Australian Government
Australian Fisheries Management Authority

Great Australian Bight

Management Advisory Committee

(GABMAC)

October 2020

Minutes

Date: 9 October 2020

9:06am – 2:42pm (AEDT)

Microsoft Teams Meeting

The Chair opened the meeting at 9:08am (AEDT)

Agenda Item 1 – Preliminaries

1.1 Welcome and Introductions

1. The Chair welcomed members and observers to the meeting and made an Acknowledgement of Country statement; acknowledging the traditional custodians of country throughout Australia, recognising their continuing connection to land, waters and culture, and paying respects to their Elders past, present and emerging.

2. There was an apology from Ms Marcia Valente, Ms Fiona Hill and Ms Anna Willock who were unable to attend the meeting.

3. The Chair reminded members of confidentiality requirements and outlined the logistics for the Microsoft Teams meeting.

4. A list of meeting attendees is provided at Appendix A.

1.2 Declarations of Interest

5. The MAC followed the conflicts of interest management process (as outlined in Fisheries Management Paper 1) and updated the Declarations of Interest (Appendix B)

6. Industry members declared potential conflicts of interest with the following agenda items: Upper Slope Dogfish Management Strategy Review (Agenda Item 3), Orange Roughy (Agenda Item 4), TAC Recommendations for 2021/22 (Agenda Item 5) and Research Priorities (Agenda Item 6).

7. Industry members disconnected from the Microsoft Teams meeting, while the remaining attendees discussed their participation in these agenda items.

8. Recognising their knowledge and ability to contribute to the discussions, remaining members agreed that it was appropriate for Industry members to participate in the discussion; however, they would be asked to disconnect from the meeting when recommendations were made.

1.3 Adoption of Agenda

9. The MAC adopted the agenda at Appendix C as final.

1.4 Minutes of previous meeting

10. GABMAC endorsed the February 2020 meeting minutes as a true representation of the outcomes of that meeting.

1.5 Action Items Review

11. The AFMA Member provided the MAC with an update on the status of action items arising from previous GABMAC meetings. The following updates were discussed:

February 2020 - Action item 7 – Agenda Item 4

GABRAG to investigate research options for dogfish in the GAB. Options identified by GABMAC:

a. *Inclusion of the GAB within the survey design for the FRDC project proposal to establish a baseline index of abundance for Harrisson's dogfish and southern dogfish (research scope is currently being considered by FRDC).*

b. *Investigate options for mitigating catch of deepwater shark species as part of the FRDC project – Improving and promoting fish-trawl selectivity in the SESSF and GABTS (2019-027).*

c. *Developing a GAB specific project to explore mitigation options to prevent capture of deepwater sharks.*

    - The AFMA member noted that an action item arose at the Great Australian Bight Resource Assessment Group (GABRAG) meeting, held on 7-8 October 2020, for AFMA to contact the Commonwealth Research Advisory Committee (ComRAC) to follow up on the progress of the FRDC project proposal (a), with the view to including one or more of the GAB closures in the survey design.

    - Industry advised the RAG (October 2020), that the Principal Investigator of the FRDC project (b), Mathew Broadhurst, has engaged with GAB industry and will continue to seek their perspective as the project progresses.

February 2020 - Action item 4 – Agenda Item 3.3

GABRAG to investigate whether a model (using historical data) could be developed to estimate the current GABT orange roughy stock status.

- An item to consider alternatives for updating the GAB orange roughy stock assessment was included on the GABRAG 7-8 October 2020 meeting agenda.

- The RAG discussed this modelling approach, however determined that the most appropriate approach was to continue collecting data under the current research plan. However, the approach for using data to update a stock assessment should be more clearly articulated in the Research Plan.

- The RAG suggested that a Lines of Evidence Approach may provide an estimate of whether the stock is 'likely' to be above the limit reference point. The RAG identified the following elements which could be considered under a Lines of Evidence Approach:

    - Currently available:

        - Ecological Risk Assessment (ERA)

        - Age structure (compare to age structure of an orange roughy stock with estimates of depletion)

        - CPUE (further analyses required to determine if this is an appropriate index of abundance for the GAB stock)

    - Potentially available (future):

        - Acoustic surveys
        - Egg surveys

- The RAG recommended establishing a working group to determine the metrics (for each line of evidence) that would be required to demonstrate recovery of the stock.
- An action item also arose from GABRAG for AFMA to contact Fish Ageing Services (FAS) to:
    a. determine the number of GAB orange roughy otoliths currently available for ageing; and
    b. obtain an estimated cost for ageing available otoliths.
- The MAC agreed that this action item was complete and could be removed.

12. The Chair asked attendees whether there were any other questions relating to action items before moving on to the next Agenda Item.

13. The list of action items was updated after the meeting (Appendix D). Items that were noted as completed (highlighted green) at the meeting will be removed and an updated list will be provided to the next GABMAC meeting in 2021.

Agenda Item 2 – Management Items

2.1 Manager's Update

14. The AFMA member provided an update on matters relevant to management of the Great Australian Bight Trawl Sector (GABTS).

Current Fishery Status

In the most recent ABARES Fishery Status Report (2020):

- No GAB species were classified as 'subject to overfishing'
- GVP (2017-18) estimated to be $9.2 million (2016-17 = $10.01 million). Deepwater flathead contributed $4.57 million (50% of total GVP), and Bight redfish contributed $1.3 million (14 % of total GVP).

South Australia Offshore Constitutional Settlement (OCS)

- AFMA has introduced additional snapper management measures to mirror those implemented by South Australia. Under these arrangements, Commonwealth fishers in the south-east region are permitted to retain 50 kilograms of snapper per trip between 1 February and 31 October each year. Fishers in the West Coast, Spencer Gulf and Gulf St Vincent regions are currently prohibited from retaining any snapper.
- Fishers in the GABTS that wish to retain snapper caught outside of South Australian waters and land this catch into a South Australian port, must record the details of the shot in which the snapper was caught in logbooks, prior to the vessel entering South Australian waters.

- AFMA and PIRSA meet regularly to discuss matters relevant to the OCS arrangements for waters off South Australia. Recent discussions have included the treatment of Bight redfish under the OCS. These discussions have been ongoing for several years, a range of options are being considered, and AFMA will continue to provide updates to the MAC as discussions continue.

2.2 Industry Update

Fishery Update

- Catches of deepwater flathead have been good and have remained stable in recent times.
- Covid-19 has created a demand for consuming Australian seafood products in the home; a positive for seafood retailers. This has shifted from Australians normally opting to consume seafood provided by the food service industry; where they often source cheaper, imported products.
- Fuel prices have declined by up to 20 per cent; reducing operating costs.
- A positive environment has been created for operators through stable catches, reduced operating costs and increased market price/demand.
- An update on the GABTS Market Development Project was provided at Agenda Item 6.1.

Agenda Item 3 – Upper Slope Dogfish Management Strategy Review

15. AFMA introduced the Agenda Item, and asked the MAC to consider and provide advice on the following:

    a. Reinstating access to the 'Racetrack/Hamburger' and 'Kangaroo Island Hill' closures to orange roughy fishing under scientific permit in waters deeper than 700 m.

    b. Whether there is sufficient evidence to support a review of the 'Conservation Dependent' listing advice for southern dogfish in the GABT, as per the Great Australian Bight Industry Associations (GABIA)'s proposal.

16. The MAC considered the background provided for the agenda item, noting:

Upper-Slope Dogfish Management Strategy

- Harrisson's and southern dogfish were nominated for threatened species listing in 2009; with the current Upper Slope Dogfish Management Strategy (the Strategy) implemented in 2012 to afford protection to both species. Both species were formally listed as 'Conservation Dependent' in 2013, following advice to the Minister from the Threatened Species Scientific Committee (TSSC).
- The 'Conservation Dependent' classification allows commercial fishing to continue, subject to the implementation of a management plan that supports recovery of the species. If this plan is not upheld, the species may be reclassified to a higher category; which would result in more restrictive management arrangements.

- As there are no biomass estimates for either species, the Strategy introduces a habitat proxy (B_{25}), by way of spatial closures, to protect >25 per cent of the species' core habitat. Spatial closures are supplemented by operational measures.
- The Strategy is currently under review. AFMA have received requests from sectors of the fishing industry to review aspects of the Strategy; including two proposals from GABIA. These requests are being considered as part of the Strategy review and will be subject to final approval by the TSSC.

Southern dogfish in the GAB

- The species of concern in the GABTS is the central stock of southern dogfish; with a portion of its core distribution occurring from western Bass Strait to south of Ceduna in the eastern GAB. Southern dogfish are found on upper-continental slopes with a depth range of 180-900 m, and a core depth range of 200-800 m.
- The central southern dogfish stock is protected in the GAB through a network of closures, which includes the 'Southern Dogfish closure' (the 60 Mile closure). The 60 Mile closure contributes approximately 8.17 per cent to the overall protection of central southern dogfish habitat.
- Although not included in the 23% of protection considered in the EPBC listing advice, southern dogfish in the GAB are provided additional protection by the 'Racetrack/Hamburger' and 'Kangaroo Island Hill' Orange Roughy Research Zones; which contribute 0.46 and 4.67 per cent to the overall protection of central southern dogfish, respectively.

GAB Orange Roughy Research Zones

- In November 2006, orange roughy was listed as 'Conservation Dependent' under the EPBC Act. The 'Orange Roughy Conservation Programme 2007' (the Conservation Programme), was implemented to address specific objectives and requirements associated with this listing. In 2014, the Conservation Programme was reviewed and replaced by the Orange Roughy Rebuilding Strategy 2014 (the Rebuilding Strategy).
- The 'GABTF Orange Roughy Research Plan' (the Research Plan), was developed by GABIA to meet the requirements of the then Conservation Programme and now Rebuilding Strategy; and was formulated in conjunction with AFMA, relevant RAGs and MACs.
- Under the Research Plan, proponents are required to apply for scientific permits, which provide access to the GAB Orange Roughy Research Zones (Research Zones) as defined in the *Southern and Eastern Scalefish and Shark Fishery and Small Pelagic Fishery (Closures) Direction 2016* (the Direction), Schedules 19-27 (inclusive). Research Zones are otherwise closed to all fishing methods.

Racetrack/Hamburger and Kangaroo Island Hill Closures

- In April 2018, AFMA granted two scientific permits under the Research Plan; which provided proponents access to all Research Zones outlined in the Direction.
- In July 2018, it was recognised that the 'Racetrack/Hamburger' and 'Kangaroo Island Hill' closures (Schedules 26 and 27 respectively), contribute to the closures implemented under the Strategy to protected southern dogfish. This has been

overlooked when allocating scientific permits in previous years. AFMA management amended existing scientific permits to reinstate both 'Racetrack/Hamburger' and 'Kangaroo Island Hill' as closures; prohibiting trawling (even under scientific permit).

GABIA Submissions

- AFMA have received two submissions from GABIA which are being considered as part of the Strategy review:
    - Proposal 1: to reopen the 'Racetrack/Hamburger' and 'Kangaroo Island Hill' closures beyond 700 m, to orange roughy fishing (under scientific permit).
    - Proposal 2: to amend the northern boundary of the 'Kangaroo Island Hill' closure to remove waters shallower than 700 m to allow fishing for traditional slope species.
- Scientific advice provided on Proposal 2 stated that this proposal would compromise the closure's objectives for dogfish, as the depth range of the area proposed to be open (depth <700m) is core southern dogfish habitat. SEMAC (2019) agreed with the scientific advice and did not support this proposal. Following this advice, GABMAC decided to focus on Proposal 1.
- Proposal 1 was perceived to pose little risk to southern dogfish, with the following scientific advice provided:
    - There is a relatively small degree of overlap in habitat depths of the two species.
    - The method of fishing for orange roughy (short, ~15 minute shots), reduces the likelihood of interactions with southern dogfish; and would enhance survival of any incidental catch.
    - Dogfish are typically diurnal, moving to shallower water at night to feed.
    - Separating habitat for the two species at 700 m is difficult due to steep seabed topography.
    - There is little risk to southern dogfish from reopening the 'Racetrack/Hamburger' and 'Kangaroo Island Hill' closures to orange roughy fishing and will not reduce the effectiveness of the Strategy to meet its objectives.
    - 'Kangaroo Island Hill' closure: whilst there is more overlap with southern dogfish habitat than the 'Racetrack/Hamburger' closure beyond 700m, the impact from orange roughy fishing is likely to be low because most orange roughy are caught in depths greater than 800 m.
    - Before allowing access to the closures, more recent bathymetry data should be considered.

GABRAG advice (7-8 October 2020)

Given the Scientific advice provided, GABRAG:

- Supported reopening 'Racetrack/Hamburger' and 'Kangaroo Island Hill' closures to orange roughy fishing in waters deeper than 700 m via scientific permit under the

Research Plan; provided that updated bathymetry data is used to inform the implementation of a 700 m depth boundary.

- Noted that any changes to the Strategy and/or access to closures that afford protection to southern dogfish, would need to be supported by the TSSC.
- Recommended that AFMA write to the TSSC proposing to reinstate access to the closures for the purpose of orange roughy fishing (under scientific permit).
- There is little new information to support the review of the EPBC listing advice for southern dogfish.
- Encouraged pursuing the inclusion of one or more GAB closures to be included in the survey design for the FRDC project, to aid the monitoring requirements of the Strategy.

17. Recognising the scientific advice provided, the MAC agreed with GABRAG's advice outlined above.

RECOMMENDATION 1

GABMAC recommended:

a. Reinstating both 'Racetrack/Hamburger' and 'Kangaroo Island Hill' closures to orange roughy fishing in waters deeper than 700 m, via scientific permit under the Research Plan; provided that updated bathymetry data is used to inform the implementation of a 700 m depth boundary;

b. AFMA write to the TSSC to seek advice on the recommendation provided at (a); and

c. Pursuing inclusion of one or more of the GAB closures in the FRDC project survey design.

18. The MAC considered GABIA's proposal to review the 'Conservation Dependent' listing advice for southern dogfish in the GABT; which noted the following:

- There are limited records of southern dogfish being caught by GABTS trawlers reported in logbook and observer data.
- The 'EPBC Listing Advice for *Centrophorus Zeehani* (southern dogfish)' indicates that the Ceduna Terrace (129^{o} - 131^{o} E) is considered unsuitable for southern dogfish populations. The listing advice refers to unpublished data from a survey undertaken in 2005. The survey deployed 100,000 hooks and did not catch a single southern dogfish (CSIRO Marine and Atmospheric Research unpublished data, 2005). There appears to be no AFMA consideration of this stock characteristic in the AFMA submission on the EPBC listing process.
- Industry believe that there are at least two separate southern dogfish stocks (eastern and western) and that this characteristic was overlooked during the EPBC listing process. The species was listed based on historically high levels of exploitation that resulted in the east coast stock becoming depleted.
- Industry believe the southern dogfish population which resides in the 60-mile closure in the GAB is separate from the rest of the central stock, and should not have been included in the rebuilding strategy. Industry believe the GABTS has been

disproportionately disadvantaged under the rebuilding strategy because of historic overfishing in the eastern part of the SESSF.

- Placing fishing closures over areas where southern dogfish have not been depleted, and are not fished, does not improve protection of the species. The area closures need to be placed over areas where the depletion has occurred, to effectively rebuild stocks.
- The overlapping southern dogfish closure that extends deeper than 700 meters needs to be removed. Southern dogfish in the GABT Fishery are not overfished and do not extend deeper than 600 meters; with their core habitat between 300 and 600 meters.
- CSIRO publications reference that species-specific identifications accompanying commercial catches of slope dogfishes (prior to 2008) were unreliable[1].
- Dogfish species were landed into markets headed, gutted and with their fins removed, making it impossible to identify dogfish to species level.
- Industry expressed concerns that CSIRO's recommendations for listing these species were made with insufficient data to verify overfishing.
- An apparent discrepancy in CSIRO advice was detected between the report 'Developing and applying a spatially-based seascape analysis (the "habitat proxy" method) to inform management of gulper sharks (Williams et al., 2013)' and advice provided at SharkRAG 2006.
    - Williams et al., (2013) estimated the decline for the central stock of southern dogfish to be 89 per cent east of Kangaroo Island Hill and 79 per cent on the western side.
    - CSIRO's presentation at SharkRAG 2006 noted an estimated abundance of southern dogfish to 'probably' be 80 per cent of virgin biomass or higher between 135° and 135°30.'

19. The MAC acknowledged Industry's frustrations and discussed the process involved with reassessing the 'Conservation Dependent' status of southern dogfish in the GAB.

20. Noting that this process would be similar to that originally undertaken to list the species as 'Conservation Dependent,' and that there was no new information to support this process, the MAC did not support pursuing delisting of southern dogfish.

21. Industry members noted there concerns with the ongoing management of southern dogfish in the GABT, however acknowledged that the time and resources required to pursue delisting of the species, especially in the absence of any new information, would be better focussed on reinstating access to the orange roughy closures and progressing other issues in the fishery at this time.

22. The MAC noted there would be an opportunity for GABIA to provide additional feedback as part of the review of the Upper-slope Dogfish Strategy currently under way.

[1] Williams, A., Althaus, F., Smith, A., Daley, R., Barker, B. and Fuller, M.E., 2013. *Developing and Applying a Spatially-based Seascape Analysis (the" habitat Proxy" Method) to Inform Management of Gulper Sharks: Compendium of CSIRO Discussion Papers*. CSIRO.

Agenda Item 4 – Orange Roughy

4.1 GABT Orange Roughy Research Plan

23. The AFMA member provided an overview of the current GABT Orange Roughy Research Plan, noting that a large portion of the background was provided at Agenda Item 3. The MAC noted the following additional information:

- The aim of the Research Plan is to assess the status of the GAB orange roughy stock and determine sustainable harvest levels for commercial fishing under the 'Southern and Eastern Scalefish and Shark Fishery (SESSF) Harvest Strategy.' This will be achieved by collecting robust scientific information, including biological data.
- Scientific permits allow operators to fish for orange roughy using a Research Catch Allowance (RCA). The RCA is currently distributed equally among proponents; and can be utilised across the entire GAB fishery (not just within Research Zones).

4.1.1 Industry Update

24. Industry provided an update on their orange roughy fishing trips completed under the GABT Orange Roughy Research Plan for the 2020-21 fishing season to date. The MAC noted the following:

- One boat has undertaken an orange roughy research fishing trip as part of their normal fishing operations in 2020.
- New fishing gear has been trialled in an attempt to improve the efficiency of catching orange roughy. Industry estimated that approximately 200 shots have been completed with only 450kg caught.
- Industry reported that the sounders are detecting fish, however once the gear is deployed, the fish lift from the bottom and avoid being caught. This is indicative of non-spawning behaviour.
- The MAC acknowledged the importance of taking into consideration the above information if/when the stock is assessed; if CPUE is to be analysed. A CPUE analysis may indicate that the fish are absent or that the stock is depleted; when they are actually present but not available to be caught.
- Determining optimal spawning time and location is challenging and will only be realised through trial and error.
- Industry indicated that more orange roughy trips will be undertaken once access to 'Racetrack/Hamburger' and 'Kangaroo Island Hill' closures is reinstated. Both closures are geographically more accessible to operators than the other Orange Roughy Research Zones.
- Industry have experienced financial loss while fishing for orange roughy; resulting from the minimal catch, increased operating costs associated with orange roughy fishing and lost commercial market fishing opportunities.
- Industry advised the MAC that gonad stage photographs need to be obtained to assist crew with identifying reproductive stages; and help to determine spawning periods.

- AFMA advised Industry that they are attempting to locate such photographs and will provide copies to Industry, if/when they become available.

4.1.2 Research Catch Allowance (RCA) Recommendation 2021-22

25. Noting the information provided at the start of this Agenda Item, the AFMA member asked the MAC to consider and provide advice on:

    a. Whether the orange roughy RCA could be managed as an Olympic RCA instead of equal allocations across scientific permits.

    b. An appropriate orange roughy RCA (and any triggers) to be implemented under the Research Plan for the 2021-22 fishing season.

26. The MAC noted the following information:

    - A 200 t RCA has been allocated under the Research Plan since 2014.
    - There has been very little fishing effort under the Research Plan since 2009; with approximately 20 t recorded since 2016.
    - While scientific permits have been allocated in most seasons, fishing has not always occurred. There were no applications for scientific permits in the 2019-20 fishing season.
    - Three scientific permits were allocated in the 2020-21 fishing season; with one orange roughy research trip undertaken to date (450kg orange roughy recorded).
    - In 2019, GABIA submitted a proposal for consideration when reviewing the Research Plan. Part of this proposal was to combine the existing five 'deepwater management zones' into three management zones which encompassed the Orange Roughy Research Zones.
    - To increase the incentive to undertake orange roughy research trips, GABIA also proposed introducing an RCA of 200 t per zone (600 t RCA in total).
    - Although this approach was not supported by the RAG (February 2019), AFMA have since considered alternate options, following the introduction of the 'Western Orange Roughy Research Plan' in the Commonwealth Trawl Sector of the SESSF.
    - The RCA implemented under the Western Research Plan is managed as an Olympic RCA (i.e. not distributed as equal allocations). Successful applicants are provided with an equal opportunity to fish for orange roughy, up to the RCA or the triggers for individual research areas. When catches approach either of these triggers, all scientific permits are revoked and fishing in one, or all, of the research areas cease. This system provides the highest likelihood of collecting the maximum amount of representative data.
    - Industry requested that the MAC give consideration to their proposal to allocate a 200 t RCA to each of the five 'deepwater management zones' for the 2021-22 fishing season. Industry indicated that this increased allocation would be justifiable, given the area difference between the GAB and 'Western Orange Roughy Zone.' An increased RCA would provide greater incentive for industry.

27. **GABRAG Advice (7 – 8 October 2020)**

- Industry advised the RAG that they had not had the opportunity to contact operators to seek feedback on the proposal for an Olympic RCA, prior to the meeting.
- Members provided in-principle support for implementing an Olympic RCA, pending feedback from Industry.
- If supported the RAG recommended that scientific permit conditions include daily reporting requirements, to ensure that the proportion of RCA caught can be communicated to permit holders.
- The RAG were of the opinion that an Olympic RCA would provide an increased incentive for Industry to undertake orange roughy fishing.
- The RAG did not support allocating 200 t per management zone and recommended setting a 200 t RCA across the entire GAB fishery. Triggers were not considered necessary from a sustainability perspective, noting that triggers may also be considered a barrier or disincentive for industry.

28. Industry advised the MAC that they supported the implementation of an Olympic RCA for the 2021-22 fishing season; provided that the effectiveness of this approach (and the associated RCA value) is reassessed by the RAG and MAC at their 2021 meetings.

29. The MAC agreed with the advice provided by the RAG.

RECOMMENDATION 2

GABMAC recommended that the orange roughy Research Catch Allowance (RCA) be set at **200 t**, and managed as an **Olympic RCA**, for the 2021-22 fishing season.

4.2 Albany & Esperance Bycatch TAC 2021-22

30. The MAC considered the background on the management of orange roughy in the GAB and noted the following:

- Orange roughy in the GABTS are managed as a non-target, bycatch only species; and are managed under the 'Orange Roughy Rebuilding Strategy 2014' (the Rebuilding Strategy, currently under review).
- The Rebuilding Strategy implements a number of management arrangements for orange roughy in the GABTS.
- Orange roughy cannot be targeted by commercial fishing operations anywhere in the GABTS, unless operating under a scientific permit, issued under the 'GABTF Orange Roughy Research Plan 2020-24' (discussed at Agenda Item 4.1).
- Spatial closures – implemented over recognised orange roughy seamounts. These areas have produced >95 per cent of historical orange roughy catch in the GAB.
- In the Albany & Esperance Quota Zones, orange roughy are managed under an incidental bycatch TAC; which must be covered by quota.
- At their February 2020 meetings, both GABRAG and GABMAC noted the overlap of the Albany & Esperance Quota Zones with both 'Albany' and 'Humdinger Magic' Orange

Roughy Research Zones. Concerns were raised regarding how the incidental bycatch TAC could be utilised and how the overlap occurred.

- When the Orange Roughy Conservation Programme 2007 (outlined in Agenda Item 3) was implemented, one of the actions outlined was a direction to not fish in waters deeper than 750 m in the GABTS.
- At the time, GABIA expressed concerns regarding the depth closure across the entire fishery and developed a "precautionary and equally effective set of arrangements" as an alternative. These arrangements were outlined in GABIA's 'Management strategy for sustainable deepwater fishing in the GABTF' (GABIA's Strategy).
- Two of the proposed arrangements outlined in GABIA's Strategy included the implementation of Orange Roughy Research Zones and the management of incidental orange roughy catch.
- GABIA engaged CSIRO to analyse historic roughy shots across the fishery; using 1988-2005 logbook data. The proposed Orange Roughy Research Zones were designed to capture more than 95 per cent of the total orange roughy catches taken in the GABTS; and were centred over 'hotspots.' Two of these hotspots were situated in the Albany & Esperance Quota Zones, which resulted in the proposal of the 'Albany' and 'Humdinger Magic' Orange Roughy Research Zones in these areas.
- The position of the Orange Roughy Research Zones were based on historical catch data, and were implemented such that any catch of orange roughy outside of these zones would likely be minimal. Through implementation of these zones, commercial fishing could continue for other species, without the risk of large incidental catches of orange roughy. A precautionary trigger limit of 10 t for orange roughy in each of the five deepwater management zones was also proposed.
- The GABIA Strategy was submitted to the AFMA Board in 2007, with the board supporting the proposal; resulting in the implementation of the GAB Orange Roughy Research Zones.
- The Conservation Programme 2007, outlined the requirement of incidental bycatch TACs to cover the low level of catch that would occur outside of closures.
- At their 2007 meeting, GABMAC, when recommending a bycatch TAC for orange roughy, acknowledged that the vast majority of the Albany & Esperance Quota Zones were closed to commercial fishing, due to an overlap with Orange Roughy Research Zones. The MAC agreed that, as the majority of area could only be accessed under scientific permit, reducing the bycatch TAC to 25 t would be appropriate and sufficient to cover incidental bycatch.
- In subsequent years, the bycatch TAC increased to 50 t. It was not well documented as to why this increase occurred, however the TAC has remained at this level since the 2009-10 fishing season.
- Orange roughy catch in the Albany & Esperance Quota Zones have remained below the incidental bycatch TAC, with no catch recorded since the 2008-09 season (with the exception of 0.1 t recorded in 2015-16).

31. The MAC discussed the possibility of extending the 'Albany' Orange Roughy Research Zone to encompass the Albany Quota Zone in its entirety. Key points included:

- Amending closure directions can be a time consuming and costly process.
- Orange roughy is listed as a quota species under the *SESSF Management Plan 2005*, and requires the determination of a TAC each fishing season; whether it be a target or bycatch species.
- The MAC agreed that arrangements should remain unchanged; and that the process should now become easier, due to the clarification of the overlap and application of the bycatch TAC.

RECOMMENDATION 3

The MAC recommended maintaining the Albany & Esperance orange roughy bycatch TAC at **50 t** for the 2021-22 fishing season.

Agenda Item 5– TAC Recommendations for 2021-22

Bight Redfish & Deepwater Flathead

32. The MAC reviewed the outcomes of the MYTAC analysis for Bight redfish and deepwater flathead, including the advice provided by GABRAG at their October 2020 meeting.

33. An overview of the 2019 stock assessments for both species, 2020 MYTAC analysis outcomes and GABRAG advice is provided at Appendix F.

34. Noting that there were no new concerns identified by the RAG, the MAC recommended the continuation of MYTACs for both Bight redfish and deepwater flathead.

RECOMMENDATION 4

GABMAC recommended the following TACs for the 2021-22 SESSF fishing season:

Bight redfish: Continuation of 5 year MYTAC – **893 t** TAC

Deepwater flathead: Continuation of 3 year MYTAC – **1,238 t** TAC

Agenda Item 6 – GAB Research Priorities

6.1 GABT Market Development Project

35. Industry advised the MAC that they are working towards finalising their GABT Market Development Project.

36. The specific project deliverables are to:

- Focus on two target and three secondary species identified by industry that are either undervalued, underutilised or are bycatch within the GABTS; to optimise quality and value throughout the full supply chain. Species include:

- Bight redfish
- Ocean jacket
- Yellowspotted boarfish
- Latchet
- Angelsharks

- Create consistency of the agreed five species product quality and develop a quality standard.
- Work with the whole value chain (fishers, wholesalers, processors, retailers and hospitality sector), to improve their returns from their current markets and to identify and understand new market opportunities that will add value to the GAB fishery catch.
- Develop a viable market development strategy and implementation plan to access and capitalise on the new market opportunities that will improve the viability and sustainability of business involved in the GAB fishery.
- Upskill the supply chain to optimise quality and markets.
- Increase consumer knowledge of the GAB fishery and specific products from the fishery to potentially enhance Social Licence to Operate (SLTO).

37. Project outputs have included:

- A comprehensive market analysis, including wholesale, distribution, consumer and retail input;
- In market interviews;
- Structured tasting and evaluation by a range of chefs and food service providers;
- Development of quality standards for each species;
- Temperature and product evaluation throughout the supply chain;
- Development of best practice guides for on-board handling;
- Product naming – alternative marketing name for latchet;
- A draft marketing program; and
- Crew based induction and training programme to support the on-board handling and quality standards.

38. The project is currently in its last stage (delays associated with Covid-19). This last stage is focused on the industry marketing strategy and on the delivery of the crew training program (online program).

6.2 Research Priorities 2022-23

39. AFMA introduced the agenda item, and asked the MAC to consider and provide advice on the research priorities for the 2022-23 financial year, to be included on the 2022-23 GAB Annual Research Statement.

40. The MAC considered the background provided and noted the following key points:

- The timeline for the AFMA research process was revised for the current funding round (research to be undertaken in 2021-22). Further information can be found on the AFMA website.
- In August 2020, the 2021-22 GAB Annual Research Statement was considered by the AFMA Research Committee (ARC). The ARC requested that GABRAG review the current research priorities:

Deepwater shark mitigation research priority

- At their February 2020 meeting, GABMAC identified the need to explore mitigation options for dogfish; to prevent capture of deepwater sharks in the GABTS. The identified options for this priority were outlined at Agenda Item 1.5.
- The ARC noted that this research would only be required if it was not included in the FRDC selectivity project (FRDC 2019-027) and recommended that Industry and AFMA management liaise with Mathew Broadhurst (Principal Investigator).
- GABRAG decided to not include this research priority on the 2022-23 Annual Research Statement.
- The MAC supported the RAG's decision to not include this as a priority, noting that a 'gulper shark excluder device' can be included in the FRDC project (2019-027).

Fuel price research priority

- At their February 2020 meeting, GABRAG identified the need to understand the implications of increasing operational costs on the fleet and to identify the point at which it would become unviable for the fleet to continue operation.
- The ARC did not support this research priority in its current form. They were of the view that the scope to focus solely on fuel impacts was too narrow. They requested that the RAG reconsider and broaden the research priority to include additional economic drivers as part of an assessment of how the fishery operates as a whole. This could include consideration of alternative assessment approaches, developing or updating economic models or other ways of improving general efficiency across the fishery. The ARC also noted that, once broadened, the priority may be better presented to FRDC for consideration.
- The RAG decided to not include this as a research priority at this time, following Industry's request to consider the logistics of this project and to determine whether it was still a priority they wished to pursue.
- The Economic Member suggested that Industry may benefit from undertaking a literature review; to assist with the development of this research priority in the future. Previous studies may help to understand leading practices and how this issue has been addressed in other fisheries.
- The MAC supported the RAG's decision to not include this as a research priority at this time.

Environmental factors and resource availability research priority

- At their February 2020 meeting, GABRAG identified the need to understand the impacts of environmental change on fishery dynamics. SESSFRAG considered this research priority in March 2020, and advised that this project could be undertaken when further information was available. To better understand the environmental data that is currently collected in the GAB, the RAG invited Integrated Marine Observing System (IMOS) to their October 2020 meeting.
- Although GABRAG (October 2020) noted the environmental data was an invaluable resource that could be accessed and utilised in the future, they decided to not include this as a research priority at this time.
    - Dr Ian Knuckey committed to analyse the impact of environmental factors on catch rates, using data collected during the GAB Fishery Independent Survey (GABFIS).
    - GABIA agreed to engage with IMOS to investigate the feasibility of GAB vessels being included as ships of opportunity, for the purpose of collecting environmental data (i.e. temperature at depth).
    - The RAG recommended that the GAB Data Plan be amended to incorporate environmental data that currently is/or could be collected by industry. However this would be dependent on the capacity of e-log systems and databases to record/store this data.

Research Priorities 2022-23

41. The RAG identified three new research priorities at their October 2020 meeting:
    a. Deepwater flathead 2022 stock assessment
    b. Monitoring of dogfish recovery – inclusion of one or more GAB closures in the FRDC project survey design
    c. Ageing of orange roughy otoliths
42. The MAC supported the inclusion of the above research priorities on the 2022-23 Annual Research Statement; and did not recommend any additional priorities.

Agenda Item 7 – Other Business

43. The Chair asked members whether there was any other business.
44. No further business was discussed.

Agenda Item 8 Meeting Close

45. The Chair noted that the Executive Officer will be in touch with members to organise the dates for the 2021 GABMAC meeting.
46. The Chair thanked all attendees for their input into discussions.

47. The meeting was closed at 2:42pm (AEDT).

Signed (Chairperson): 

Date: 18/12/2020

Appendix A: Meeting attendees

Name	Membership
Mr Barry Windle	Chair
Mr Lance Lloyd	Scientific Member
Ms Anissa Lawrence	Environment/Conservation Member
Mr Neil Macdonald	Industry Member
Mr Jim Raptis	Industry Member
Dr Robert Gale	Economic Member
Mr Daniel Corrie	AFMA Member
Ms Kehani Manson	Executive Officer
Apologies	
Ms Marcia Valente	Industry Member
Ms Fiona Hill	Observer
Ms Anna Willock	Observer

Appendix B: Declarations of Interest

Name	Membership	Declared interests
Mr Barry Windle	Chair	No interest in the fishery, pecuniary or otherwise. • Independent Chair of the SA Gulf St Vincent Prawn Fishery Management Committee
Mr Lance Lloyd	Scientific	No interest in the fishery, pecuniary or otherwise. • GABRAG Chair • Member of GABMAC and SESSFRAG • Board Member, AwF – Aquaculture without Frontiers (Australia) • Director – Lloyd Environmental Pty Ltd. • Research Fellow – Federation University Australia
Ms Anissa Lawrence	Environment/Conservation	No pecuniary interest • Director of TierraMar Consulting • Independent consultant • Undertakes contracts for a number of conservation NGOs, government departments, non-government agencies and the private sector on a range of fishery related matters • Chair of Ocean Future Fund • Director of FISHI International • Conservation member on SPFRAG, SEMAC and the South Australian Rock Lobster MAC
Mr Neil MacDonald	Industry	• Director NMAC (SA) P/L • Executive Officer of the Great Australian Bight Industry Association (GABIA) • Executive Officer of Surveyed Charter Boat Owners and Operators Association South Australia • Executive Officer Southern Fishermen's Association • Executive Officer of Saint Vincent Gulf Prawn Boat Owner's Association • Executive Officer of Marine Scale Net Fishers Association • Committee support services South Australian Rock Lobster Management Advisory Committee & Research Sub-Committee • Chair – CGG Gippsland MSS Scientific Advisory Committee
Mr Jim Raptis	Industry	• GABRAG Industry Member • Operates two boats in the GABT Fishery and owns four GAB SFRs as well as quota in the Southern and Eastern Scalefish and Shark Fishery

Name	Membership	Declared interests
Ms Marcia Valente	Industry	• Consultant for Silver Phoenix Holdings who hold two GAB SFRs
Dr Robert Gale	Economic	• Director – Next Level Sustainability • Independent reviewer of the 2018 SA State of the Environment Report for the SA Environmental Protection Authority
Mr Dan Corrie	AFMA member	Employed by AFMA. Manager of Southern Trawl, Scallop and Squid Fisheries. No pecuniary or other interest in the SESSF.
Ms Kehani Manson	Executive Officer	Employed by AFMA. Executive Officer of GABRAG. No interest, pecuniary or otherwise.
Ms Fiona Hill	Observer	Employed by AFMA. Senior Manager of Demersal and Midwater Fisheries. No interest, pecuniary or otherwise.
Ms Anna Willock	Observer	Employed by AFMA. Executive Manager of the Fisheries Management Branch. No interest, pecuniary or otherwise.

Appendix C: Adopted Agenda

Time (AEDT):

9:00 – 15:00

Join Microsoft Teams Meeting **or** +61 2 8318 0009 Conference ID: 424 068 599#

Location: Microsoft Teams Meeting

Chair Name: Barry Windle

Item	Purpose	Lead presenter	Time
1. Preliminaries			**9:00 – 9:30**
1.1 Acknowledgement of Country Welcome and Apologies		Chair	
1.2 Declaration of interests	For action	Chair	
1.3 Adoption of agenda	For action	Chair	
1.4 Minutes of previous meeting	For endorsement	Chair	
1.5 Actions arising from previous meetings	For information	AFMA	
2. Management Items			**9:30 – 10:00**
2.1 Manager's Update	For information	AFMA	
2.2 Industry Update	For information	GABIA	
3. Upper-Slope Dogfish Management Strategy Review			**10:00 – 11:30**
	For advice	AFMA/GABIA	
Morning Tea			**11:30 - 11:40**
4. Orange Roughy			**11:40 – 12:40**
4.1 GAB Orange Roughy Research Plan			
4.1.1 Industry update	For noting	GABIA	
4.1.2 Research Catch Allowance Recommendation 2021-22	For recommendation	AFMA	

Item	Purpose	Lead presenter	Time
4.2 Bycatch TAC Recommendation 2021-22 (Albany & Esperance)	For recommendation	AFMA	
5 TAC Recommendations for 2021-22			**12:40 – 13:10**
5.1 Bight redfish	For recommendation	AFMA	
5.2 Deepwater flathead	For recommendation	AFMA	
Lunch			**13:10 – 13:40**
6. GAB Research Priorities			**13:40 – 14:40**
6.1 GABT Market Development Project Update	For noting	GABIA	
6.2 Research Priorities 2022-23	For advice	AFMA	
7. Other Business			**14:40 – 15:00**
Meeting Close			

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Appendix D: List of all GABMAC items (updated)

- Complete/Redundant
- Underway
- Yet to start
- Need advice

Table 1 Action item summary

Note: All items marked green (complete) will be removed from the list of action items that is prepared for the next meeting (GABMAC 2021)

	Agenda Item	No.	Action Item	Agency/Person Responsible	Timeframe	Progress
	1.4/Nov 2017	1	AFMA to formally write to the Department of the Environment and Energy to enquire about the granting of WTO accreditation for a period of 10 years.	AFMA	As soon as practicable	A letter was sent to the Department of Environment and Energy on 20 December 2017. This was followed up 25 May 2018. See action item below for resolution.
	1.4/ Feb 2020	1	AFMA to amend the wording for the progress against Action Item 1 – Agenda Item 1.4 (November 2017) to clearly identify why this item arose and the progress made to date.	AFMA	As soon as practicable	The above Action Item (1 – Agenda Item 1.4 November 2017), resulted from GABIA's concerns regarding whether the Department would be willing to grant the extended accreditation period, given a number of ongoing projects related to bycatch in the GABTS. The Action Item was discussed at GABMAC December 2018. The AFMA member informed the MAC that the WTO applies to

						the entire SESSF; most of the conditions relate to specific sectors; with a low number of conditions directly relating to the GAB. The SESSF is subject to a three year review, and as such so is the GABT.
	1.4/ Feb 2020	2	AFMA to circulate the table containing historical action items (GABRAG and GABMAC) to MAC and RAG members	AFMA	As soon as practicable	A table containing previous action items does not currently exist, however this can be developed moving forward. Historical action items can be found in previous minutes.
	3.1/ Feb 2020	3	AFMA to investigate why the Albany and Humdinger Magic orange roughy closures were placed over the Albany and Esperance quota zones; noting these are the only areas where the orange roughy bycatch TAC can be caught.	AFMA	As soon as practicable	As a response to the blanket 750m deepwater closure implemented under the 'Orange Roughy Conservation Programme 2007,' GABIA submitted the 'Management strategy for sustainable deepwater fishing in the GABTF' as an alternative approach. GABIA's Strategy outlined a series of Orange Roughy Research Zones, within which fishing could only occur under scientific permit. Research Zones were positioned over 'hotspots' which comprised >95% of the total orange roughy catch in the GABTS between 1988 and 2005. Two of these 'hotspots' were situated in the Albany & Esperance Quota Zone; which resulted in the proposal of the 'Albany' and 'Humdinger Magic' Research Zones.

						The Conservation Programme outlined the requirement of incidental bycatch TACs to cover the low level of incidental catch that would occur outside of the closures/Research Zones.
	3.3/ Feb 2020	4	GABRAG to investigate where a model (using historic data) could be developed to estimate the current GABT orange roughy stock status.	GABRAG	As soon as practicable	This has been included as an Agenda Item (2.1) for the GABRAG October 2020 meeting.
	3.3/ Feb 2020	5	GABRAG to be contacted, out of session, to confirm that they support the orange roughy 200 t research catch allowance being applied to the entire GAB fishery; not just limited to the orange roughy research zones.	AFMA	As soon as practicable	GABRAG supporting the research catch allowance being utilised across the entire GAB fishery.
	3.3/ Feb 2020	6	AFMA and GABIA to hold an induction workshop in Port Lincoln for skippers fishing under the Orange Roughy Research Plan, and provide them with an information package including details of relevant closures.	AFMA/GABIA	As soon as practicable	This workshop was initially scheduled for April 2020. However, due to the Covid-19 restrictions, this workshop had to be cancelled. AFMA/GABIA will endeavour to reschedule this meeting once it is safe to do so.
	4/ Feb 2020	7	GABRAG to investigate research options for dogfish in the GAB. Options identified by GABMAC:	GABRAG	As soon as practicable	a. The Research scope is still being considered by ComRAC. If the research proposal is supported, further consideration will be given to including

			a. Inclusion of the GAB within the survey design for the FRDC project proposal to establish a baseline index of abundance for Harrisson's dogfish and southern dogfish (research scope is currently being considered by FRDC). b. Investigate options for mitigating catch of deepwater shark species as part of the FRDC project *Improving and promoting fish-trawl selectivity in the SESSF and GABTS* (2019-027). c. Developing a GAB specific project to explore mitigation options to prevent capture of deepwater sharks.			the GABT in the survey design. b. GABIA and AFMA have liaised with Mathew Broadhurst (project Principle Investigator) – a 'gulper excluder device' can be included in the project if industry want to pursue this. c. This was included as a line item on the GABT Annual Research Statement 2021-22. Progression of this research item is subject to outcomes of (b). An action item arose at GABRAG (7-8 October 2020) for AFMA to contact ComRAC to follow up on the progress of the FRDC project proposal (a), with the view to including one or more of the GAB closures in the survey design.
	4/ Feb 2020	8	AFMA to advise ISMP observers undertaking GAB trips to record length measurements and life status of any dogfish cause as incidental bycatch. Photos should also be taken to assist with species identification (where possible).	AFMA	As soon as practicable	The AFMA Observer Manager has advised that observers undertaking GAB trips will record the requested data. Length measurements would however be dependent upon catch rates (i.e. large quantities of piked spurdogs are possible).
	5/ Feb 2020	9	For species relevant to the GAB, AFMA to compare the results of the project 'A Report Card for	AFMA	As soon as practicable	In the August 2019 update to the GABT Ecological Risk Assessment (updated effort information), all shark species that were

			Australia's Sharks' (Simpfendorfter et al., 2019) against those in the 2019 GABT Ecological Risk Assessment (ERA).			listed as 'at risk' in the previous iteration (April 2019), were downgraded to low risk. Although identified as low risk, these species were compared with the results of 'A Report Card for Australia's Sharks,' with all but one species (School Shark) listed as sustainable. School Shark is currently under a rebuilding strategy.

Appendix E: Summary of Recommendations from GABMAC October 2020

	Recommendation
1	GABMAC recommended: a. Reinstating both 'Racetrack/Hamburger' and 'Kangaroo Island Hill' closures to orange roughy fishing in waters deeper than 700 m, via scientific permit under the Research Plan; provided that updated bathymetry data is used to inform the implementation of a 700 m depth boundary; b. AFMA write to the TSSC to seek advice on the recommendation provided at (a); and c. Pursuing inclusion of one or more of the GAB closures in the FRDC project survey design.
2	GABMAC recommended that the orange roughy Research Catch Allowance (RCA) be set at **200 t**, and managed as an **Olympic RCA**, for the 2021-22 fishing season.
3	GABMAC recommended maintaining the Albany & Esperance orange roughy bycatch TAC at **50 t** for the 2021-22 fishing season.
4	GABMAC recommended the following TACs for the 2021-22 SESSF fishing season: **Bight redfish:** Continuation of 5 year MYTAC – **893 t** TAC **Deepwater flathead:** Continuation of 3 year MYTAC – **1,238 t** TAC

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Appendix F: 2021-22 TACs

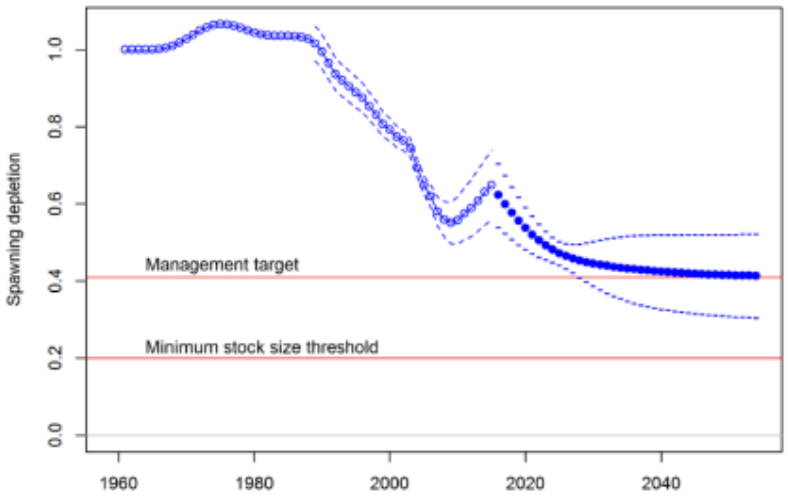
Bight redfish

Centroberyx gerrardi

Species Summary					
Common Names	Bight redfish, Redfish, Nannygai, Golden Snapper, Red Snapper, Red Squirrel-fish				
Stock assessment	Tier 1 Species - Last assessed by GABRAG in December 2019.				
Stock Structure	Assessed as a single stock				
Stock status against reference points ($\%B_0$)	**Tier**	**Year**	**Biomass**	**Target**	**Limit**
	1	2019	65	41	20
	1	2015	63		
	1	2011	90		
Stock trend and other Indicators See CPUE Report See Data Summary	Modelling suggests a slow decline in abundance, consistent with the fish-down of a developing fishery to near the target in 2009, with a steady increase to an estimated biomass of 64%B_0 at the start of 2020. Depletion of the stock occurred more rapidly in the mid-2000s, when substantial fishing effort occurred, but the stock has never fallen below the Maximum Economic Yield (MEY) biomass target. The current biomass is higher than the target biomass.				
Multi-Year TAC	**Year of MYTAC**			**Have breakout rules been triggered?**	
	1st of 5yr			**No**	
Catch and TAC (t)	**Year**		**Agreed TAC (t)**	**TAC (t) after unders/overs**	**Catch (t)**
	2020-21		893	953	40 (as at August 2020)
	2019-20		600	680	170
	2018-19		800	880	220

<table>
<tr><td rowspan="4">Economics
(Primary)</td><td>Year</td><td>Species GVP ($m)</td><td>Fishery GVP ($m)</td><td>% Fishery GVP</td></tr>
<tr><td>2019-20</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td>2018-19</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td>2017-18</td><td>1.3</td><td>9.2</td><td>14.2</td></tr>
<tr><td>ABARES Status (2019)</td><td colspan="2">Biomass: Not overfished</td><td colspan="2">Fishing Mortality:
Not subject to overfishing</td></tr>
<tr><td colspan="5">Assessment Summary</td></tr>
<tr><td>Key model technical assumptions/ parameters</td><td colspan="4">- Single stock (Zone 80)
- Two sex model
- One fleet: Trawl (separated for different sources of length data – ISMP, Industry, GAB-FIS)
- Selectivity allowed to vary between GAB-FIS trawl fleet
- Discards: minimal (ignored)
- M: estimated at 0.1017 (well estimated, range 0.093-0.11)
- Recruitment: estimated (1960-2003)</td></tr>
<tr><td>Significant changes to data inputs</td><td colspan="4">Updated software: from SS-V3.24U to SS-V3.30.14.05
1. Apply new features in SS to allow better tuning of length and age data, automatically tune abundance indices
2. Retune translated model using current model tuning protocols (revised since 2015)
3. Adjust catch with revisions to 2014/15 catch history – replace estimated catch data used in the last assessment with actual catch
4. Final year 2018, add catch to 2018/19
5. Add FIS indices for 2017/18
6. Update CPUE to April 2018
7. Update length frequency data to 2018/19
8. Add updated age error matrix, age-at-length data to 2017/18 and GAB-FIS age-at-length data
9. Add FIS age-at-length data from 2008
10. Final year of recruitment estimation changed to 2003
11. Retune using latest tuning protocols, including Francis weighting on lengths and ages.</td></tr>
<tr><td>Stock assessment key points</td><td colspan="4">Model fits to commercial CPUE are poor. The model was not adequately able to fit the decline in the initial part of the CPUE series (i.e. 1987-1994). The inter-annual variation in CPUE over time is unexpected for such a long-lived species. This variation may be driven by availability, rather than changes in biomass. The market value of Bight redfish could also influence CPUE if targeting is not occurring.
Seven out of the last ten recruitments are above average. Eighteen sensitivities were explored, including:</td></tr>
</table>

	- Increasing and decreasing *M*: results are very sensitive to the assumed value for natural mortality (*M*). The estimated current depletion level can be as low as 39%B_0 when *M* is 0.075. - Exclude the CPUE series: results were quite sensitive when the CPUE index was excluded (i.e. using GAB-FIS as the only abundance index). - Extend the recruitment deviations to 2005: it was somewhat sensitive to extending recruitment deviation estimates for an additional two years (i.e. up until 2005). However, this sensitivity produces unrealistically high recruitments in the last two years; with little age and length data to inform them. - Adding additional interpolated FIS abundance indices: made very little difference to the estimates of spawning biomass or to the fits to the abundance indices. - For all other standard sensitivities, there is limited variability in current depletion, ranging between 58% and 68% SSB_0.
RAG Comments on assessment	<u>Prior to 2019 assessment</u> At their 2018 meeting, GABRAG noted that overall catches of Bight redfish had decreased since 2016. The decrease in 2015 was attributed to the seismic survey that was also conducted that year. However, catches have remained low up to 2018. The length frequency measurements of Bight redfish have decreased from modal length = 30-35cm in previous years, to modal length = 29cm in 2018. The RAG recommended that the RBC for Bight redfish for the 2019-20 season be cut to 600 t; and recommended that the stock assessment for Bight redfish be moved forward from 2020 to 2019, noting that: - the 2015 and 2018 FIS surveys showed a decrease in the relative biomass; - the depth distribution of Bight redfish appeared to have shifted; with movement inshore apparent; - there had been a significant change to the catch composition in the GAB. In 2005, Bight redfish and deepwater flathead accounted for approximately half of the total composition. In 2018, both species only contributed 11% (each), to the total catch composition; and - the FIS length frequency measurements had decreased from previous years. <u>2019 assessment</u> While the CPUE and FIS points may be influenced by availability, the RAG urged caution, noting a similar instance for the eastern redfish stock; where the model and stock indicators suggested the stock was sustainable, and was later assessed to be overfished. There was some concern that the current FIS is not accurately indexing Bight redfish abundance, and the decrease in biomass estimates may be influenced by availability. The length of the MYTAC should consider scheduling of future Tier 1 stock assessments and the FIS, to ensure they are in different financial years; to minimise annual financial pressure on Industry.

Projected Biomass	The projected 2020-21 spawning stock biomass is estimated to be 64% B_0. <u>Projections from 2019 assessment</u> 

RAG Recommendations

In 2019, GABRAG recommended that up to a five year RBC, using either the single year RBCs or the average across the chosen period, be set for Bight redfish; under the proviso that fisheries indicators are monitored annually to ensure the key inputs to the Tier 1 assessment (CPUE, age/length frequencies) do not change.

In 2020, GABRAG recommended continuing the 5-year MYTAC; with an RBC of 912 t recommended for the 2021-22 fishing season.

	Year	RBC (t)	Is a MYTAC Recommended?
Recommended Biological Catch	2020/2021	1,024	Yes. 5 year MYTAC recommended using 5-year average RBC of 912 t.
	2021/2022	961	
	2022/2023	905	
	2023/2024	856	
	2024/2025	813	
Discount Factor (%)	N/A	- N/A (Tier 1)	
State Catch (t)	19 t	- SA catches	
Discards (t)	N/A	- Discards are considered to be low and are not deducted from the RBC.	
Recreational Catch (t)	N/A	- Recreational catch is not included in the assessment and is not deducted from the TAC.	

Research Catch Allowance (t)	N/A	- N/A
Implications for companion species / TEPs / multi-species fisheries		GABRAG has noted concerns regarding the lower catches of Bight redfish in recent years; with the species being taken as bycatch when targeting deepwater flathead.
Provisional TAC under the Harvest Strategy		893 t

MAC Recommendations	
Commercial fishers' interest	N/A
Species specific management (target, companion and bycatch)	N/A

GABMAC recommended that the Bight redfish TAC be set at 893 t for the 2021-22 fishing year, the second year of a five year MYTAC; with undercatch and overcatch provisions set at 10 per cent and a determined amount of 2 t.

Undercatch (%)	Overcatch (%)	Determined Amount (t)	TAC (t)
10	10	2	893

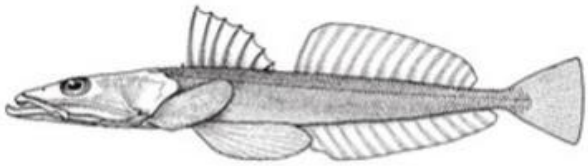
AFMA Advice

AFMA Management recommends that the Bight redfish TAC be set at 893 t for the 2021-22 fishing year, the second of a five year MYTAC; with undercatch and overcatch provisions set at 10 per cent, and a determined amount of 2 t.

2020-21 agreed TAC (t)	2021-22 recommended TAC (t)	Overcatch & Undercatch (%)	Determined amount (t)	Change in TAC (t)
893	893	10	2	0

Deepwater Flathead

Neoplatycephalus conatus

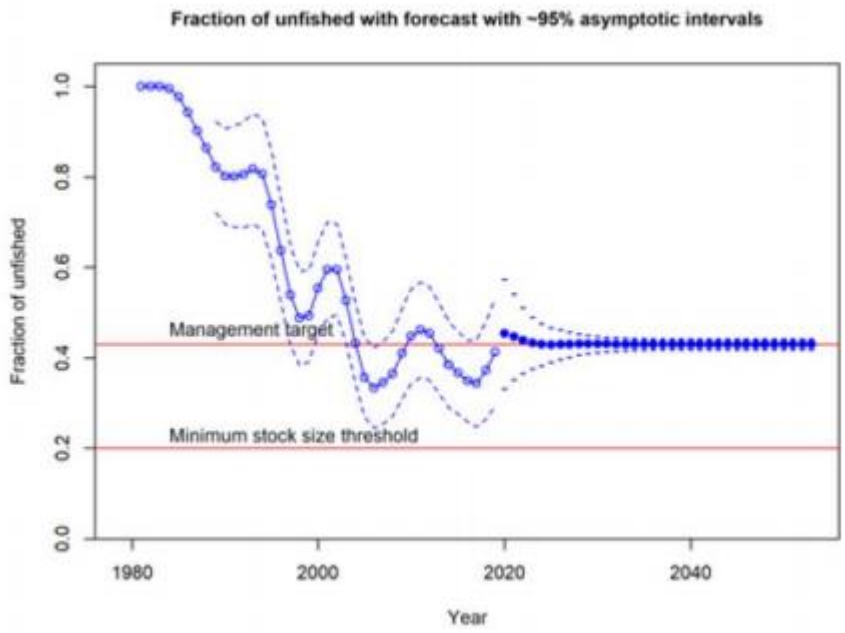


Species Summary

Common Names	Deepwater flathead, Deep sea flathead, trawl flathead				
Stock assessment	Tier 1 Species - Last assessed by GABRAG in December 2019.				
Stock Structure	Assessed as a single stock				
Stock status against reference points ($\%B_0$)	**Tier**	**Year**	**Biomass**	**Target**	**Limit**
	1	2019	45	43	20
	1	2016	45		
	1	2013	45		
Stock trend and other Indicators See CPUE Report See Data Summary	While remaining above target, estimated spawning biomass suggests a gradual decline toward the target since 2012-2013. The spread of recent age data indicates the stock is responding to a reduction in fishing effort.				
Multi-Year TAC	**Year of MYTAC**		**Have breakout rules been triggered?**		
	1st of 3yr		**Yes** >50% of TAC caught GABRAG (2020) recommended maintaining the 3-year MYTAC		
Catch and TAC (t)	**Year**	**Agreed TAC (t)**	**TAC (t) after unders/overs**	**Catch (t)**	
	2020-21	1,238	1,349	131 (as at August 2020)	
	2019-20	1,128	1,229	694	
	2018-19	1,128	1,241	529	
Economics	**Year**	**Species GVP ($m)**	**Fishery GVP ($m)**	**% Fishery GVP**	

(Primary)	2019-20	N/A	N/A	N/A
	2018-19	N/A	N/A	N/A
	2017-18	4.57	9.16	49.9
ABARES Status	**Not overfished**		**Not subject to overfishing**	
Assessment Summary				
Key model technical assumptions/ parameters	- Single stock (Zone 80) - Two sex model - One fleet: Trawl (separated for different sources of length data – ISMP, Industry, GAB-FIS) - Selectivity allowed to vary between GAB-FIS trawl fleet - Discards: minimal (ignored) - *M*: estimated at 0.263 - Recruitment: estimated 1980 to 2013 (previously 2011)			
Significant changes to data inputs	Updated software: from SS-V3.24U to SS-V3.30.14.05 1. Apply new features in SS to allow better tuning of length and age data, automatically tune abundance indices 2. Retune translated model using current model tuning protocols (revised since 2015) 3. Final year 2018, add catch to 2018/19 4. Add FIS indices for 2017/18 5. Update CPUE to April 2019 6. Update length frequency data to 2018/19 7. Add updated age error matrix, age-at-length data to 2017/18 and GAB-FIS age-at-length data 8. Final year of recruitment estimation changed to 2013 9. Retune using latest tuning protocols, including Francis weighting on lengths and ages.			
Stock assessment key points	Crew collected length data is not available from the Danish seine vessel. This information is important and should be collected. GABIA will pursue this. Danish seine catches are included in the base case assessment as part of the trawl catch. A sensitivity was conducted to include a separate Danish seine fleet, with catches, age and length data from the Danish seine vessel. This increased the estimates of biomass over time. However, there is not enough length data for this to be considered as a new base case; and the changes in biomass needed further exploration. The RAG had previously noted that it would be useful to undertake a meta-analysis to better understand the value for natural mortality (*M*) in the assessment. The 2019 assessment shows a likelihood profile suggesting a plausible range between 0.233 and 0.3, with the model estimating *M* at 0.263. Bridging analysis: adding catch, CPUE and FIS indices made very little difference to the estimate of biomass. Adding age and length data to 2018 resulted in a lower estimate of biomass trend over time. There is a divergence in the estimate of biomass from about 2012,			

	when age data was added, which is likely driven by the influence of age estimates on recruitment. The updated tuning protocol returns the SSB trajectory to near target levels. The fits to trawl CPUE are much better from 2003 compared to earlier in the time series, where the model couldn't fit to the large increase in commercial CPUE in the early 1990s. Model fits to ages and lengths are good, and both improved once tuned. Fits to CPUE are good, whereas the fits to the FIS estimates are poor for the last two survey points. The FIS and commercial CPUE data shows a recent decrease in catch rates, however, the age and length data are more positive. The model does not fit the most recent FIS or CPUE points, which is likely due to a conflict in the data with ages and lengths. Catches of deepwater flathead have decreased since 2012; the last two years catches are the lowest since 1999. The decrease in 2014 was attributed to the seismic survey that was also conducted that year. Recruitment deviations show poor recruitment for the period 2008-2011, however, recruitments in 2012 and 2013 have recovered to just below, and just above average recruitment, respectively. While it is based on the estimate of 2018 biomass, likelihood profiles suggest biomass is not well determined; with a broad range of SSB_{2018} (2,250-5,000 t), with the most likely value 3,350 t. Various sensitivities were explored, however, there was minimal variation from the base case.
RAG Comments on assessment	<u>2019 assessment</u> The RAG suggested that more data is required before Danish seine can be included as a separate fleet; and should remain as a sensitivity. Industry noted that catch rates in October and November 2019, are the best they've seen in a long time and reflect catches in 2016. Industry have observed that deepwater flathead appear to be shifting to shallower depths. There also appears to have been a temporal shift in the spawning season for deepwater flathead. The RAG expressed concern that the assessments are not impacted by the recent FIS abundance estimates and the latest catch data; both of which are indicating that the stock is declining.
Projected Biomass	The 40 year projection depends on the RBC being caught each year, which the RAG noted was unlikely due to the low number of vessels operating in the fishery.

	Projections from the 2019 assessment 

RAG Recommendations

In 2019, the RAG recommended up to a four year RBC, under the proviso that fisheries indicators are monitored annually to ensure the key inputs to the Tier 1 assessment (CPUE, age/length frequencies) do not change.

In 2020, GABRAG recommended continuing the 3-year MYTAC; with an RBC of 1,238 t recommended for the 2021-22 fishing season.

	Year	RBC	Is a MYTAC Recommended?
Recommended Biological Catch	2020/2021	1,253	Yes. 3 year MYTAC recommended using 3-year average of 1,238 t.
	2021/2022	1,238	
	2022/2023	1,224	
	2023/2024	1,214	
Discount Factor (%)	N/A	- N/A (Tier 1)	
State Catch (t)	N/A	- There are no State catches	
Discards (t)	N/A	- Discards are considered to be low and are not included in the RBC.	
Recreational Catch (t)	N/A	- N/A	

Research Catch Allowance (t)	N/A	- N/A
Implications for companion species / TEPs / multi-species fisheries		The RAG noted that deepwater flathead effort contributes to catches of other commercial species in the GAB (i.e. Bight redfish).
Provisional TAC under the Harvest Strategy		1,238 t

MAC Recommendations	
Commercial fishers' interest	N/A
Species specific management (target, companion and bycatch)	N/A

GABMAC recommended that the deepwater flathead TAC be set at 1,238 t for the 2021-22 fishing year, the second of a three year MYTAC; with undercatch and overcatch provisions set at 10 per cent, and a determined amount of 2 t.

Undercatch (%)	Overcatch (%)	Determined Amount (t)	TAC (t)
10	10	2	1,238

AFMA Advice

AFMA Management recommends that the deepwater flathead TAC be set at 1,238 t for the 2021-22 fishing year, the second of a three year MYTAC, with undercatch and overcatch provisions set at 10 per cent, and a determined amount of 2 t.

2020-21 agreed TAC (t)	2021-22 recommended TAC (t)	Overcatch & Undercatch (%)	Determined amount (t)	Change in TAC (t)
1,238	1,238	10	2	0