothfish using data up to and including 2020.

Members noted that the first paper updated two key biological relationships that are essential for the Macquarie Island Toothfish stock assessment: growth and maturity. Dr Hillary noted that there is now ageing data from 1996 up to and including 2019 and the male and female growth relationships required for the stock assessment can now be updated. SARAG noted that the growth parameters are very accurately estimated for both sexes with females generally being longer-at-age than males from age five onwards. This is also very consistent with previous estimates.

SARAG noted that maturity is a key life-history characteristic used as input to age and size structured integrated assessment models. For the Macquarie Island Toothfish stock assessment maturity-at-length is the key relationship, translated through the distribution of length-at-age to get an expected maturity-at-age relationship then used to define the female spawning population abundance and age structure. The method used to estimate these key parameters was updated in 2019 to better account for established maturity definitions, and agreed by the SARAG to be used in an update to the stock assessment. For females, the size at 50% maturity was 98.9cm and for males it was 87.3cm (given the growth dimorphism this difference is actually far less pronounced when translating to maturity-at-age). Members noted that these estimates are, as with the growth parameters, very consistent with those estimated in 2019.

Members noted that the second paper presented was the Macquarie Island Toothfish assessment which uses a spatial model that fits to data from the entire Macquarie Island Toothfish fishery, assumes a single reproductive stock, but takes into account spatial structuring of the population within the region. Two areas – northern and southern – are incorporated into the model, with movement of fish between areas, and recruitment to both areas.

SARAG noted that the assessment fits data obtained from the tag-recapture program since 1995, to length composition information for the years 1994-2020, and to age-at-length data obtained from aged otoliths (1997-2019). Members further noted that the model is consistent



with the 2019 assessment with only one sensitivity, a higher natural mortality, having a substantive impact on results. Members noted three other sensitivities were tested: 1) using the estimates of tag shedding rates instead of the previous assumption of effectively zero tag loss over time, 2) assuming a lower steepness in the stock recruitment relationship, and 3) assuming a higher steepness. It was noted that none of these three sensitivity tests make a significant difference to the results.

Members noted that a total allowable catch for the entire Macquarie Island region was again calculated using the new model developed by CSIRO and following the CCAMLR decision rules. CSIRO presented a range of recommended TACs (from 620t-655t) to SARAG with an average of 644t which is an 11% increase from the 2019 assessment.

Industry members left the room and SARAG recommended a TAC of 635 tonnes with a voluntary agreement from industry to spread the effort using the following splits: 300t Aurora Tough; 251t Northern Macquarie Ridge; and 84t Southern Macquarie Ridge.

SARAG noted that the CCAMLR decision rule will likely continue to cause short-term variability in the TAC as the estimates move around over time, despite there being no meaningful changes in overall status from one assessment to the next. CSIRO indicated that alternative harvest control rules should now be considered and that it would be undertaking a management strategy evaluation (MSE) of alternatives to try and construct a management procedure (MP) that can meet the relevant sustainability objectives with features we would rather see.

SARAG thanked CSIRO for comprehensive assessment.

Agenda item 7 – Fishery Assessment Plan 2022/23 – 2023/24

Members noted that AFMA had drafted a 2022/23 - 2023/24 MITF Fishery Assessment Plan (FAP) with only minor edits from the previous FAP (2020/21 – 2021/22). SARAG agreed that a tag rate of two tags/tonne and a minimum tag overlap of 60% (but with an aim for 80%) was still appropriate and that industry would provide more up-to-date figures for the cost of the tagging work.

SARAG members provided some additional comments on the draft MITF. Members noted that the comments will be incorporated into the FAP before finalisation prior to the MITF season start on 15 April 2022.

Heard Island and McDonald Islands Toothfish Fishery

Agenda item 8 – Patagonian Toothfish stock assessment

Members noted the paper presented by AAD titled 'Draft integrated stock assessment for the Heard Island and McDonald islands Patagonian toothfish (*Dissostichus eleginoides*) fishery in Division 58.5.2'. SARAG noted that the 2021 assessment was an update of the 2019 model including updated catch data to 2021 and observations until the end of 2020 (including new



ageing data from the RSTS and commercial fishery) plus updated growth parameters and a vessel tagging performance index.

Members noted that this is the first time that relative vessel tagging performance has been calculated in the HIMIF. AAD indicated that most vessels in the fishing fleet have tag-survival and tag-detection performance rates of greater than 0.9, and vessels with a lower estimated tagging performance are no longer active in the fishery. Currently, the HIMI toothfish stock assessment model assumes that all vessels have equal tag-survival and tag-detection rates. Members noted that the failure to account for individual vessel tagging performance rates of less than one when using tag-recapture observations in the stock assessment could lead to an overestimate of the stock biomass.

SARAG noted that while useful in the CCAMLR exploratory fisheries where crews are responsible for tagging, the tagging performance index in this paper was not being correctly applied in the HIMI context and recommended to defer the inclusion of the index to the next assessment if these issues could be resolved.

AAD explained that there was a conflict in the information from the random stratified trawl survey (RSTS) and the tagging data as the RSTS indicates a recent recruitment pulse which is not yet reflected in the tag return data. Members also noted that the spatial distribution of tag releases had decreased over the last few fishing seasons and agreed that the HIMI Fisheries Assessment Plan should be amended to encourage the spatial spread of fishing effort.

Members noted that the catch limit which satisfies the CCAMLR decision rules would result in the spawning biomass status remaining below 40% of virgin spawning biomass for almost ten years and would only return to the target level at the end of the 35-year period. SARAG agreed that the development of an alternative strategy should be considered that no longer relied upon projecting constant catches forward.

SARAG noted that the stock assessment paper recommended that a more dynamic strategy should be investigated as a basis by which to set the catch limits, and this would account for the current spawning stock biomass status by specifying lower catch limits in the immediate future and higher catch limits when the stock status increases. CSIRO presented a paper titled 'Alternative hockey-stick harvest control rule for managing Toothfish fisheries'. Members noted that the paper outlined an alternative management procedure (or harvest strategy) with the potential to manage toothfish fisheries according to the current CCAMLR objective using a harvest rate rather than a constant catch. SARAG noted that this approach had potential and should be run in parallel with the stock assessment. Members further noted that there has already been critical discussions about the CCAMLR decision rule at recent meetings including considerations of using an F-based approach rather than the current strategy of projecting a constant catch forward for 35 years.

The AAD member noted that alternative methods to setting catch limits would need to be presented to the Working Group on Statistics, Assessment and Modelling before going to the Scientific Committee and Commission. Members requested to see any papers before they are submitted to WG-SAM by 14 June 2021.

Members discussed returning to annual rather than biannual assessments and agreed to continue biannual assessments.

Agenda item 9 – Skate and ray assessment



Dr Jamie Cleeland presented an update on the progress of the bycatch assessment for skates in the HIMI Fishery. SARAG noted that during the icefish trawl fishery there is a higher skate bycatch and if the total allowable catch of icefish increases this will likely increase skate bycatch. Currently there is a combined skate and ray bycatch limit of 120 tonnes in the HIMI Fishery, however, preliminary results indicate that a higher combined bycatch limit for skates could be feasible based on individual assessments of the three main species (*Bathyraja eatonii*, *B. murrayi* and *B. irrasa*). SARAG also noted that the skate bycatch limit could be split between the Patagonian Toothfish and the Mackerel icefish fisheries.

Members noted that electronic monitoring could provide more accurate bycatch information on total skate bycatch and fishing-induced skate mortality. Uncertainty in skate species-specific catch numbers could also be reduced by observer identifying every skate on the line instead of a subsample only. To assist with this process, an identification guide on mobile phone app is in development, and observers could be requested to take footage of any rare species. SARAG noted that better cameras for the AFMA observers would assist in identifying the different skate species.

SARAG noted that skates had generally low re-capture rates and were less likely to be recaptured in deeper waters. Recaptured skates were concentrated mainly in an area in the south-eastern part of the fishery, and SARAG recommended that skate tag-releases be focused in that area. SARAG also discussed the use of alternative tag types to reduce potential tag shedding rates, and the use of satellite tags to better understand the physiological response of skates to capture.

Dr Cleeland indicated that she has been working with French scientists as well as a veterinarian regarding the evaluation of skate injuries by the vessel crew when skates are brought up to the roller, and indicated that a training tool and new handling video were in development.

SARAG thanked Dr Cleeland for the presentation and noted that she will prepare a written paper for the next meeting (**Action arising 1**).

Agenda item 10 – Fishery Assessment Plan 2021/22 – 2022/23

Members noted that AFMA had drafted a 2021/2022 – 2022/23 HIMI Fishery Assessment Plan (FAP) with only minor changes from the previous FAP (2019/20 – 2020/21). Members agreed that a tag rate of two tags/tonne and a minimum tag overlap of 60% (with an aim for 80%) was still appropriate. Industry noted that takes 23 days to complete all the stations and the number of estimated research days needs to be increased. SARAG also recommended that the following words be included in the new HIMIF FAP to encourage effort spread across the range of the fishery:

It is not only the total number of tags released that is important to the stock assessment, but also spatial spread of both tag releases and scanning (recapture) effort. Therefore, industry are strongly encouraged to spread effort to the extent that is practically possible within the area of the fishery where tags have previously released



(see Figure xx). The practice of continually fishing in a small area also causes difficulty for non-spatial tag-based models.

SARAG noted that amendments will be incorporated into the FAP before finalisation prior to the HIMIF season start on 1 December 2021.

Agenda item 11. Trawl gear modification trial

SARAG noted that in November 2020, Austral Fisheries was issued with a scientific permit to trial a new icefish trawl rig comprising lighter gear, with smaller bobbins and discs than permitted under the HIMIF regulations.

Members noted that the vessel *Cape Arkona* ran trials (54 shots) of the new gear in December 2020/January 2021 and March/April 2021. The *Atlas Cove* also conducted Icefish fishing in March/April 2021 with the original trawl gear. Members noted that the trial showed lower skate bycatch rates, and with a higher ratio of Mackerel Icefish to skates than when using the original gear, both when looking at historical data, and against the *Atlas Cove* this season. The lighter gear also appeared to not be impacting the benthos as much with the skipper on the vessel reporting less sand and weeds in the net and also less damage to the Mackerel Icefish. However, industry acknowledged that there is currently not enough data for the new gear to conclusively determine the difference between the gears.

SARAG recommended that the trial continue for another year, and that if possible, both vessels, using the differing gears, fish in the same period to allow for a direct comparison of the gear types. Industry will provide next season's raw data to the AAD, which will be presented at a SARAG meeting in 2022.

CCAMLR & Exploratory Fisheries

Agenda item 12 – CCAMLR new and exploratory application

SARAG noted that one proposal for New and Exploratory fisheries was received from Australian Longline Fishing Pty Ltd to fish in Divisions 88.1, 88.2, 58.4.1 and 58.4.2. Members noted that the proposal was tabled and supported at the CCAMLR Consultative Forum Meeting held on 3 May 2021. Industry again expressed their desire to fish Division 58.4.1.

Members noted that the final decision on whether to lodge a proposal with CCAMLR is taken by the relevant Australian government agencies that are also responsible for final preparation and submission of a research plan for Divisions 58.4.1 and 58.4.2. SARAG noted that AFMA and AAD will submit the final application for New and Exploratory fisheries to the CCAMLR Secretariat no later than 1 June 2021.

Agenda item 13 – Papers to WG-EMM and WG-SAM



SARAG noted that the following papers are planned for the 2021 CCAMLR Working Group meetings of the Ecosystem Monitoring and Management (WG-EMM) and Statistics, Assessments and Modelling (WG-SAM).

WG-EMM:

- Krill TEMPO biomass estimate in CCAMLR Division 58.4.2-East
- Krill TEMPO Biology
- Krill TEMPO Predator distribution
- Krill 48 Assessment in Grym (co-authored)

WG-SAM:

- MSE work to support HIMI Stock Assessment (F-based);
- East Antarctic Research fishing: Progress report;
- East Antarctic Research fishing: Update of the research plan; and
- Krill 48 Assessment in Grym (co-authored).

Members noted that formal working group meetings are likely to go ahead in 2021, however, AAD indicated that the timing of the meetings had not been finalised.

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

AAD have indicated that the following papers will be submitted to the 2021 CCAMLR Working Group meeting on Fish Stock Assessment (**WG-FSA**) (4 to 15 October 2021):

- HIMI Report on the 2021 Random Stratified Trawl Survey;
- HIMI Updated Mackerel icefish assessment;
- HIMI Updated Patagonian Toothfish assessment;
- Update of the research plan for 58.4.1 and 58.4.2;
- Update of East Antarctic ageing and growth.

Research

Agenda item 15 – Recent research

a. Electronic monitoring trial



SARAG noted that since the last discussion of e-monitoring (EM) at SARAG 62, CCAMLR has established an e-group to discuss the application of e-monitoring (EM) in CCAMLR fisheries. The Coalition of Legal Toothfish Operators and the Antarctic and Southern Ocean Coalition have given broad support for introducing EM. SARAG noted the slow progress of CCAMLR discussions on EM.

SARAG noted that there have been new EM installations on the *Atlas Cove*, *Isla Eden* and *Antarctic Aurora*. This is in addition to the system already operational on the *Antarctic Discovery*. AAD indicated that they have had a preliminary look at the data obtained from trips on the *Antarctic Discovery* but encountered problems with matching the data with that collected by the observers. SARAG noted that AFMA is working with AAD to develop protocols to allow meaningful comparisons between observer and EM data.

The AFMA members noted that AFMA is set to receive \$10 million in additional government funding over the next four years to support the introduction of EM in its fisheries. This funding includes both capital and program expenditure. It is expected that AFMA will be developing a strategic plan for what its EM program may look like in 10 years' time. To this end, AFMA is seeking advice on how the RAG thinks EM technologies can best be utilised in the sub-Antarctic fisheries, with a view to undertaking trials to support this over the next 1-5 years. SARAG noted that potential applications of EM may include:

- Fish length collection (noting ongoing need for otolith, sexing, gonad staging, tissue samples to support close-kin)
- Catch composition and reporting utilising AI (e.g replacing the need for logbooks)
- Effort information (fishing positions, hooks set, trawl duration etc.)
- Monitoring protected species interaction
- Reduced need for two observers during April and re-tasking of observers during the remainder of the fishing season to support priority data collection in support of stock assessments.

SARAG agreed to form an electronic monitoring sub-committee comprising of Marty Johnson, Philippe Ziegler, Jaimie Cleeland, Genevieve Phillips and Rhys Arangio. The sub-committee agreed to meet in the next few months and report back to SARAG 64 (**action arising 2**). Members noted that four vessels have cameras and observers onboard which provides a good opportunity to do field testing. The AFMA observer noted that the footage from the cameras is held within existing protocols and has never been released without the SFR holder's permission. Members noted that the footage is held for 6 months and then hard erased.

b. Environmental and ecosystem drivers of catch efficiency within Australia's Sub Antarctic Patagonian Toothfish fisheries

SARAG members noted the presentation by Mr Downie on the Fisheries Research Development Corporation (FRDC) funded project 2019-169 'Environmental and ecosystem



drivers of catch efficiency within Australia's subantarctic Patagonian Toothfish (*Dissostichus eleginoides*) fisheries; and

Members noted that Mr Downie is the Principal Investigator and Dr Richard Hillary, Dr Rudy Kloser, Dr Peter Oke and Dr Ben Scouling are the co-investigator.

Members noted that the objectives of the project are to:

1. Develop a high-resolution oceanographic tool to map historical oceanographic data on the Kerguelen Plateau and Macquarie Ridge, utilising data from available sources;
2. Define Patagonian toothfish foraging habitats from historic bioacoustics data collected on-ground and by the IMOS BASOOP in the Kerguelen Plateau and Macquarie Ridge (2000 days of data)
3. Investigate how historic bioacoustics data collected on-ground and by IMOS BASOOP can be used for seabed habitat classification in the Kerguelen Plateau and Macquarie Ridge regions; and
4. Combine environmental, ecological, economic covariates and catch histories to characterise variation in catchability.

Mr Downie explained that there will be two project discussion groups and the aim is to hold annual meetings. The first group will be with Industry and managers and the second group will be a technical discussion group that would involve industry and AAD. Mr Downie noted that he will be also working with the researchers conducting the Impact of environmental variability on Toothfish fishery (TREV) project.

SARAG thanked Mr Downie for his presentation and agreed to act as the project oversight group for the project.

c. Any other research

SARAG noted that AAD had two FRDC projects close to being accepted. One proposal is looking at a range of issues over the next five years including a sex-differentiated stock assessment for HIMIF, as well as doing maturity work, and also sea lice work. As part of this latter project, researchers would like to put sea lice traps on vessels. SARAG supported the crew deployment and retrieval of the traps on one of Australian Longline vessels and agreed that a senior observer should collect the sea lice. The second proposal is for stock assessment, exploratory fisheries, and ageing work.

The AFMA member explained that the AFMA Research Committee (ARC) process this year (for funding in 2022/23) will be as follows.

- July 2021 - ARC to meet with RAG Chairs to discuss strategic direction/priority needs and AFMA's Five Year Strategic Research Plan
- By mid-August 2021 – 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 2021- ARC considers priorities/scopes submitted as well as strategic issues and agrees on priorities to include in AFMA call for proposals
- Early September 2021 - the ARC's call for applications is published, with proposals due mid-October 2021
- Late October 2021 – proposals submitted are provided to RAGs and MACs and AFMA Management for comment, with comments due by mid-December 2021.
- February 2022 - ARC meets to assess and recommend research proposals for funding to AFMA CEO for 2022-23 financial year

SARAG noted that in order to be considered at the August ARC meeting, the following will need to be submitted for each fishery by no later than 13 August 2021:

- the fishery's five-year strategic research plan;
- the fishery's annual research statement using the template (attached); and
- completed RAG/MAC fishery specific research gap identification and scope forms (attached) for each priority including essential research.

AFMA explained that they will arrange for SARAG/SouthMAC consideration of these papers out-of-session and noted that the next MITF stock assessment will be included in this process.

Environment

Agenda item 16 - Environmental interactions and gear loss

SARAG noted that during the 2020/21 HIMI Fishery fishing season (as of 27 April 2021) five seabirds have died as a result of interactions with fishing gear in the HIMI fishery (since 1 December 2020)

- On 13 December 2020 a white chinned petrel was found deceased in the trawl net

On 2 April 2021 a Southern black browed albatross was hooked on longline gear when setting and drowned
Two white chinned petrels were hooked on longline gear when setting and drowned on 5 April 2021 and 17 April 2021
On 8 April 2021 a white chinned petrel was hooked on longline gear when setting and drowned

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 three Porbeagle shark interactions with fishing gear in the MITF.

Members further noted that there was a significant decrease in the amount of gear lost in the HIMI Fishery in 2020 compared to 2019. The amount of gear recovered was also greater than the amount of gear lost.

In 2020/21 Exploratory fisheries had a significant increase in gear lost when compared to the previous season. Industry explained that the increase in gear loss in the current season was



the result of sea ice preventing the retrieval of gear and also due to the fishery being an Olympic fishery which allows very little time to search for lost gear.

Other

Agenda item 17 – Other business

Members noted that there was no other business discussed at SARAG 63.

Agenda item 18 – Next meeting

SARAG agreed to hold the next SARAG meeting on 18 or 19 August 2021. The key item for discussion will be the Patagonian Toothfish and Mackerel Icefish assessments and the upcoming CCAMLR meetings.

The meeting closed at 11:50 am on Thursday 6 May 2021.



Sub-Antarctic Resource Assessment Group (SARAG) Meeting 63

Final Agenda

Wednesday 5 May 2021

9.00am – 5:00pm

Thursday 6 May 2021

9.00am – 12:00pm

Runnymede room

Lenna of Hobart Hotel, 20 Runnymede St, Battery Point, TAS

Introduction

- | | | | |
|-----|----------------------------------------------------------------------|-------|-----------------|
| 1. | Preliminaries | | |
| 1.1 | Welcome to 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 62 | AFMA | For Comment |
| 3. | Action Arising | AFMA | For Discussion |
| 4. | Correspondence | AFMA | For Discussion |
| 5. | Update on fishing operations
(HIMI, MITF, Exploratory, observers) | All | For Information |

Macquarie Island Toothfish Fishery

- | | | | |
|----|---------------------------------------------------|-------|----------------|
| 6. | Macquarie Island stock assessment | CSIRO | For Discussion |
| | a) Update to biological parameters for assessment | | |
| | b) Stock assessment and recommended TAC scenarios | | |
| 7. | Fishery Assessment Plan 2022/23-2023/24 | AFMA | For Discussion |

Heard Island and McDonald Islands Fishery

- | | | | |
|----|---------------------------------------|-----|----------------|
| 8. | Patagonian Toothfish stock assessment | AAD | For Discussion |
|----|---------------------------------------|-----|----------------|



a)	Alternative hockey-stick harvest control rule for managing Toothfish fisheries	AAD	For Discussion
9.	Skate and ray assessment	AAD	For Information*
10.	Fishery Assessment Plan 2021/22-2022/23	AFMA	For Discussion
11.	Trawl gear modification trial	Austral	For Discussion

CCAMLR & Exploratory Fisheries

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

Research

15.	Recent research		
d.	Electronic monitoring	AFMA	For Information
e.	Environmental and ecosystem drivers of catch efficiency within Australia's Sub Antarctic Patagonian Toothfish fisheries.	CSIRO	For Discussion
f.	Any other research	All	For Discussion

Environment

16.	Environmental interactions and gear loss	AFMA	For Information
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Other

17.	Other Business	Chair	For Discussion
18.	Next Meeting	Chair	For Discussion

* Verbal update, no agenda paper provided

