



Australian Government

Australian Fisheries Management Authority



# Sixty-ninth meeting of the Sub-Antarctic Resource Assessment Group (SARAG)

FINAL MINUTES

SARAG 69

22-23 AUGUST 2023

## **SUB- ANTARCTIC RESOURCE ASSESSMENT GROUP (SARAG)**

**CHAIR:** Mr Bruce Wallner

**Date:** 22-23 August 2023

**Venue:** Old Woolstore Apartment Hotel, Hobart, Tasmania

### **Attendance**

#### **Members**

Dr Philippe Ziegler, AAD  
Dr Cara Masere, AAD  
Dr Rich Hillary, CSIRO  
Dr Tim Ward, IMAS  
Brad Milic, Industry  
Rhys Arangio, Industry  
Danait Ghebrezgabhier, AFMA  
Claire Wallis, Executive Officer, AFMA

#### **Invited Participants & Observers**

Dr Heather Patterson, ABARES  
Dr Pia Bessell-Browne, CSIRO  
Dr Jaimie Cleeland  
Dale Maschette, IMAS/AAD  
Dr Stephanie Brodie  
Dr Julie McInnes  
Dr Kris Carlyon  
Sam Thalmann  
Sean Kebbell  
Dr Colette Appert  
Selina Stoute, AFMA  
Alice McDonald, AFMA  
Heather Johnston, DAFF

## **Introduction**

### **Agenda item 1 - Preliminaries**

#### **1.1 Welcome and Apologies**

The sixty-ninth meeting of the Sub-Antarctic Resource Assessment Group (SARAG 69) was opened at 9:00am on 22 August 2023 by the Chair, Mr Bruce Wallner. The Chair welcomed members and observers to the meeting and acknowledged the Muwinina people as the traditional owners and custodians of the land SARAG 69 met on, including their ongoing connections to land and sea country and paid respects to elders past, present and emerging.

Members noted that the meeting was being recorded for the purpose of developing the meeting record.

#### **1.2 Declarations of Interest**

SARAG noted declarations of interest from members and observers at the start of the meeting and from additional observers and invited participants throughout the duration of the meeting as required. All declared interests are reflected in the standing register at **Attachment A**.

The Chair noted that industry has a strong interest in stock assessment items, and that while all members would discuss the technical input aspects of these items, industry members would leave during the RAG's deliberations of total allowable catch (TAC) recommendations. Members noted that industry also holds an interest in the MITF seabird arrangements (agenda item 7).

### **1.3 Adoption of Agenda**

The agenda was adopted without amendment, and can be found at **Attachment B**.

### **Agenda item 2 – Actions Arising**

SARAG noted an update from the Executive Officer on the status of actions arising from previous SARAG meetings at **Attachment C**.

### **Agenda item 3 – Correspondence**

SARAG noted the out of session correspondence since its last meeting.

### **Agenda item 4 – Member Updates**

#### **AFMA Update**

SARAG noted the updates from the AFMA Member on the US Marine Mammal Rule, and an update on observer program deployments as outlined in the agenda paper provided.

#### **Industry Member Updates**

SARAG noted Industry member updates as follows:

Mr Milic advised that:

- One Australian Longline Fishing Pty Ltd (ALFPL) vessel is fishing in the MITF in the 23/24 season, and that standard catch rates with good fish sizes were being reported.
- The access to areas that were previously thought to be inaccessible prior to the Marine Park review process had prompted industry to increase exploration of other fishing grounds in the MITF. This was resulting in a better understanding of these areas.
- The other ALFPL vessel arrived at HIMI in mid-April and encountered sperm whales and orcas in June which required the vessel to leave any deployed fishing gear and voluntarily move 90-miles from the area to discourage the habituation of orcas with the vessel. The vessel retrieved the fishing gear several weeks later.
- Due to issues with sea lice, the first trip to HIMI had notable amounts of B-grade product.
- A mix of two distinct toothfish size classes was reported in the catches during the first part of the trip, while later in the same trip there seemed to have been a single larger size class in catches.

Mr Arangio (Austral Pty Ltd) reported that:

- Two vessels have fished at HIMI since the start of April. The season started slow in terms of catch rates but has since been fairly standard.
- The Austral vessels also encountered the same pod of orcas, estimated at 30 whales, across the first two weeks of July. It was suspected these animals were the resident population from Crozet that had been seen at Kerguelen in recent years. The voluntary 90-mile move on rule was implemented by all vessels and appeared to be successful.
- Both vessels are close to returning to port in advance of their final trips for this season and may undertake fishing in the SIOFA area in early December.

## **Agenda item 5 – Climate Change**

The Senior Manager of the AFMA Climate Change Program gave a brief update on the outcomes from the MITF Climate Change Workshop held on 21 August 2023. The workshop report will be provided to SARAG for comments once drafted. The draft report from the HIMI Climate Change Workshop (May 2023) has been circulated and a reminder will be sent to SARAG for final comments to be provided by 31 August 2023 (**Action Item 1**). The finalised HIMI and MITF workshop reports would inform further internal planning at AFMA and be made publicly available on the AFMA website.

Dr Steph Brodie gave a presentation on the draft HIMI and MITF Climate & Ecosystem Status Reports, where SARAG was asked to consider which indicators in the reports may be of particular use to the fishery. Indicators and data sources included El Niño Southern Oscillation (ENSO) drivers from 2004 onward, Southern Annular Mode (SAM) phases from 2000-present, Sea Ice Extent Anomalies from 1980-present, Marine Heatwave indicators, region specific bottom temperatures, and toothfish body condition. SARAG heard that El Niño is likely to develop this year, with an expected shift to negative in the SAM and associated northward shift in westerly winds resulting in a weakening of the circumpolar current and decreased sea ice extent. Dr Brodie noted that sea ice extent has been at record lows in 2023 across the year. The marine heatwave forecast for HIMI showed decreasing probabilities moving into September, with a similar pattern seen at MITF. SARAG heard that the Bureau of Meteorology produces 10-day forecasts, including products showing oceanic fronts that form important foraging regions for top marine predators, and was asked whether other indicators might also be valuable in the fisheries.

Mr Arangio reflected that this work fitted neatly with the work being undertaken on the TREV and CSIRO projects, which explored toothfish responses to oceanographic conditions with final reports due soon that may feed into these processes. Mr Arangio highlighted an interest in catch rates and average size data, and potential ways of reporting on changes in seabird and marine mammal presence and behaviour throughout the year.

The timeline of future updates and whether there was capacity to move the product to a browser platform was also raised. Ms McDonald advised that the outputs are intended to eventually be automated on a timeline that would allow them to inform RAG and MAC TAC setting discussions; with a longer-term plan to have a live product that automates updates as data becomes available throughout the year.

Dr Ziegler noted that some data sources would be limited in their ability to update on a highly frequent rotation, while contrastingly the marine heatwave data should be updated regularly to be an effective indicator. He recalled prior discussions that sea ice extent may be more influential on toothfish catch rates at HIMI compared to MITF, where the confluence of water masses had greater impacts and may be a data stream worth pursuing.

SARAG endorsed the draft Climate & Ecosystem Status Reports for finalisation.

AFMA recalled that the AFMA Commission expects that advisory committees will incorporate climate change considerations into TAC setting processes and its advice back to the Commission. AFMA noted the examples provided in the paper of how this has been implemented in the SESSF, with the scallop fishery taking marine heatwave forecasts explicitly into consideration. SARAG heard that this approach is of interest to the Commission to ensure that both MACs and RAGs have a process in place that if significant risks or concerns due to climate change are emerging, these are effectively identified, discussed, and considered in a precautionary TAC setting approach. AFMA is in the early stages of developing a climate risk integration framework through expert workshops over the coming months, which will be brought to RAGs as it moves to being trialled. SARAG noted that CCAMLR will hold a climate change focused workshop in September, and that AAD could reflect relevant outcomes from this work back to SARAG.

**ACTION ITEM 1** – AFMA to seek SARAG feedback on the HIMI climate adaptation workshop report by 31 August 2023.

## **Agenda item 6 – Stock Assessment Updates**

### **6.1 Heard Island & McDonald Islands Patagonian Toothfish Stock Assessment**

SARAG recalled that at its May 2023 meeting it comprehensively discussed the initial bridging analysis for the draft HIMI toothfish stock assessment and had suggested additional analyses and sensitivity tests to further explore the impact of RSTS and longline tagging data on survey catchability ( $q$ ) and biomass estimates. SARAG noted the presentation from Dr Masere on the results of these analyses and the updated HIMI toothfish stock assessment.

#### *Updated bridging analysis*

The 2023 toothfish stock assessment was run on CASAL (where possible) and the new Casal2 based on the best available estimates of model parameters and built on the 2021 stock assessment to include updated catch, survey, aging and tag recapture data for 2022/2023. Key annual events in the fishery (such as fishing, biological processes and observations) were sequenced through assigned time steps in Casal2.

#### *Results of additional analyses and sensitivity tests suggested by SARAG 68*

SARAG noted that while the interrogation of the RSTS and tagging data inputs to the model is ongoing, the disparity between the number of expected and observed longline tag recaptures has increased in recent years, likely due to the high spatial concentration of fishing effort and tagging. An analysis of the spatial and temporal aspects of tag release and recapture overlap indicated that the fishing footprint has decreased since 2018 and that within that, the

distribution of fishing effort has changed. In 2018, 2020 and 2021, relatively high catches were concentrated in a few single small 0.5\*0.25 degree grid cells. This resulted in substantially higher than expected 2019 tag recaptures in 2020 and lower than expected tag recaptures in 2021 and 2022. Similarly, in 2021 a substantially greater than expected number of 2018 tags were recaptured. In response to these trends, tag releases from these small cells and their recaptures in the same cells were excluded in the stock assessment as they most likely violated the assumptions of random mixing of mark-recapture estimates. SARAG agreed that future work on quantitative approaches to account for the spatial distribution of fishing effort and tagging data would be valuable (**Action Item 2**).

SARAG noted that shorter time periods of estimated year class strength (YCS) were tested during sensitivity analyses in Casal2, and YCS estimates over 1996 – 2017 (compared to 1986-2017) resulted in the lowest value for  $B_0$ .

SARAG noted a summary of the key areas of uncertainty still needing exploration in the model which include: disparity between cohort strength of young fish observed in the RSTS and older fish observed in the longline fishery, factors influencing survey catchability ( $q$ ), identifying population/stock which tag-based estimates relate to, choice of time-range from which to project YCS, and population parameters (natural mortality, post-release mortality, and steepness). SARAG noted future updates of the model may include the toothfish fishing mortality assigned to the RSTS and the weighting of the LL1 and LL2 strata splits based on industry advice on expected fishing depth trends (**Action Item 2**).

### *Stock Assessment Outputs*

SARAG noted that the 2023 stock assessment resulted in a reduced estimate of the virgin spawning stock biomass (SSB) (64,520t) than that obtained in by the 2021 assessment (69,120t) and a lower current SSB status of 0.39 (predicted to be 0.41 in 2023 by the 2021 assessment). Annual catch limits were calculated over the 35-year projection period as per the CCAMLR decision rules and estimated to be 2,660 tonnes (Table 1, Scenario 1). Under this catch limit, the SSB was projected to remain below  $B_{40\%}$  for 15 years, reaching a minimum of  $B_{33\%}$  by 2029, before increasing to the target level  $B_{50\%}$  at the end of the 35-year projection period (2058). This general pattern is consistent with that predicted by the 2019 and 2021 stock assessments although at a lower level.

In addition to (1) using the CCAMLR decision rules to determine the catch limit, SARAG considered four alternative scenarios (Table 1, Scenarios 2-5) that sought to 2) increase the target level to  $B_{55\%}$  at the end of the 35-year projection period; 3) accelerate the rebuilding to the target level by shorting the projection periods to 25 years; (4) accelerating the rebuilding to 20 years; and 5) a mid-point catch limit between Scenarios 3 and 4. The minimum SSB over both shorter projection periods did not drop as low as the CCAMLR projection period, with only a 0.01 difference in the minimum SSB status under the 25- and 20-year projection periods. The projected SSB recovery across all scenarios assumes a more optimistic pattern of recruitment compared to what has been seen in the fishery for the last 20 years but the drivers of the below average recruitment are not well understood. The RAG did reflect, however, that the model's recent recruitment estimates did not appear in line with the recent very high juvenile toothfish catches in the RSTS, which imply there may have been recent successful spawning events.

Noting the results of the stock assessment, SARAG reiterated the need to continue to set a precautionary catch limit for toothfish, primarily to reduce the level of stock depletion projected under the CCAMLR decision rule, and due to the ongoing uncertainty present in the stock assessment inputs, particularly in reconciling the tag-recapture data assumptions with characteristics of the stock. SARAG considered the two alternative lower catch limit options and noted that a 2,400t TAC, while having the least economic impact, would result in a longer period of SSB rebuilding and therefore carried greater risk. While the lower catch limit of 2,120t is marginally more precautionary of those presented, it would result in the greatest short term economic consequences for industry.

To manage conflicts of interest, Industry members and observers left the meeting while SARAG deliberated on the TAC advice.

**Table 1.** Casal2 model projections considered by SARAG 69 as basis for TAC advice

Scenario no.	Model	Total Allowable Catch	Projected stock status
1	CCAMLR Harvest Control Rule	2,660 t	Years below $B_{50\%}$ : 2020 - 2057 SSB status after 35y: 0.500 Min SSB status: 0.33
2	Target 55% $B_0$ at end of 35-year projection period	2,360t	Years below $B_{50\%}$ : 2020 - 2046 SSB status after 35y: 0.552 Min SSB status: 0.34
3	Target 50% $B_0$ at end of 25-year projection period	2,400 t	Years below $B_{50\%}$ : 2020 - 2042 SSB status after 20y: 0.501 SSB status after 35y: 0.592 Min SSB status: 0.35
4	Target 50% $B_0$ at end of 20-year projection period	2,120 t	Years below $B_{50\%}$ : 2020-2047 SSB status after 25y: 0.501 SSB status after 35y: 0.544 Min SSB status: 0.34
5	Midpoint of catch limits between Scenarios 4 and 5	2,260 t	Years below $B_{50\%}$ : 2020 - 2045 SSB status after 35y: 0.57 Min SSB status: 0.34

SARAG also considered the mid-point catch limit of 2,260t (Table 1, Scenario 5).

SARAG 69 **RECOMMENDED** setting a more precautionary catch limit for toothfish than that derived under the CCAMLR decision rule on the basis that a) the stock biomass depletion is projected to continue beyond the levels expected under previous assessments before starting to recover, and b) there is ongoing uncertainty present in the stock assessment inputs, particularly in reconciling the tag-recapture data with other information about the stock.

However, in the absence of an alternate harvest control rule providing a clear pathway to diverge from the CCAMLR decision rule, SARAG was unable to distinguish between the alternative lower TAC options on a scientific basis.

SARAG noted that each option would have different levels of short-term economic impact, and that consideration of economic factors is the remit of SouthMAC.

SARAG further noted that while a TAC was set in 2021 using a step-down approach to seek to return to  $B_{50\%}$  over 20 years, this was an *ad hoc* approach and highlighted the importance of work to better clarify a domestic TAC setting decision rule going forward (**Action Item 3**).

SARAG therefore recommended that SouthMAC, taking into account SARAG advice consider setting a TAC for the 2023/24 and 2024/25 HIMI fishing seasons based on the following alternative scenarios:

- i. A lower catch limit of 2,400t derived from the 25-year projection period;
- ii. A lower catch limit of 2,120t derived from the 20-year projection period; or
- iii. A lower catch limit of 2,260t that is a midway point between the 20 and 25 – year projection periods.

In making its recommendation, SARAG reiterated the importance of prioritizing work to better understand and address the ongoing uncertainties impacting the toothfish stock assessment including the impact of the spatial distribution of fishing effort on tag recaptures and to develop and test alternate decision rules. This is the first instance that SARAG has not come to a HIMI Toothfish TAC recommendation within a meeting and highlights the importance of future work identified and prioritized by the RAG.

SARAG recalled the outcomes of the HIMI climate adaptation workshop, including the information presented on the potential impacts of climate change in the Southern Ocean. It further considered its discussions under Agenda Item 5 on the draft HIMI Climate and Ecosystem Status reports on the indicators that are being monitored and updated over time and will guide SARAG's consideration of climate impacts when formulating its TAC advice. Noting that more targeted research is currently underway in the HIMI fishery to better understand climate impacts, SARAG considered that current data collection methods in the fishery should be improved to collect environmental data to allow AFMA to respond to changes in the fishery, and that the alternative lower TACs considered offer a level of precaution that may account for any potential risks posed by climate change as climate impacts continue to be better integrated into the management of the HIMI fishery.

SARAG noted that the catch limit of 2,660t for 2023/24 and 2024/25 that is based on the CCAMLR decision rule would be presented for endorsement at CCAMLR 42.

<p><b>ACTION ITEM 2</b> – AAD to undertake additional analyses to address the ongoing uncertainties impacting the toothfish stock assessment, including:</p> <ul style="list-style-type: none"><li>- Evaluation of the impact of the spatial distribution of fishing effort on tag recaptures on the stock assessment</li><li>- further examination of the disparity between cohort strength of young fish observed in the RSTS and older fish observed in the longline fishery,</li></ul>
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and potential linkages to movement patterns  
- toothfish fishing mortality assigned to the RSTS and the weighting of the LL1 and LL2 strata splits

**ACTION ITEM 3** – Development of a domestic decision rule for HIMI Toothfish TAC setting be explored going forward, noting this may require specific funding.

## 6.2 Heard Island and McDonald Islands Mackerel Icefish Stock Assessment

SARAG noted the results of the 2023 RSTS and Mackerel Icefish Stock Assessment as provided by D Maschette. The 2023 Grym assessment indicated that catches at 714t in the 2023/24 season and 599t in the 2024/25 season satisfy the CCAMLR decision rules. SARAG noted the substantial higher catch limit of 1,857t for 2023/24 recommended by the 2022 assessment model which was anticipated due to the highly variable stock characteristics of mackerel icefish, and that it appears a relatively lengthy period of stock stability had passed.

SARAG heard that the catch of bycatch species taken by the RSTS indicated that *Bathyraja eatonii* and *B irrasa* show mild reductions in biomass, while *B murrayi* showed a small increase. Unicorn icefish (*Channichthys rhinoceratus*) and grenadiers (Macrouridae) were reported to be stable, while grey rockcod (*Lepidonotothen squamifrons*) showed a mild increase.

To manage conflicts of interest, Industry members and observers left the meeting while SARAG deliberated on the TAC advice.

SARAG **RECOMMENDED** that the HIMI mackerel icefish TAC be set at 714t in 2023/24 and 599t in 2024/25. In making this recommendation, SARAG noted that the current harvest strategy is considered to be sufficiently conservative to avoid harvesting that would be inconsistent with the CCAMLR objectives.

SARAG considered that current data collection methods in the fishery and the TAC setting process will allow AFMA to respond to changes in the fishery due to climate change as icefish biological parameters that inform the assessment of the stock are regularly estimated to ensure that long-term environmental changes, such as those which are predicted to occur due to climate change and may impact population characteristics, are accounted for.

## 6.3 Heard Island and McDonald Islands Bycatch Assessment

### *Bycatch limits*

SARAG heard an update from Dr Cleeland on the current status of the skate and ray bycatch assessment work first presented to SARAG in May 2022, which is seeking to eventually develop species-specific catch limits based on differences in life history parameters. Dr Cleeland advised that future assessments for *Bathyraja irrasa* will be transitioned to Casal2 once key parameters are better defined. Dr Cleeland also advised that collaborative research on *B irrasa* growth is occurring with New Zealand, including use of biochemical markers in Ross Sea species. Future work on aging *B eatonii* and *B murrayi* is planned, to supplement the current use of proxy species in their assessments.

SARAG **RECOMMENDED** maintaining the current bycatch limits outlined in Table 2 for the 2023/24 HIMI fishing season, noting that there is currently no updated information to indicate those levels should be revised.

**Table 2.** 2023/24 Bycatch Limits for the HIMI Fishery

Species	TAC (tonnes)
Caml grenadier ( <i>Macrourus caml</i> ) and Whiton's grenadier ( <i>M. whitsoni</i> )	409
Bigeye grenadier ( <i>M. halotrachys</i> ) and Ridge tailed rattail ( <i>M. carinatus</i> )	360
Unicorn icefish ( <i>Channichthys rhinoceratus</i> )	1 663
Grey rockcod ( <i>Lepidonotothen squamifrons</i> )	80
Skates and rays ( <i>Bathyrāja</i> spp.)	120
All other species (each)	50

SARAG noted the importance of future work to better determine stock biomass of deepwater grenadiers, particularly *Macrourus halotrachys*.

Industry requested that AFMA continue to provide advice throughout the season as the 80t and 120t limits are reached where necessary.

#### *Skate and ray post-release mortality – project updated*

SARAG heard a presentation from Dr Appert on post-release mortality studies of *B irrasa* in the HIMI longline fishery and expressed gratitude for Austral's logistical support of the study. Dr Appert described methodology including use of pop-up satellite archival tags (PSAT) to track post-release movements of skates, and on-board sampling to support blood biochemistry analyses of stress markers as indicators of post-release survival. One PSAT was deployed on a dead skate, to allow investigation of the effects of currents and benthic scavengers on activity markers. Of 24 PSATs released, two were deployed for five days as trials and 22 were deployed for 30 days including the PSAT on a dead skate. Nine tags were released prematurely between 13-27 days while all others released at the 30-day mark. SARAG observed preliminary depth and activity time-series figures and heard that next steps include comparing the activity from the control PSAT with skates released alive.

SARAG noted that future considerations of skate and ray bycatch limits in the fishery may be informed by the results of this project.

Recalling that it had previously viewed a skate and ray handling and condition paper (SARAG 65, May 2022), SARAG endorsed the updated poster tabled at the meeting for use on Australian vessels.

#### **6.4 Macquarie Island Patagonian Toothfish Stock Assessment**

SARAG recalled that at its May 2023 meeting it comprehensively discussed the draft toothfish stock assessment for the MITF and requested that CSIRO test additional TAC scenarios with

different spatial splits to inform SARAG’s TAC discussion and recommendation. Fixed catch proportions were assigned to the Aurora trough and the remainder was shared between the North and South regions of the model, the results of this analysis are outlined in Table 3, using the CCAMLR decision rule as a basis to set TACs in the MITF. Three new scenarios were presented with a 3-year average catch split between NMRL (42%) and SMRL (58%).

**Table 3.** Proposed Patagonian toothfish TACs from a range of predicted spatial catch splits for 2024/25 and 2025/26

Aurora Trough	NMRL	SMRL	NMRL %	SMRL %	TAC
200	137	137	0.5	0.5	473
250	107	107	0.5	0.5	464
300	78	78	0.5	0.5	455
200	65	194	0.25	0.75	458
250	51	153	0.25	0.75	454
300	38	113	0.25	0.75	451
200	113	155	0.42	0.58	468
250	88	122	0.42	0.58	460
300	64	88	0.42	0.58	452
<b>Average</b>					<b>459</b>

SARAG noted that differences between recommended TACs under the presented scenarios were relatively small and recalled industry advice that following the extension of the Macquarie Island Marine Parks, effort in the Aurora Trough is likely to be lower in coming years.

To manage conflicts of interest, Industry members and observers left the meeting while SARAG deliberated on the TAC advice.

SARAG **RECOMMENDED** a 2024/25 and 2025/26 MITF Patagonian Toothfish of 468t from the outputs based on a lower anticipated catch of 200t in the Aurora Trough and a 3-year average catch split between NMRL and SMRL. SARAG noted that while no formal split of TAC is applied, it strongly encouraged fishing effort in the northern region to continue.

SARAG recalled its discussion at the recent MITF climate adaptation workshop and under Agenda Item 5 on the draft MITF Climate and Ecosystem Status reports and the indicators that are monitored and updated over time, noting that this will guide the RAG’s consideration of climate impacts when formulating its TAC advice. Noting that more targeted research is currently underway in the MITF to better understand and integrate climate impacts into the management of the fishery, SARAG considered that current data collection methods in the fishery and the TAC setting process will allow AFMA to respond to changes in the fishery, including those due to climate change.

### 6.5 Macquarie Island Bycatch Limits

SARAG noted that the total bycatch in the MITF for the 2022/23 fishing season was 21t, with grenadiers representing the most significant catch (9.9t) followed by violet cod (9t) and stone crabs (1.2t). SARAG also noted that no new bycatch assessments have been conducted since

the limits were set in 2021. SARAG requested that a simple analysis of bycatch trends over time be incorporated in future MITF stock assessment work to inform the RAG's discussions (**Action Item 4**)

SARAG **RECOMMENDED** that the current bycatch limits as outlined in Table 4 be maintained for the 2024/25 and 2025/26 fishing seasons, noting that the bycatch in the fishery is low and there is no updated information to suggest that the limit should be revisited at this stage.

**Table 4.** MITF bycatch TAC for the 2024/25 and 2025/26 fishing seasons

<b>Species</b>	<b>TAC (tonnes)</b>
Any single species (other than Patagonian Toothfish) taken in the fishery	50

**ACTION ITEM 4** – Analysis of bycatch trends over time to be provided to inform future SARAG considerations of bycatch limits for the MITF.

SARAG noted that the longline Ecological Risk Assessment is currently underway and the MITF Bycatch and Discards Workplan is due to be updated and that this was also part of the fishery's MSC Client Action Plan.

### **Agenda item 7 – MITF Seabird Management Arrangements**

SARAG recalled its recommendations on proposed fishing season extensions and/or changes to night time setting in the fishery based on its initial consideration of the industry proposal to vary some of the seabird bycatch mitigation measures in the MITF at a joint meeting with SouthMAC in February and at SARAG 68. SARAG further recalled it:

- Supported further investigation of a potential fishing season extension provided any amendments are step-wise, evidence based and supported by a quantitative assessment of risk. Depending on the results of this assessment, a trial season extension with clear performance measures may be considered.
- Sought further details from industry on their request to vary current night setting arrangements, noting the discussions and concerns on risks associated with such a change.
- Sought further information from AFMA on the requirements for progressing a fishing season extension review, including by way of a trial, and on the observer data available on seabird abundance particularly during the current 1-week extension period (1-7 Sep).

SARAG noted the additional information provided by AFMA to inform its discussions including:

- That the current 1-week season extension in the fishery, which was introduced in 2018, is yet to be agreed by the AFMA Commission as a permanent arrangement for the fishery.
- That the current fishing season extension was fished for the first time in 2022 and no seabird interactions occurred during this period.
- A summary of the nature and extent of observer data on seabirds in the fishery

- Seabird expertise at the meeting to provide information on seabird behaviour around Macquarie Island.

Considering the information above, SARAG was asked to consider whether sufficient data was available to assess the potential changes in risk associated with a) a further trial season extension; and b) incremental amendments to night-setting arrangements. SARAG invited industry to suggest any additional actions that could be taken to mitigate any increase in the risk of interactions with seabirds during the proposed extension period or daylight setting trials (as is current practice at HIMI), noting AFMA Management's starting point that any trial would be discontinued if one individual of the 5 albatross and petrel species of concern is caught. SARAG also noted that while the HIMI trials evolved over the course of their implementation, pre-agreed conditions were in place prior to any stage of the trials commencing, including responses to evidence that interaction risk had exceeded a defined level.

#### *Observer data*

SARAG noted the summary provided by the Executive Officer on the available observer data, on seabird abundance and species richness over time. SARAG discussed the varying availability of seabird data across the MITF longline fishing season and noted a reduction in data availability mid-season linked to a mid-year decrease in fishing activity as the vessel returns to port between a first and second trip. SARAG noted advice that daily observations occurred as other tasks allowed, usually prior to the start of night-time setting. SARAG recommended that the observer data be further examined to identify bias or patterns in times of observations, and that observers be instructed to conduct daily seabird observations, at regular intervals, for the remainder of the 2023/24 season and during the 2024/25 season (**Action Item 5**).

#### *Seabird Ecology Advice*

SARAG welcomed Dr Julie McInnes, Sam Thalmann and Dr Jamie Cleeland as invited experts on the ecology of seabirds on Macquarie Island to provide their initial insights on the available observer data and identify any supplementary data sources that could assist SARAG, such as through seabird tracking or monitoring programs.

SARAG heard that the September period is particularly challenging for land-based data collection as field teams usually arrive only in October on Macquarie Island to coincide with seabirds returning to the island following an extended period at sea. Furthermore, seabird tracking and monitoring programs to date have mainly concentrated on better understanding seabird behavior during the breeding season. This annual pattern makes it challenging to monitor seabirds, and as a result tracking data in August and September is sparse. The experts indicated that an increase in seabird abundance and species diversity starts with giant petrels arriving in August to be incubating eggs in September. Wandering albatross were reported as being present all year in small numbers, and grey petrels are present during winter to breed. Light-mantled albatross, black-browed albatross and grey-headed albatross are present in greater numbers over the Austral summer but can be observed in the waters around Macquarie Island during winter, as reflected in the observer data and limited coarse scale tracking data. The invited experts described this annual increase in seabird abundance as rapid and non-linear, and as a result the potential risk of interaction was considered to increase

markedly over time in September. SARAG heard additional advice that timing of September abundance increase is likely to vary between years due to broader environmental conditions.

Dr McInnes, Mr Thalmann and Dr Cleeland acknowledged that the MITF is exemplary in mitigating seabird bycatch and noted that this is due to the high mitigation standards in place in the fishery. They noted that in their view, as observers to SARAG, the step-wise assessment of the change in the risk profile during a fishing season extension had not yet been demonstrated due to the insufficiency of the available data, therefore additional data would need to be collected to undertake a risk assessment of fishing during the first week of September, prior to consideration of additional weeks. They noted that observer data provided a critical opportunity to better understand at-sea distribution and behavior of seabirds, and that leading into a trial period this data collection should be prioritized with the aim of providing statistically meaningful information.

### Daylight Setting

SARAG noted that night-setting is a key ACAP best practice mitigation measure, and that based on seabird foraging behaviour and activity patterns, introducing daylight fishing carries more risk than a limited fishing season extension. SARAG heard that the availability of information on seabird abundance and behaviour from tracking studies has improved over time, but it is unclear whether seabird behaviours have altered since the current management arrangements were implemented in the fishery to enable longline fishing. It was noted that daytime interaction risk is variable between species, with some being more active at twilight than midday, but overall daytime setting substantially changes the risk profile.

SARAG noted industry members' advice that in addition to ACAP best practice standards, during higher interaction risk periods at HIMI vessels will have the ability to voluntarily implement additional mitigation measures, including using multiple tori lines, adding additional weight to the main line to increase sink rates, and that setting is aborted if the Captain considers risk too high at any particular period. SARAG heard that discretionary use of additional mitigation measures was the approach preferred by industry when these factors are used to inform risk in a MITF trial, noting that deployment of additional mitigation devices would be used as needed, given the risk to industry that one seabird mortality would end the trial. SARAG discussed ongoing research by CSIRO on the use of lasers as seabird deterrents and that this method is currently not recommended by ACAP.

SARAG noted that observer data on seabird abundance across different times of the day is limited and requires additional analysis. Specifically, SARAG recommended investigation of species-specific abundance by time of day, which would require further exploration of the observer data to identify data gaps (**Action Item 6**). In addition to collection of multiple daily daylight observations, SARAG discussed whether other data sources may better inform the risk assessment, including data held by the AAD, the Tasmanian government, or academic institutions.

Industry members noted they are seeking increased flexibility from the current night setting only restrictions and are comfortable with expert guidance on times of the day with reduced risk for seabird interactions. SARAG recommended that the industry proposal be refined to increase specificity around what was sought as "daytime setting" and a proposed trial period, to be provided for further discussion at SARAG 70 (**Action Item 7**)

SARAG did not support a trial of daylight setting at this time. However, Members agreed that further analyses of available information would assist in further evaluating risks to seabirds from daylight setting during part of the fishing season.

### Fishing Season Extension

SARAG noted that the observer data gives some indication of an increase in seabird abundance towards the end of the fishing season (August), which aligned with expert advice on breeding behaviour for many species at Macquarie Island. SARAG accepted that during the early stages of seabird increase on Macquarie Island (around the end of the fishing season), where observer daily haul counts suggest similar seabird species richness but increased seabird abundance around the vessels, no interactions had been reported in the fishery during this period since 2007 despite the increasing risk profile. Dr McInnes advised SARAG that additional land-based observational survey data could be interrogated and analysed to explore the utility of these data to inform risk-based discussions, but that more detailed supplementary information for decision would require accessing several data sources and development of an information paper highlighting caveats and gaps, which would be subject to funding (**Action Item 8**).

Based on seabird behaviour and available data, the invited experts considered that a continuation of the existing season extension trial was the best supported option at this time. SARAG noted this advice and an updated proposal from industry to trial the season extension (see **Attachment D**) proposing a precautionary, step-wise approach to week-based increases in the trial period, such that the season extension trial would be assessed by individual week (Weeks 1, 2 and 3). Under this scenario, the trial of Week 1 will be in its third year of data collection in 2024.

SARAG supported in-principle the industry proposal for a fishing season extension trial subject to further consideration of outcomes from the 2022-23 season extension period, and the review of any new seabird data that will be presented to SARAG 70, clarification of minimum effort needed to undertake and progress trial stages, and the development of an agreed precautionary, step-wise approach to week-based increases in the trial period.

### Monitoring and Decision Rules

AFMA indicated that in any phase of the trial, a mortality of one of the five seabird species of concern would mean the risk threshold had been exceeded and result in the cessation of the trial, which was agreed to by industry. Regarding other seabird species, it was noted that interaction frequency would need to be lower than the TAP rate (0.01/1000 hooks), as an increase of interactions to the TAP rate would be significantly above the performance of the fishery to date in maintaining very low interaction rates. Industry members referred to the HIMI season extension three bird rule as a potential option that would meet this requirement. AFMA reflected that in their view, minimum and consistent data collection standards must be met for the trial to continue, and that Week 1 (September 1-7) is to be incorporated in development of trial design.

SARAG discussed the minimum effort required to provide meaningful information needed to confirm the conclusion of a trial and noted that HIMI trials of both fishing season extension and daylight setting were based on a 500k minimum, which was derived from the rates set out

in the Threat Abatement Plan – Seabirds. This was considered achievable in approximately five years, based on 2022 effort (1-6 September), and it was noted that data from multiple years would provide more meaningful and robust results when considering trial outcomes. SARAG noted that this effort would underpin the continued collection of observer data, which would need to be maintained during the trials, in addition to effort-based interaction risk data.

SARAG discussed trial design, and agreed that a minimum of 500,000 hooks would need to be set without exceeding the relevant interaction limits to successfully conclude each individual stage (week) of the trial. This design would necessitate multiple seasons of data collection for each week, supporting robust results that would also account for inter-seasonal variability. SARAG discussed whether a trial of fishing in Week 2 (8-14 September) could be initiated prior to reaching 500,000 hooks set in Week 1, and Industry Members expressed strong interest in seeing a Week 2 trial commence in September 2024. SARAG discussed minimum hook numbers necessary to progress the trial, and considered that at least 200,000 hooks would need to be set in week 1 and the outcomes reviewed prior to progression of the trial to week 2. Noting the likely increasing risk profile further into September, SARAG discussed that 300,000 hooks set in Week 2 may be the minimum requirement to consider commencement of a trial in Week 3 (15-21 September) taking into account the outcomes of week 1 and 2 trials and subject to further RAG consideration, should industry seek to pursue this further.

SARAG agreed that SARAG 70 (May 2024) would review updated observer data from 25 August – 7 September 2023, a presentation from Dr McInnes on land-based observations of seabird presence offshore Macquarie Island (pending funding to support analyses), and the results of data review on daylight observation gaps. This discussion would seek to further define potential management responses to changes in risk for non-critical seabirds, and give consideration at that time to whether it would remove its support for the Week 2 trial to begin in 2024 if the minimum hook trigger had been reached and none of the five listed seabirds had been killed, after the 2023 season.

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| <p><b>ACTION ITEM 5</b> – SARAG recommended that observers conduct daily seabird observations, at regular intervals, for the remainder of the 2023/24 season and during the 2024/25 season</p> <p><b>ACTION ITEM 6</b> – Observer data to be analyzed for gaps in observation (time of day) and develop paper on species specific diurnal patterns and risk for SARAG 70</p> <p><b>ACTION ITEM 7</b> – Industry to provide an updated proposal with a more specific outline of “daytime setting” and proposed trial period for discussion at SARAG 70</p> <p><b>ACTION ITEM 8</b> – AFMA to explore funding options to progress seabird experts to provide a paper summarizing any additional seabird abundance data for consideration at SARAG 70</p> |
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### **Agenda item 8 – CCAMLR Papers 2023**

SARAG took the papers provided as read and noted a brief update from Dr Ziegler, including that the AAD was still determining papers to be presented to the Working Group on Incidental Mortalities Associated with Fishing (WG-IMAF).



## **Agenda item 9 – Fishery Monitoring**

### Close Kin Mark Recapture (CKMR)

SARAG heard an update from Dr Hillary on the trial CKMR program, including a proposed general sampling design and associated budget costings. Of note was the minimum requirement for 100 Parent-Offspring-Pairs (POP) and Half-Sibling-Pairs (HSP) to be generated from the dataset, which Dr Hillary advised would require an estimated 20,000 samples, with an even split in sampling between juveniles and adults from primarily RSTS and longline data sources. Feedback from AAD and Industry was that currently 3,000 toothfish are sampled per year in the RSTS, and that the addition of genetic sampling would be a significant addition to the program and may require an additional crew member, observer or scientist on board. SARAG noted that the design of the sampling tool to deal with toothfish skin and flesh characteristics may need to be amended.

SARAG heard that CSIRO has moved to full genome assembly approaches, which is effective in identifying HSPs in larger populations, and will also support POP identification. The importance of spatial sampling in the absence of population structure information was discussed, including potential approaches to sampling the Kerguelen plateau across EEZs. SARAG discussed specific costs of continuing the project, including genotyping, lab work, bioinformatics, inclusion in the stock assessment and engagement and adoption. Discussion of potential funding identified the FRDC-IPA as the most likely source.

SARAG discussed timeframes for the development of the database and subsequent work to provide the information for stock assessment purposes noting that a similar project on Southern Bluefin Tuna (SBT) took about three years to provide preliminary data for the assessment model. Dr Hillary noted that it would be dependent on successful sampling during the required time-period. Dr Hillary also reported that the SBT project was ongoing in terms of providing samples, though the number of samples processed annual was one-third of those required for the initial set up phase.

SARAG noted that while CKMR sampling was being considered as part of a broader cost-benefit analysis, that it could be incorporated into planning processes for research funding if considered appropriate. Industry Members indicated that additional data to improve understanding of stock status, whether CKMR or a Random Longline Survey, was of importance in the near future to better understand tag bias impacting the stock assessment. A further meeting between industry, CSIRO and AAD to further discuss alternative data source timelines and potential contributions to the toothfish stock assessment, as well as discussion of spatial approaches and means of better understanding fine scale and broader scale movements to come up with a plan of action was required (**Action Item 9**).

### RSTS Periodicity

Following a query from industry regarding strata that appeared to continuously catch low volumes of toothfish, SARAG noted the importance of the northern strata in informing biomass estimates of a range of species, both target and non-target as required under the Fishery Assessment Plan. SARAG also noted the importance of consistency in the timing of the RSTS into the future, and advice from Scientific Members that moving the RSTS to early March in advance of the longline season as ongoing is unlikely to significantly effect model outputs.

Industry reflected that in their view the highest priority in the RSTS data is toothfish, including improving understanding of recruitment patterns. In the short-medium term, industry indicated that continuing as an annual survey was acceptable from their perspective to provide a fuller understanding of the anticipated recruitment pulse, and that moving the timing of the RSTS to the start of March would help offset the opportunity and actual cost imposed as a result of undertaking this expensive survey annually.

AFMA indicated support for bringing the RSTS to early March and noted the CCAMLR objectives supported by the RSTS in providing information on non-target species and queried how this data could be produced if the RSTS were no longer providing it. Industry noted that the view of reducing frequency of the survey in the long term would be that it continued to provide this information, though perhaps every second year. SARAG noted the potential impacts of less frequent sampling on understanding climate change impacts in the HIMI fishery, and that the northern strata are showing the greatest impacts at this time.

Dr Masere gave an update on the RSTS review paper which had been circulated for comment out of session. Members noted that more detailed investigation and discussion at future meetings of SARAG would be beneficial, and that this item should remain on the agenda for the next meeting (**Action Item 10**).

SARAG noted that a more detailed Cost-Benefit paper addressing potential combinations of CKMR, RSTS and RLS data streams would be further considered at SARAG 70.

SARAG **RECOMMENDED** that the RSTS start on 1 March 2024 at the earliest, and that future RSTS surveys would continue to commence on 1 March at the earliest.

**ACTION ITEM 9** – Industry, CSIRO and AAD to meet out of session to discuss alternative data source timelines and potential contributions to the toothfish stock assessment and means of better understanding and incorporating movement and mixing characteristics of the stock.

**ACTION ITEM 10** – AAD to provide an updated RSTS review paper for discussion at SARAG 70.

## **Agenda item 10 – TEP Interactions & Gear Loss**

SARAG noted the updated provided on TEP interactions and gear loss.

### *Southern elephant seal interactions*

SARAG further noted the preliminary mapping undertaken by the AAD of southern elephant seal interactions following a request from SouthMAC that interactions in recent seasons be explored, with a view to providing some advice that might inform the MAC's discussions regarding interaction rates.

SARAG noted that trends in elephant seal interactions have fluctuated in the past with no clear patterns or hotspots identified in the location of reported interactions. Interactions were broadly spread across the HIMI season with a small peak in August in some years and depth of capture varied between 750m and 1700m, leading SARAG to consider that the interactions were

widely spread and possibly difficult to mitigate. Dr Cleeland noted that work on tension-release snoods was a potential option, where hooks are attached to lines that have a weak point that breaks at higher tensions that are biologically realistic for seals, though unlikely to be reached by target species. Industry Members reflected that confirmation of seal bycatch as a significant issue would need to occur before considering changes to fishing gear, noting the economic impact of replacing snoods. Industry Members also reflected that most interactions are a result of entanglement in the mainline, rather than being hooked.

The potential to identify the source population of seals was raised, with thought given to collecting genetic, sex and age data. The group noted that elephant seals are usually tangled in mainline, and usually drop out of the line as it reaches the surface, giving a very limited window for sampling or observation. SARAG discussed the status of southern elephant seal populations and heard that while the status of the HIMI population has not been recently assessed, the Kerguelen populations are reported to be increasing. The only population currently assessed to be decreasing is the Macquarie Island population, though animals from this region are unlikely to be foraging at HIMI.

#### *Acoustic monitoring of sperm whales at HIMI*

SARAG received an update on passive acoustic monitoring of sperm whales off HIMI by Dr Brian Miller, following deployment of an acoustic recording device by Austral in 2021. The device recorded for a little over 6 months and showed seasonal presence information of sperm whales. Very few were detected between September and January, and a substantial increase in detections was reported in February and March. Antarctic minke whales and pygmy blue whales were also reported, as well as orcas and/or long-finned pilot whales.

SARAG discussed the current season reports of cetacean depredation on toothfish lines and noted that while this information may be usefully incorporated in the stock assessment in the future, depredation does not constitute a wildlife interaction to be reported under this agenda item.

### **Agenda item 11 – Five-year Strategic Research Plan 2024-2028**

SARAG heard that the Sub Antarctic Fisheries 5-year Strategic Research Plan (SRP) is due for revision and considered research needs for both HIMI and MITF research needs for consideration by both ARC and COMRAC over the coming 5 years. SARAG developed a list of research priorities for 2024-2028 and requested that AFMA circulate the revised draft SRP for comment out of session (**Action Item 11**) noting that SARAG may opt to reconvene intersessionally to finalise the SRP.

<b>ACTION ITEM 11</b> – AFMA to circulate the revised draft Sub Antarctic Fisheries 5-Year SRP (2024-2028) for comment out of session.
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### **Agenda item 12 – Fishery Assessment Plans**

SARAG reviewed the Fishery Assessment Plans (FAP) for HIMI and MITF that are due to be renewed, and considered that no significant amendments were required to develop the new FAPs. SARAG noted that the HIMI FAP should be amended to reflect the newly agreed annual

start date of 1 March. Industry Members indicated that information regarding cost sharing for HIMI and MITF research activities will be provided to AFMA to update the document.

SARAG noted that the MITF FAP should be amended to:

- update the company name for Australian Longline Fishing Pty Ltd; and
- observer seabird observations frequency should be amended from “once daily” to “as directed each day”.

SARAG discussed whether prescription of tagging locations should be incorporated in the HIMI FAP and noted that Industry Members preferred that advice be provided ad-hoc throughout the fishing season on tagging spread. SARAG reflected that the tagging requirements (minimum number based on rate) in each fishery are subject to change pending the biennial Total Allowable Catch determinations and would be updated following the AFMA Commission decisions in November 2023 and the FAPs will be finalized out of session.

### **Agenda item 13 – Other Business**

SARAG noted that no other business was raised.

### **Agenda item 14 – Next Meeting**

SARAG agreed that SARAG 70 would meet on Tuesday 7 May 2024 in Hobart with the meeting duration to be confirmed closer to the time.

## Attachment A

**Table 1. Member, invited participant and observer declarations of interest as advised to date.**

Name	Membership	Declared interests
Bruce Wallner	Chair	No pecuniary or other potential interests in sub-Antarctic fisheries.
Dr Philippe Ziegler	Scientific member	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 principle and co-investigator on current FRDC projects. Dr Ziegler is also the scientific member of SouthMAC, and the Scientific Representative for Australia to CCAMLR.
Dr Cara Masere	Scientific member	Member of the Fisheries team within the Southern Ocean Ecosystems Program at the AAD and has no pecuniary or other interests in the sub-Antarctic fisheries.
Dr Rich Hillary	Scientific member	Employed by CSIRO and is the Principal Investigator of the Macquarie Island Toothfish Fishery (MITF) stock assessment. 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 Tim Ward	Scientific member	<p>Institute Marine and Antarctic Studies, University of Tasmania, Associate Professor, Fisheries Scientist</p> <p>AFMA Small Pelagic Fishery Resource Assessment Group, Scientific Member</p> <p>AFMA Research Projects (SPF Monitoring, Blue Mackerel Spawning Fraction), Principal Investigator</p> <p>Natural Environment and Resources, Tasmania (Developmental Tasmanian Sardine Fishery), Scientific Advisor, Principal Investigator</p> <p>South Australian Marine Scalefish Fishery Management Advisory Committee, Independent Conservation Scientist, Member</p> <p>Pelamis Pty Ltd (Environmental Consulting Company), Director</p>
Brad Milic	Industry member	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.

Name	Membership	Declared interests
Rhys Arangio	Industry member	Employed by Austral Fisheries P/L (Austral Fisheries) as the General Manager of Science and Policy. Austral Fisheries owns Statutory Fishing Rights (SFRs) in the Australian sub-Antarctic fisheries, which include 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, nor of any legal action taken by his Company against AFMA, and has an interest in all agenda items.
Danait Ghebregabhier	AFMA member	AFMA employee, no interests pecuniary or otherwise.
Claire Wallis	Executive officer	AFMA employee, no interests pecuniary or otherwise.
Dr Heather Patterson	Invited Participant	Employed by the Department of Agriculture, Fisheries and Forestry and is the Editor of the Australian Bureau of Agricultural Resource Economics and Sciences (ABARES) Fishery Status Reports. Dr Patterson noted that she has no pecuniary interest in the sub-Antarctic fisheries.
Dr Pia Bessell-Browne	Invited Participant	Employed by CSIRO as an assessment scientist. Dr Bessell-Brown advised they are the principal investigator on the FRDC project 'Developing a harvest control rule to use in situations where depletion can no longer be calculated relative to unfished levels.' Dr Bessell-Brown noted they have no pecuniary interests in the sub-Antarctic fisheries.
Dr Jamie Cleeland	Observer	Employed as a Fisheries Scientist at the Australian Antarctic Division and declares that they have no pecuniary or other personal interest, direct or indirect, in any matter that raises or may raise a conflict with their duties participating in the AFMA Sub-Antarctic Resource Assessment Group.
Dale Maschette	Observer	Employed by IMAS and is a fishery scientist responsible for HIMI work including the HIMI icefish stock assessments. They hold no pecuniary interest in the subantarctic fisheries. Their salary is connected to two FRDC research grants related to Southern Ocean fisheries, one that they are the primary investigator on, another that they are a co-investigator on. They are also one of the alternative Scientific Committee representatives to CCAMLR.
Selina Stoute	AFMA observer	AFMA employee, no interests pecuniary or otherwise.
Alice McDonald	AFMA Observer	AFMA employee, no interests pecuniary or otherwise.

Name	Membership	Declared interests
Justine Johnston	AFMA Observer	AFMA employee, no interests pecuniary or otherwise.
Anna Willock*	AFMA Observer	AFMA Deputy CEO, no interests pecuniary or otherwise,
Gill Slocum*	AAD Observer	Employed by the Australian Antarctic Division, no interests pecuniary or otherwise
Heather Johnston	Observer	Employed by the Department of Agriculture, Fisheries and Forestry. No interests pecuniary or otherwise.
Dr Colette Appert	Observer	PhD candidate supervised by Dr Jaimie Cleeland at the Institute of Marine and Antarctic Studies, studies focus on post-release mortality of skates in the HIMI toothfish longline fishery. No pecuniary interests.
Sean Kebbell	Industry Observer	Employed by Austral Fisheries P/L (Austral Fisheries) as the Southern Fleet Operations Manager. Austral Fisheries owns Statutory Fishing Rights (SFRs) in the Australian sub-Antarctic fisheries, which include waters under the jurisdiction of CCAMLR. He was not aware of any investigation or prosecution action by AFMA against his Company, nor of any legal action taken by his Company against AFMA, and has an interest in all agenda items.
Dr Stephanie Brodie**	Observer	Employed by the CSIRO and through the organisation either has in the past or may in the future receive funding for research related to the fishery
Dr Julie McInnes***	Observer	Dr Julie McInnes is a Research Associate with the Institute for Marine and Antarctic Studies at the University of Tasmania. She is the Primary Investigator on an Australian Heritage Grant 'A strategic assessment of wildlife populations on Macquarie Island', Parks Australia funded grant 'The utilisation of Macquarie Island Marine Park by seabirds and marine mammals – a review of current knowledge and future directions' and co-investigator on the 'Macquarie Island Wildlife Monitoring Program' (led by NRE). Julie is one of Australia's representatives on the ACAP Population and Conservation Status working group and Taxonomy working group. Dr McInnes advised that she has no pecuniary interests in the sub-Antarctic fisheries.
Sam Thalmann***	Observer	Sam Thalmann is a permanent employee of the Department of Natural Resources and Environment Tasmania and is responsible for the oversight and direction of the Macquarie Island Vertebrate Monitoring Program. A marine biologist he has over 30 years' experience working in

Name	Membership	Declared interests
		monitoring and management of marine predator populations. Sam Thalman has advised that he has no pecuniary interests in the sub-Antarctic fisheries.

- \* attended for Agenda Item 6.1 only
- \*\* attended for Agenda Item 5 only
- \*\*\* attended for Agenda Item 7 only



## 69<sup>th</sup> Meeting of the Sub Antarctic Fisheries Resource Assessment Group (SARAG)

The Old Woolstore Apartment Hotel, 1 Macquarie St, Hobart

22-23 August 2023

### Draft Agenda

Chair: Mr Bruce Wallner

Approximate time	Item	Purpose	Lead presenter
<b>Day 1 – 22 August 2023, Shearers Room, 9:00am - 5:00pm (AEST)</b>			
9:00 (60 min)	<b>1. Preliminaries</b>		
	1.1 Welcome and apologies	For action	Chair
	1.2 Declaration of interests	For action	Chair
	1.3 Adoption of agenda	For action	Chair
	<b>2. Actions Arising</b>	For noting	AFMA
	<b>3. Correspondence</b>	For noting	AFMA
	<b>4. Member updates</b>	For noting	All
	<b>5. Climate Change Adaptation</b>	For noting	AFMA
10:00 (30 min)	<b>6. TAC Setting</b>		
	6.1 HIMI Patagonian Toothfish TAC	For action	AAD
<b>10:30 (30 min)</b>	<b>Morning Tea</b>		
11:00 (90 min)	<b>6. TAC Setting (cont.)</b>		
	6.1 HIMI Patagonian Toothfish TAC (cont.)	For action	AAD
	6.2 HIMI Mackerel Icefish TAC	For action	AAD
<b>12:30 (30 min)</b>	<b>Lunch</b>		
13:00 (120 min)	<b>6. TAC Setting (cont.)</b>		
	6.3 HIMI Bycatch Management & TAC	For action	AAD

Approximate time	Item	Purpose	Lead presenter
	6.4 MITF Patagonian Toothfish TAC	For action	CSIRO
	6.5 MITF Bycatch Management & TAC	For action	CSIRO
<b>15:00 (30 min)</b>	<b>Afternoon Tea</b>		
15:30 (90 min)	<b>7. MITF Seabird Arrangements</b>	For discussion	AFMA Member
17:00	<b>Day 1 Meeting Close</b>		

## Day 2

Approximate time	Item	Purpose	Lead presenter
<b>Day 2 – 23 August 2023, Shearers Room, 9:00am - 5:00pm (AEST)</b>			
9:00 (30 min)	<b>8. CCAMLR papers for 2023</b>	For noting	AAD
	8.1 Update from WG-EMM & WG-SAM	For noting	AAD
	8.2 Papers to WG-FSA, SC & CCAMLR Commission	For noting	AAD
9:30 (60 min)	<b>9. Fishery Monitoring</b>		
	9.1 Close Kin Mark Recapture	For discussion	CSIRO
	9.2 RSTS Periodicity	For decision	AAD
<b>10:30 (30 min)</b>	<b>Morning Tea</b>		
11:00 (60 min)	<b>9. Fishery Monitoring (cont.)</b>		
	9.3 Cost Benefit Analysis update	For discussion	AAD
12:00 (30 min)	<b>10. TEP Interactions &amp; Gear Loss</b>	For noting	AFMA Member
<b>12:30 (30min)</b>	<b>Lunch</b>		
13:00 (60 min)	<b>11. Five-year Strategic Research Plan 2024-28</b>	For advice	AFMA Member

Approximate time	Item	Purpose	Lead presenter
14:00 (90 min)	<b>12. Fisheries Assessment Plans</b>	For advice	AFMA Member
	12.1 HIMI FAP 2024/25-2025/26	For discussion	AFMA Member
	12.2 MITF FAP 2024/25-2025/26	For discussion	AFMA Member
<b>15:30 (30 min)</b>	<b>Afternoon tea</b>		
16:00 (20 min)	<b>13. Other Business</b>	For discussion	Chair*
16:20 (10 min)	<b>14. Next Meeting</b>	For decision	Chair*
16:30	<b>Day 2 Meeting Close</b>		

\* Verbal update, no agenda paper provided

## Attachment C

Item	Action arising	Status
<p><b>1</b></p>	<p><b>Longline survey</b></p> <p>AAD to keep SARAG up-to-date regarding a longline survey in the HIMIF (SARAG 62 Agenda Item 7), and to develop a paper with 3 RLS options and cost/benefits for each approach for discussion (SARAG 65 Agenda Item 11).</p> <p>AAD to integrate survey design scenarios, sample size stations and predict some inputs to progress the recommendations of the RLS paper. AAD will incorporate this work into the overarching research priorities document to determine operational components of the RLS. (SARAG 66 Agenda Item 5.5)</p> <p>AAD to provide a paper on RLS design, including number of lines, potential shot placements, and opportunity cost at <b>SARAG 70</b> (SARAG 68 Agenda Item 7)</p>	<p><b>Ongoing</b></p> <p>Further discussion of RLS design will occur at SARAG 70.</p>
<p><b>2</b></p>	<p><b>Observer Data Collection</b></p> <p>AFMA to consult on observer task lists with relevant SARAG members to review and provide comments (out of session) and update the observer manual for the coming season.</p> <p>AFMA to advise on the nature and extent of historical observer seabird abundance and consider the resumption of seabird abundance counts by observers (if they had been paused, Joint SARAG &amp; SouthMAC Meeting Feb 23).</p>	<p><b>Ongoing</b></p> <p>At SARAG 68 (May 2023) AFMA and AAD agreed that AAD would review data needs of the CCAMLR New and Exploratory, HIMI and MITF fisheries, and to subsequently meet with AFMA to review and update the observer instructions and handbook for the 2023/24 seasons; including seabird data collection requirements and with regard to the Fisheries Data &amp; Monitoring Strategy.</p> <p><b>Complete</b></p> <p>Observers are asked to determine abundance of seabirds within the vicinity of vessel during fishing operations and when the vessel is not actively fishing for both the HIMI and MIT fisheries. This constitutes one daily observation (abundance count) each day during daylight hours, when the vessel is NOT fishing; one abundance count conducted during each set and one for each haul.</p> <p>Discussed under Agenda Item 7</p>

Item	Action arising	Status
3	<p><b>MITF Management Arrangements</b></p> <p>AFMA to provide a paper for review at SARAG 69 outlining; the process to follow for season extension review, progression of the next trial, and giving an update on 2022 September seabird abundance data (SARAG 68, Agenda Item 9)</p>	<p><b>Complete</b></p> <p>Discussed under Agenda Item 7</p>
	<p>CSIRO to present an updated MSE options paper with further refined options for discussion at SARAG 70 (SARAG 68, Agenda Item 6.3)</p>	<p><b>Ongoing</b></p> <p>To be discussed at SARAG 70</p>
4	<p><b>Climate Change Advice Integration</b></p> <p>AFMA to provide example of SESSF approach to considering climate change in TAC setting at SARAG 69 (SARAG 68 Agenda Item 5)</p>	<p><b>Complete</b></p> <p>Discussed under Agenda Item 5</p>
5	<p><b>HIMI Data Collection Approaches</b></p> <p>AAD to work with CSIRO, industry and AFMA to provide a paper to the next SARAG meeting outlining the broad scientific and resource costs and benefits associated with the implementation of different surveys and research proposals: Random Stratified Trawl Survey (RSTS, including variations to the periodicity), Random Longline Survey (RLS) &amp; Close Kin Mark Recapture (CKMR) (SARAG 66, Agenda Item 5.4)</p> <p>AAD to provide a paper on RLS design, including number of lines, potential shot placements, and opportunity cost at SARAG 70 (SARAG 68, Agenda Item 7)</p>	<p><b>In progress</b></p> <p>Further discussion of RLS design will occur at SARAG 70.</p>
6	<p><b>Electronic Monitoring</b> - AFMA to review EM WG membership and reconvene the group (SARAG 66, Agenda Item 6).</p> <p>AFMA to schedule an OOS meeting of SARAG to progress planning process for a Sub-Antarctic EM data collection trial (SARAG 68, Agenda Item 2)</p>	<p><b>Ongoing</b></p> <p>The EM workshop to progress EM discussions was scheduled for 24 August but has been delayed due to unanticipated resource constraints within AFMA and will be convened in 2024.</p>

Item	Action arising	Status
7	<p><b>Close Kin Sampling –</b> CSIRO to provide preliminary sampling design and costings to SARAG 69, and advice to industry on whether to continue sampling (SARAG 68, Agenda Item 7)</p>	<p><b>Complete</b> Discussed under Agenda Item 9.1</p>
8	<p><b>Marine Mammal Interactions</b> AFMA to provide a discussion paper for SARAG 69 to explore data or investigation/analysis needs regarding elephant seal interactions (SARAG 68, Agenda Item 9.3)</p>	<p><b>Partially Complete</b> To be discussed further under Agenda Item 10. AAD has provided maps of recorded seal interactions for SARAG discussion of further analysis needs by relevant experts. AFMA requests the RAG discuss and identify who is best placed to undertake any further analysis.</p>
	<p>AFMA to provide an update to SARAG 69 on the US MMR and any specific response regarding requirements around HIMI and marine mammal interactions (SARAG 68, Agenda Item 9.3)</p>	<p><b>Complete</b> Discussed under Agenda Item 4</p>
9	<p><b>Observer Samples –</b> A list of samples collected during trips to be provided to industry to ensure all observer samples are unloaded. AAD and AFMA to develop a procedure to provide this list (SARAG 66, Agenda Item 9.1). AFMA to contact T Lamb and to clarify history of the issue and report back at SARAG 69 (SARAG 68, Agenda Item 2).</p>	<p><b>Complete</b> Tissue samples are now stored in brightly coloured containers to differentiate them from commercial product, and that industry will be included in AAD/AFMA correspondence confirming that observers have removed all gear and samples on disembarking.</p>

Item	Action arising	Status
10	<p><b>HIMI Toothfish Stock Assessment</b></p> <p>AAD to further explore contrasting RSTS and longline tagging data results and impact on q by exploring:</p> <ul style="list-style-type: none"> <li>- Deeper exploration of RSTS biomass patterns since 2016</li> <li>- RSTS aging subsampling</li> <li>- Spatial and temporal aspects of tag release and recapture overlap and</li> <li>- impacts on recapture likelihood</li> <li>- Tag movement patterns</li> <li>- Years allowed between tag release and recapture</li> <li>- Choice of years used for YCS estimates and use in assessment</li> <li>- RSTS and tag data weighting (bridging analysis and sensitivity analysis)</li> <li>- Combining RSTS and LL tagging data to explore RSTS tag returns</li> </ul> <p>(SARAG 68 Agenda Item 6.1)</p>	<p><b>Complete</b></p> <p>Discussed under Agenda Item 6.1</p>
11	<p><b>MITF Toothfish Stock Assessment</b></p> <p>CSIRO to present additional TAC scenarios prior to SARAG 69</p> <ol style="list-style-type: none"> <li>1. Aurora Trough (200, 250, 300), 50:50 split between NMRL and SMRL</li> <li>2. Aurora Trough (200, 250, 300), 25:75 split between NMRL and SMRL</li> <li>3. Aurora Trough (200, 250, 300), <math>\mu</math>3yr catch (2020-2022) split between NMRL and SMRL</li> </ol>	<p><b>Complete</b></p> <p>Discussed under Agenda Item 6.4</p>
	<p>CSIRO to provide advice to SARAG 69 on options to stagger stock assessment timing, including feasibility of undertaking an MITF stock assessment process in 2024, rather than 2025 (SARAG 68, Agenda Item 6.2)</p>	<p><b>Complete</b></p> <p>Discussed under Agenda Item 6.4</p>

### Proposal

#### 1. Continue trial season extension, 1-7 September

Continue the season extension trial between 1 and 7 September, with only night setting allowed. For added certainty, this trial period is proposed to be concluded once a cumulative total of at least 500,000 hooks have been set in this period.

#### 2. Begin trial season extension, 8-14 September

Once 200,000<sup>1</sup> hooks have been set in the period 1-7 September, a season extension trial between 8 and 14 September will be enabled, with only night setting allowed. This trial period is proposed to be concluded once a cumulative total of at least 500,000 hooks have been set in this period.

#### 3. Begin trial season extension, 15-21 September

Once 300,000 hooks have been set in the period 8-14 September, a season extension trial between 15 and 21 September will be enabled, with only night setting allowed. This trial period is proposed to be concluded once a cumulative total of at least 500,000 hooks have been set in this period.

#### 4. Begin trial to allow daylight setting

Begin a trial of setting in daylight hours, during periods of the season with low seabird species richness and abundance. This trial would be conducted from weeks 7 to 10 of the season and is proposed to be concluded once a cumulative total of at least 500,000 hooks have been set. The period for the daylight setting would include hours 1100 to 1400 and also the time between nautical dawn to sunrise, and sunset to nautical dusk.

Upon the collection of further observer data, the available daylight hours could be expanded upon proving successful daylight setting, which would reduce the amount of time required to reach the desired number of hooks.

### Additional seabird mitigation measures

As part of the season extension trial periods 8-14 September and 15-21 September and the daylight setting trial, at times of heightened seabird abundance during setting operations, the vessel will employ additional seabird mitigation measures including:

- Up to 3 tori lines, and/or
- additional line weighting
- bird bafflers
- common sense – if the captain believes the seabird risk is too high, due to seabird behaviour or abundance, hooks will not be set

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<sup>1</sup> This is contingent on SARAG 70 being satisfied that any new seabird data presented does not increase the relative level of uncertainty surrounding risk in this period to unacceptable levels. If this is the case, the required number of hooks would increase to 300,000, before the trial season extension period 8-14 September would be enabled.



### **Seabird triggers during trials**

Fishing activity in any period under the trials (i.e. before 500,000 hooks have been set in that period), where a vessel:

- catches and kills any 1 of the 5 listed seabirds with longline fishing gear, the relative season extension trial period will end, and the trial will be deemed unsuccessful.
- catches and kills 3 of any other species of seabird (excluding the 5 mentioned above) with longline fishing gear, that trial period for that season shall cease. The trial will continue the following season. At the completion of the trial, the data from this period will be considered by SARAG to make a decision on the formal inclusion of season extension for the relative period.

### **Conclusion of trials**

Once each of these season extension trial periods have concluded (that is, after setting 500,000 hooks in that period), and if the above seabird triggers have not been breached, these periods will officially become part of the season extension period of the Macquarie Island longline season, and that season extension period would contain the following seabird triggers:

- If any 1 of the 5 listed seabirds are caught and killed with longline fishing gear in the season extension period, that vessel must cease fishing for the remainder of that season; and
- If 3 of any other species of seabird are caught and killed with longline fishing gear in the season extension period, that vessel must cease fishing for the remainder of that season.

### **Comparison to HIMI trials**

It is noted that the three season extension trial conditions are more precautionary than the previous HIMI season extension trials, in that they:

- Are individual 1 week extension periods as opposed to 2 week extension blocks at HIMI, therefore having better ability to account for any potential increases in risk over time.
- Have twice the amount of hooks set required per period before the trial can be concluded. That is 500,000 hooks per week, as opposed to 500,000 hooks per fortnight at HIMI.
- Each have their own separate seabird bycatch triggers that would require the trials cease, and SARAG reconsider, if breached. This was not the case at HIMI.
- Provide for vessels utilising additional seabird mitigation measures in periods of high seabird abundance. This was not the case at HIMI.