Australian Government
Australian Fisheries Management Authority

Tropical Tuna and Billfish Fisheries Research Assessment Group (TTRAG)

MINUTES
TTRAG 12
23-24 JULY 2015
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THE TWELFTH MEETING OF THE TROPICAL TUNA AND BILLFISH FISHERIES RESOURCE ASSESSMENT GROUP (TTRAG12)

Mooloolaba, 23-24 July 2015

Contents

List of Actions

	Action	Responsibility	Status
1	A long-term analysis project of SST, other oceanographic factors and catch data to be made a research priority. The purpose would be to use the current model for Southern Bluefin Tuna and re-adapt for Yellowfin Tuna. This could be done for bycatch species as well. In the mid-term, Robert Campbell to undertake a statistical analysis of the relationship between oceanography and fish distribution. AFMA to also investigate the potential for a collaborative study (with SPC and near neighbour countries like PNG, Solomon Islands, New Caledonia, Vanuatu and Fiji) that examines fine scale spatial and temporal CPUE and size data for additional information regarding mixing of tropical tuna species within and between the Australian and adjacent fishing zones.	Dr Rob Campbell	Ongoing. This project is progressing and further updates will be provided by Dr Campbell at the next TTRAG meeting (TTRAG 13). There have been several data difficulties encountered with changes made to the database by AFMA. There are two stages to this project; 1) long-term analysis, 2) short-term statistical analysis with real-time data for industry. This second stage is to assist industry in becoming more economically efficient in their operations.
2	TTRAG EO to distribute line-weighting trial report to TTRAG after it has been submitted to FRDC.	TTRAG EO	Ongoing, report has not yet been finalised.
3	AFMA to provide Dr Rob Campbell with the locations of the SBT management zones and a list of all the shot numbers within the zones.	AFMA & Rob	Ongoing. This is difficult to do, but it is being investigated. This may be more easily addressed from this point onwards, rather than incorporating previous years' and historical data.
4	TTRAG to discuss the "Development of an approach to harvest strategy management of internationally managed multi-species fisheries" report when finalised by CSIRO.	TTRAG	Ongoing.
5	AFMA to include the classification of "discard" in the fishery management arrangements booklet and clarify the requirements for reporting discards.	AFMA	Ongoing.

1 Preliminaries

1.1 Welcome and apologies and attendees

1. The TTRAG Chair opened the meeting at 8:30am.
2. Attendees:

Members
Dr Sandra Diamond, Chair (University of Western Sydney)
Mr Steve Auld (AFMA)
Dr Rob Campbell (CSIRO)
Dr Cathy Dichmont (CSIRO)
Dr Julian Pepperell (Recreational fishing scientist)
Mr Gary Heilmann (Industry)
Mr John Abbott (Industry)
Dr Rich Hillary (CSIRO)

Invited participants
Mr Paul Williams (Industry)

Observers
Mr Trent Timmiss (AFMA)
Mr Jacob Tapp (Department of Agriculture)

Executive Officer
Ms Stephanie Martin (AFMA)

Apologies
Dr James Larcombe (ABARES)
Prof John Tisdell (Economist, University of Tasmania)
Mr Pavo Walker (Industry)
Mr Cathal Farrell (Industry)

1.2 Pecuniary interest declarations

3. TTRAG discussed the declaration of pecuniary interest and how TTRAG will deal with potential conflicts of interest.
4. The attendees were asked to state their pecuniary interests.

- Dr Sandra Diamond; employee of the University of Western Sydney. Has no pecuniary interest (financial or research) in tuna fisheries. Currently has a PhD student involved in game fishing tournament research. Dr Diamond is paid as the TTRAG Chair.
- Dr Robert Campbell; employee of CSIRO, no pecuniary interest in Australian tropical tuna fisheries. Is actively engaged in research on the Eastern and Western Tuna and Billfish Fisheries. PI of the following research projects: "*Data management, provision of fishery indicators and implementation of the harvest strategies for Australia's tropical tuna fisheries*", and *"Developing innovative approaches to improve CPUE standardisation for Australia's multi-species pelagic longline fisheries"*.
- Dr Cathy Dichmont; has a consulting company, but has no pecuniary interests in the tuna fisheries. Is also involved with CSIRO, but has no pecuniary interest in Australian Tropical

Tuna Fisheries. Has a cross-cutting project that affects tuna fisheries. Is the CSIRO research representative on the northern hub that co-ordinates tropical fisheries research and proposals. Observer on the AFMA Research Committee (ARC) and the Commonwealth Fisheries Research Advisory Board (ComFRAB).

- Mr Steve Auld; employee of AFMA, which includes a salary. Is the Manager of the tropical tuna fisheries, but has no pecuniary interest in Australian tropical tuna fisheries. Has a declared interest/involvement in all agenda items. Co-investigator on Dr Rob Campbell's multi-species fisheries project.
- Ms Stephanie Martin; employee of AFMA, which includes a salary. Is a Senior Management Officer for the tropical tuna fisheries. No pecuniary interest in tropical tuna fisheries.
- Mr John Abbott; owns an ETBF boat SFR, and ETBF quota SFRs, and also holds a state licence fish receiver permit.
- Mr Gary Heilmann; director of several companies that hold; 2 ETBF boat SFRs and quota SFRs (less than 5% of quota species except for Albacore Tuna which is greater than 5% of the total ETBF quota), a fish receiver's permit and a Coral Sea fishery permit.
- Mr Paul Williams; director of a company that holds an ETBF boat SFR, ETBF quota SFRs, and holds a Commonwealth fish receiver's permit.
- Dr Rich Hillary; employee of CSIRO, no pecuniary interest in Australian tropical tuna fisheries. Is the PI for the Management Strategy Evaluation (MSE) project for the tropical tuna and billfish species.
- Dr Julian Pepperell; independent fisheries consultant and representative of the recreational fishing sector. Is currently undertaking research into game fishing in NSW and Western Australia fisheries. Is involved in a 3-year project monitoring fish landed at game fishing tournaments and pop-up satellite tagging on juvenile Black Marlin.

Observers

- Mr Trent Timmiss; employee of AFMA, which includes a salary. Is Senior Manager of Tuna and International Fisheries.
- Mr Jacob Tapp; employee of the Department of Agriculture. No pecuniary interest in tropical tuna fisheries.

Members not present

- Dr James Larcombe; employee of ABARES, leads delegations to the WCPFC Scientific Committee and does Tropical Tuna research. Has no pecuniary interest in the Australian Tropical Tuna Fisheries.
- Prof John Tisdell; employee at the University of Tasmania and is a scientific member of the Great Australian Bight Resource Assessment Group (GABRAG). Has no pecuniary interest in tropical tuna fisheries.
- Mr Pavo Walker; owns several ETBF boat SFRs, and ETBF quota SFRs for all species. Holds a Coral Sea permit and minorline permit.
- Mr Cathal Farrell; Manager of fish receiving business and holder of an ETBF boat SFR.

5. At the beginning of each agenda item, TTRAG members with a stated conflict of interest were asked to leave the room and the remaining members discussed their individual claims. In all cases, all members were agreed to be permitted to participate in the item discussion.

1.3 Adoption of agenda

6. TTRAG adopted the meeting agenda, noting the addition of an update from Dr Robert Campbell on his multi-species CPUE project under agenda item 4.1 and a RAG self-assessment questionnaire under agenda item 6.

1.4 Acceptance of minutes

7. The minutes from TTRAG 11 were accepted by members with a number of amendments from Dr Robert Campbell and Dr Sandra Diamond.

1.5 Actions arising/out-of-session developments

8. TTRAG discussed the action items arising from TTRAG 11 (Table 1), and commented on progress.

Table 1. Actions arising from TTRAG 11 and the status of these actions.

	Action	Responsibility	Status
1	A long-term analysis project of SST, other oceanographic factors and catch data to be made a research priority. The purpose would be to use the current model for Southern Bluefin Tuna and re-adapt for Yellowfin Tuna. This could be done for bycatch species as well. In the mid-term, Robert Campbell to undertake a statistical analysis of the relationship between oceanography and fish distribution. AFMA to also investigate the potential for a collaborative study (with SPC and near neighbour countries like PNG, Solomon Islands, New Caledonia, Vanuatu and Fiji) that examines fine scale spatial and temporal CPUE and size data for additional information regarding mixing of tropical tuna species within and between the Australian and adjacent fishing zones.	Dr Rob Campbell	Ongoing. This project is progressing and further updates will be provided by Dr Campbell at the next TTRAG meeting (TTRAG 13). There have been several data difficulties encountered with changes made to the database by AFMA. There are two stages to this project; 1) long-term analysis, 2) short-term statistical analysis with real-time data for industry. This second stage is to assist industry in becoming more economically efficient in their operations.
2	Dr Robert Campbell to investigate what data on hook type (in relation to SWO catches), branchline length and bubble	Dr Rob Campbell	Completed. This action item will be addressed under section 4.1 of this meeting.

	length are available in the observer data.		
3	TTRAG EO to distribute line-weighting trial report to TTRAG after it has been submitted to FRDC.	TTRAG EO	Ongoing, report has not yet been finalised.
4	The TTRAG recreational fishing member to provide members with any recreational research papers that are relevant.	Dr Julian Pepperell	This is a standing agenda item. Dr Pepperell will provide any relevant information at each TTRAG meeting.
5	Dr Sandra Diamond to distribute Danielle Ghosn report on the club-based tournament fishery to TTRAG members.	TTRAG Chair	Completed.
6	Dr Rob Campbell to create a new area off the south coast of NSW specifically for Striped Marlin to include in the CPUE standardisations.	Dr Rob Campbell	Completed.
7	AFMA to provide Dr Rob Campbell with the locations of the SBT management zones and a list of all the shot numbers within the zones.	AFMA & Rob	Ongoing. This is difficult to do, but it is being investigated. This may be more easily addressed from this point onwards, rather than incorporating previous years' and historical data.
8	AFMA to provide a presentation on e-monitoring at the next TTRAG meeting.	AFMA	Completed. This action item will be addressed under section 2.4 of this meeting.

2 Update of key fishery events

No pecuniary interests were declared under this agenda item.

2.1 Current catches and effort in the domestic fishery – verbal updates since TTRAG 11 (March 2015) from industry, recreational fishing members and scientists

9. The AFMA member began discussions by providing an update on the current catches of all quota species for this fishing season. The Bigeye tuna catches this season have been substantial in comparison to previous years, and large catches have been taken off Coffs Harbour. In contrast, the catches of Albacore tuna have been lower this season. The Broadbill swordfish and Striped marlin catches have been reasonable and the Yellowfin tuna catches are indicating an average

season. Unlike previous years, the catch of Southern Bluefin tuna has been much higher this year off the east coast and the size and quality of these fish are also better.

10. Industry members confirmed that this is the best season for Bigeye tuna since 2007/08, but they were unsure why this is the case. There has been a good run of Bigeye tuna earlier on in the season than usual, with the majority of fish being larger—approximately 28 kilograms. This trend in Bigeye tuna has not been seen by industry for several years and they questioned where these larger fish have been previously. Along similar lines, the Yellowfin catches have also been good and the quality and fat content of the fish have been better than usual. This is another trend that has not been seen for several years. Industry further mentioned that the catches of Albacore tuna have also been of larger fish than usual.

11. There was an overall comment by industry that many operators are not going down to the Southern Bluefin Tuna Management Zones (SBT zones) this year to catch Bigeye tuna as they do not feel that it is worthwhile due to general cost. The AFMA member pointed out that there are no longer observer costs associated with doing this due to the implementation of e-monitoring. An industry member indicated that many operators still do not fully understand the rules regarding the SBT zones and this factor also makes them reluctant to fish in those areas.

12. TTRAG noted that the overall prices this season are also reasonably good, largely due to the drop in the Australian Dollar. More tuna is being exported to the United States now and this market is becoming very important.

13. In further regard to Southern Bluefin Tuna, industry members indicated that New Zealand has been having a good season as well and the overall quality of all tuna species has been much better than previously. It was suggested that operators may now be targeting the better quality fish rather than fishing for quantity. This is the effect of quota.

14. For clarity, TTRAG members noted that colour is important in the tuna species. Bigeye tuna for example, have a pale meat colour for most of the year except for winter when the meat colour becomes much redder. Fatty fish generally have good colour and this indicates good quality in fish. The better colour and fat content also occurs more often in larger fish while the smaller fish tend to have paler meat colour and therefore, are of poorer quality. The smaller fish are commonly referred to by industry as “rats”.

15. In regard to effort in the fishery this season, it has remained relatively stable. The quota for all species is considered by industry to be “fully fished”. For the Eastern Tuna and Billfish Fishery (ETBF), 37 boats now have electronic monitoring systems installed and operational and these boats are considered to be the full-time, active boats.

16. It was noted by TTRAG that regarding the Coral Sea Zone, only 11 boats are permitted to fish in this area and there is no opportunity to expand this effort. It is still uncertain as to whether the Coral Sea Zone will be made a marine park. If this happens, fishing effort will be affected. Two reports are due out in August, so there may be some progress following this.

17. For the Western Tuna and Billfish Fishery (WTBF), there are currently only two active boats and the quota is highly unlikely to be fully caught. The AFMA member informed TTRAG that the applications for three large-scale longline boats to be deemed Australian vessels have recently been approved, subject to their legal importation into Australia. These boats will fish in the WTBF between January and March 2016. The operators are local, but the vessels are foreign owned and they are intending to target Bigeye tuna further north around the Cocos and Christmas Islands. These boats are required to have electronic monitoring onboard and must clear customs and the Australian Maritime Safety Authority (AMSA) surveys before they can fish.

18. More generally, industry members requested a comparison of current Catchwatch reports with those from previous years. This may be possible with new software, but AFMA will look into this

when available. The Catchwatch reports from the current and previous fishing seasons are all located on the AFMA website.

19. The recreational fishing catch update was provided by Dr Julian Pepperell. TTRAG members noted that the east coast gamefish fishery is largely influenced by SBT this season. As recreational fishers must travel further offshore to catch SBT, they have also been catching larger-sized Yellowfin and Bigeye tuna. This shift in recreational fishing to further offshore and an increase in effort, is a normal trend for the winter months.

20. Further north, juvenile Black Marlin have occurred in reasonable numbers for this time of year off Townsville and this is reflective of fairly consistent recruitment of Black Marlin over the last 4-5 seasons. Conversely many, very small and very young, Black Marlin were unusually encountered off Hervey Bay this year. It is possible that this is an indication of alternate spawning times and locations for Black marlin, rather than only within the Coral Sea.

21. There have continued to be regular catches of Swordfish mainly off St Helens, Tasmania, but only small numbers of hooks are being put into the water.

22. In Western Australia, the Sailfish have appeared again off Broome and there have been multiple recaptures of tagged fish. A large number of these recaptures occurred exactly a year after the fish were tagged in the same place. As most of the tagging is either pop-up or conventional tagging, where and how far these fish travel is still unknown.

23. Blue Marlin has developed into a very consistent recreational fishery with the majority of catches occurring off Bermagui and around Coffs Harbour and Brisbane. Anglers are consistently catching 150-200kg Blue Marlin and these are generally caught over 1-2 fishing days and with two fish per boat. As a result of these catches, several tournaments offering up to $50 000 in prize money have developed. Generally, female fish are being caught outside of the spawning season.

24. The AFMA member informed TTRAG that AFMA has written an article on the management of Swordfish for the Bluewater magazine and it should be published in the August issue. It is likely that AFMA will contribute a few more articles to this magazine over the next few months.

25. It was also noted by TTRAG that the Secretariat for the Pacific Community (SPC) is conducting a stock assessment on Albacore tuna this year and some large changes are expected. The draft that was presented to the Western and Central Pacific Fisheries Commission (WCPFC) Scientific Committee indicated a much higher level of depletion than has previously been displayed. This increase is likely to be due to a greater number of Chinese boats now fishing for Albacore and also the various structural changes in the assessment.

26. In relation to Striped Marlin, an industry member stated that this species ran a lot later this year down along the south coast of NSW. The fish were fairly small-size, but this trend was unusual. In comparison, the commercial catches of Striped marlin off the south coast have not been very high this season.

2.2 MAC/AFMA Commission outcomes

27. The AFMA member informed TTRAG that the most recent TTMAC meeting was held in Sydney in May. The main items of discussion were the 2015-16 budgets and the implementation of electronic monitoring (e-monitoring).

28. In regard to the AFMA Commission, TTRAG noted that the most recent meeting was held in Darwin in June. It was a single day meeting and largely concentrated on the Scallop fishery and Small Pelagic Fishery Total Allowable Catches and the recreational catches of Southern Bluefin Tuna (SBT).

29. At both meetings, no issues were discussed that directly relate to the tropical tuna fisheries.

2.3 CSIRO workshop outcomes

30. Dr Rich Hillary provided TTRAG with a summary of an ETBF harvest strategy workshop that was held by CSIRO at the beginning of June 2015 in Hobart. The bulk of the information discussed at the workshop was previously presented at the last TTRAG meeting (TTRAG 11) in March 2015. The key topics from the workshop were:

    a) An update on the Management Strategy Evaluation work for the tuna and billfish;

    b) The connectivity and stock structure work being conducted by CSIRO;

    c) The cost and benefits of reducing the current major uncertainties;

    d) The state of play of a Harvest Strategy initiative at the level of the Western and Central Pacific Fishery Commission;

    e) A summary of gamefish information; and

    f) The strategies for future engagement and research priorities.

31. TTRAG noted that there is a final report currently being written by CSIRO on the "Development of an approach to harvest strategy management of internationally managed multi-species fisheries" and this will be distributed to TTRAG for discussion when completed and finalised.

ACTION: TTRAG to discuss the "Development of an approach to harvest strategy management of internationally managed multi-species fisheries" report when finalised by CSIRO.

32. TTRAG further noted that an initial scoping study has recently been funded by AFMA that will investigate the stock structure of the three tropical tuna species (Yellowfin, Bigeye and Albacore Tuna) across the western Pacific Ocean, at scales of relevance to the ETBF. This scoping study will be conducted by CSIRO and will conclude on 30 June 2016.

33. Due to the updated information now available on stock connectivity in the western and central Pacific Ocean, TTRAG members agreed to re-word the following research priority to be more specific and better reflect the intention of the research required:

    "Determination of the spatial dynamics and movement rates of the principal target species within the ETBF and connectivity and population structure within the broader WCPO – beyond tagging. This may include but is not limited to: Stable isotope analysis, otolith micro-chemistry or novel genetic techniques."

    The re-wording of this research priority will be completed out of session. It is considered to be the highest priority for funding in 2016/17.

2.4 E-monitoring

34. The AFMA observer, Mr Trent Timmiss, provided TTRAG with an update on electronic monitoring (e-monitoring) that has now been implemented in both the ETBF and WTBF. As of 1 July 2015, e-monitoring systems became compulsory on all full-time boats within the ETBF and WTBF. The classification of "full-time" is those boats that fish for more than 30 days during a fishing season. For the ETBF, there are currently 37 full-time boats and two boats in the WTBF. E-monitoring hard drives are exchanged at the beginning of each month and there is approximately a 3-4 month turn-around time for the copying and analysis of footage for each

boat. The e-monitoring provider is Archipelago Australia Pacific (AAP) and they are conducting the footage analysis. AAP will also provide progress/feedback reports back to each boat following their footage analysis. If, after 6 months, there is misreporting by a particular boat, AFMA will make contact with the owner. If misreporting is still occurring after 12 months, more serious compliance action will be carried out. AFMA is expecting to see a significant increase in the reporting of discarded fish and protected species interactions.

35. TTRAG noted that AFMA will hold an industry-wide meeting in Sydney in October/November to discuss the progress of e-monitoring. All industry members will be invited to attend.

36. It is unlikely that there will be any significant issues for TTRAG regarding e-monitoring, aside from greater accuracy and reliability in the data collected from the two fisheries. However, TTRAG noted that there is expected to be a relatively sudden change in the data records with e-monitoring and there may need to be further consideration of this for the CPUE standardisations in 2016.

37. The analysis rate of e-monitoring footage is a random 10% minimum for each boat. This rate will continue for the first 12 months and then will be reviewed. There is the potential for the coverage rate to be weighted towards those boats that are uncompliant or continuing to misreport.

38. TTRAG acknowledged that there is now considerable interest in e-monitoring from the Western and Central Pacific Fisheries Commission (WCPFC) and the Taiwanese fleets and the Solomon Islands are currently implementing e-monitoring. The Californian and Hawaiian fleets are intending to have e-monitoring operational within the next 12 months or so.

39. In regard to electronic logbooks (e-logs), four ETBF operators are now using the system. There are still several issues with e-logs though and AFMA is considering becoming involved in streamlining the process and managing e-logs, particularly if other fisheries begin taking up the systems. Data entered into the e-log system is automatically available in the AFMA database however, if there are issues with the systems then e-logs is not a cost-effective option for data collection.

40. It was suggested by an industry member that an Excel spreadsheet could be used as an alternative option to e-logs. This spreadsheet could be linked/exported to AFMA, making data entry much simpler for industry. The AFMA observer stated that this is a real possibility and there is no problem with operators providing their data this way.

41. Continuing on with the e-monitoring discussion, the AFMA member reminded industry members that their hard drives can be sent back to AFMA using Australia Post bags. Hard drives should be returned at the beginning of each month, regardless of whether they are full or not. A flyer will be distributed to industry in the next week or so reiterating this requirement.

42. An industry member queried several requirements of the e-monitoring process such as what should be done if a system breaks down and whether operators are allowed to fix their own systems. The AFMA member stated that in all cases it is best to contact AAP in the first instance. The AFMA member also stated that all these processes should have been explained to operators upon installation of their e-monitoring system. If this has not been the case, AFMA will chase this up.

3 Harvest Strategy

The following members declared their interest under Harvest Strategy items:

Mr Gary Heilmann
Mr Paul Williams
Mr John Abbott
Mr Steve Auld
Dr Cathy Dichmont
Dr Rich Hillary
Dr Robert Campbell

In line with the requirements as a RAG industry member who has declared interests under an agenda item, Mr Heilmann left the room. The remaining members of TTRAG agreed that Mr Heilmann should be allowed to return for all discussions and recommendations made under Agenda item 3.

In line with the requirements as a RAG industry member who has declared interests under an agenda item, Mr Williams left the room. The remaining members of TTRAG agreed that Mr Williams should be allowed to return for all discussions and recommendations made under Agenda item 3.

In line with the requirements as a RAG industry member who has declared interests under an agenda item, Mr Abbott left the room. The remaining members of TTRAG agreed that Mr Abbott should be allowed to return for all discussions and recommendations made under Agenda item 3.

In line with the requirements as the RAG AFMA member who has declared interests under an agenda item, Mr Auld left the room. The remaining members of TTRAG agreed that Mr Auld should be allowed to return for all discussions and recommendations made under Agenda item 3.

In line with the requirements as a RAG scientific member who has declared interests under an agenda item, Dr Dichmont left the room. The remaining members of TTRAG agreed that Dr Dichmont should be allowed to return for all discussions and recommendations made under Agenda item 3.

In line with the requirements as a RAG scientific member who has declared interests under an agenda item, Dr Hillary left the room. The remaining members of TTRAG agreed that Dr Hillary should be allowed to return for all discussions and recommendations made under Agenda item 3.

In line with the requirements as a RAG scientific member who has declared interests under an agenda item, Dr Campbell left the room. The remaining members of TTRAG agreed that Dr Campbell should be allowed to return for all discussions and recommendations made under Agenda item 3.

3.1 Fisheries data summaries

43. Dr Robert Campbell provided TTRAG a summary of the catch and effort data for the ETBF. The number of boats peaked in the late 1990s; however, the current fleet is a fraction of the size and much more dedicated. The number of hooks set peaked in approximately 2003, but has remained relatively stable over the past 4 years. The spatial extent of fishing effort also peaked in 2003, but this has now contracted in association with the contraction of effort. The economics of fishing has become a greater driver of fishing behaviour and operators are now generally fishing closer inshore. The average annual decrease in effort is likely to be largely due to changes in management, however the average number of hooks deployed per boat is steadily increasing.

44. TTRAG members noted that the level of fishing effort recorded in 2003 is considered to be the base year for the maximum effort in the ETBF. While the number of hooks being set per day is steadily increasing, the number of boats in the fishery is either remaining the same or decreasing slowly.

45. For the sets by target species data, Yellowfin tuna is the most commonly targeted species. There have been some changes in the gear setting over the years, but very little change in the type of bait used (predominantly squid). Squid is specifically used to catch Broadbill swordfish, but is also commonly used to catch Southern Bluefin Tuna (SBT). The number of light sticks used for targeting Swordfish has displayed a slight increase and there are now more sets using 100% light sticks. This may be another reflection of SBT targeting by operators.

46. Other indicators such as set time, hooks per float and mainline length have all remained relatively constant over the last few years. Overall, the annual catches in 2014 have been slightly higher than the previous year for all target species except Albacore tuna and the total catch is higher than last year by 10%. For byproduct species, catches of SBT, Escolar and Mahi Mahi have all been higher also.

47. TTRAG members queried the discrepancies between the processor and Catch Disposal Record (CDR) data. Both these records should be the same, but in several cases the numbers are different. These discrepancies need to be investigated further as there may be potential bias in the data and it may be useful to breakdown the data to landings per port.

48. The effort and catch by month data indicates a large amount of seasonality for Yellowfin and Bigeye Tuna in particular and it is possible there may be some correlation with New Zealand data. The CPUE data for Albacore Tuna, Swordfish and Striped Marlin did not raise any concerns amongst TTRAG members.

49. TTRAG did not raise any concerns regarding the size classes for all target species, but noted that the progression of each new cohort for Yellowfin and Bigeye Tuna in particular, can be distinguished from the data. There has been a small decline in the number of large Swordfish caught, however this is likely due to the introduction of circle hooks.

50. While the mean weight for Yellowfin Tuna has remained relatively stable over the years, there is a noticeable difference between the fish caught off NSW and Queensland. There is greater fluctuation in the mean weight of fish caught off NSW and industry commented that there has been a slight increase in the amount of large fish caught. While this is not generally a concern, this trend may be a reflection of the changes in fishing effort and the catch history rather than it being biologically driven. With the improvement and increased access to Sea Surface Temperature (SST) information, operators are able to target larger fish closer inshore.

51. In regard to bycatch sampling, 83 000 size samples have been collected for Mahi Mahi and the sampling numbers are similarly high for several other bycatch species. Catches of Mahi Mahi, Escolar, Wahoo and Mako sharks are all relatively stable. It was noted by TTRAG however, that only dead Mako sharks may be kept and landed.

52. An industry observer stated that larger Swordfish are usually caught further offshore, but they can now be caught increasingly closer inshore. There has also recently been movement and changes with Swordfish quota ownership and access and this is influencing fishing practices. It was suggested that this influence should be considered in the CPUE standardisation.

53. For this year, hook type and bubble length data was included in the standardisation. There was a significant change from J-hooks to circle hooks during 2008 and this is a general reflection of Swordfish targeting, but greater numbers of Albacore tuna and Striped Marlin are also caught with circle hooks. Bubble length overall has increased slightly between 2001 and 2014, but this

data is highly variable between boats. In addition, the average branchline length decreased between 2004 and 2008, but has remained stable since then.

54. The AFMA member informed TTRAG that a gear survey of the ETBF is undertaken every year, but he will investigate the possibility of making the data collected available to the RAG.

3.2 CPUE standardisations

55. Dr Robert Campbell presented the CPUE standardisations to TTRAG. Overall, the wind speed indicator displayed the least influence. In comparison, the influence of the Southern Oscillation Index differs from north to south, where it is correlated quite highly with rainfall in Queensland, but is not correlated at all with rainfall in Victoria.

56. For discards, logbook data was used. However with the implementation of e-monitoring, the amount of discards being reported in logbooks is expected to increase and this may have a more significant impact on the CPUE standardisations in future years. Currently there is great variability in the discards across sets and the relative level of predation is largely unknown as heads of fish are not commonly reported in logbooks as "discards". However, industry members indicated that in reality, the level of predation is much higher. The level of predation will need to be reviewed for future analyses once logbook data becomes more consistent with e-monitoring.

57. Industry members also highlighted to TTRAG members that predation is not constant; rather it is largely regional and potentially seasonal. Predation on catch from Whales has been more noticeable in recent years and some operators avoid fishing in certain areas where predation is known to be high. In this way, accurate predation rates are likely to have increased influence on the CPUE standardisations.

58. Industry members further informed TTRAG that the definition of discards is questionable and requested that this be made clear by AFMA and included in the management arrangements booklet. The general rule for SBT is that anything caught that is not fit for human consumption is not decremented from quota holdings. Often skippers do not record fish heads as discards, while observers do.

ACTION: AFMA to include the classification of "discard" in the fishery management arrangements booklet and clarify the requirements for reporting discards.

59. TTRAG continued to discuss the CPUE standardisations on a per species basis.

Yellowfin Tuna

60. TTRAG noted that the small-size CPUE trend for Yellowfin Tuna is increasing. There appeared to be some influence from hooks per float and bait type, but there is a concurrent regionalisation/area effect. Live bait for Yellowfin Tuna generally gives the highest catch rates and this was confirmed by industry members. Bubble length and mainline length also displayed some influence.

61. An industry observer stated that often a proportion of the hooks set by operators will have a higher catch rate (on a per shot basis), as lines drift into areas where catchability is increased. An example of this is when longlines are set around eddies and parts of eddies. It was further suggested by the industry observer that the CPUE may also be influenced when there is a small number of boats catching a large percentage of a particular species quota, but only a small

number of the hooks set are productive. The industry members that operate in this way are referred to as "highliners".

62. Overall, Yellowfin Tuna is looking positive and the standardisation appears to be reflective of the current trends.

Bigeye Tuna

63. The catches of Bigeye Tuna have increased marginally over recent years. The small-size class is trending above the long-term average, the prime and large-size classes are currently below the long-term average. This could be reflective of a cyclic trend however, and it is possible to see the movement of cohorts through the size classes. More generally, larger catches of Bigeye Tuna occur with greater use of light sticks and moonphase appears to have a large influence on the CPUE for Bigeye Tuna.

64. TTRAG noted that overall, the CPUE for Bigeye Tuna is reasonably positive.

Albacore Tuna

65. The Albacore Tuna CPUE data also did not raise any concern from TTRAG members and the trend is currently directly following the long-term average.

Broadbill Swordfish

66. The size classes for Swordfish displayed a slight increase in the proportion of small and large fish, while the prime-size fish was on track with the 5-year trend and remaining stable. Light sticks had a positive influence on CPUE as did shallow sets. Conversely, the great the number of hooks per kilometre, the less fish caught. This means that operators need to put twice the number of hooks in the water to catch the same number of fish, therefore mainline length has an influence on Swordfish CPUE. Moonphase also displayed a significant influence on CPUE, while SOI and SST had little effect.

67. Overall, the CPUE for Broadbill Swordfish was positive and TTRAG members did not raise any concerns.

Striped Marlin

68. There has been a long term decline in the catch of Striped Marlin; however, this mimics the decline in effort. The size class data displayed relatively stable trends except for a noticeable increase in the small-size CPUE. It is possible that this is a cyclic trend occurring over a 30-year period.

69. The CPUE standardisation for Striped Marlin was also considered generally positive and no TTRAG members raised any concerns.

70. In regard to the Western Tuna and Billfish Fishery, TTRAG members did not raise any concerns relating to the current and ongoing management of the quota species.

3.3 ATBF Harvest Strategy Framework

71. The AFMA member summarised the updated ATBF Harvest Strategy Framework document with the incorporated TTRAG member comments from the last meeting. The current framework is now as follows:

HCR A = full quantitative stock assessment

HCR B = standardised CPUE analysis (including the abundance and proportion of the different size classes)

HCR C = standardised CPUE analysis (without the abundance and proportion of the different size classes)

HCR D = an ERA-type (SAFE) process consisting of indicators and reference points

72. The previous "HCR C (alternate)" was incorporated into a set of "selection criteria" rather being a stand-alone rule.

73. TTRAG noted that if this framework was to apply to all fisheries, certain ones such as the SESSF would not conform to HCR A. As long as the data-poor rule (HCR D) is appropriate however, then this should be reasonable.

74. Concern was raised by TTRAG scientific members regarding HCR C specifically. This rule is really a monitoring tool or a prompt for further consideration or investigation of the data for a certain species. In this way, members did not think that the name "harvest control rule" was appropriate. It was agreed that this rule should be renamed "Monitoring Level".

75. Industry members pointed out that byproduct species are unlike target species in that the byproduct species caught is related to the area/location fished. In this way, spatial and temporal considerations should be included in the framework; however, these considerations are accounted for in the CPUE standardisations.

76. The AFMA member stated that these further comments from TTRAG would be incorporated into the framework document out-of-session and distributed again to members for review. It is intended that this ATBF Harvest Strategy Framework document will be finalised and submitted to the next TTMAC meeting for consideration.

4 Research

The following members declared their interest under the research agenda item:

Dr Cathy Dichmont

Dr Rich Hillary

Dr Julian Pepperell

Dr Robert Campbell

Mr Steve Auld

In line with the requirements as a RAG scientific member who has declared interests under an agenda item, Dr Dichmont left the room. The remaining members of TTRAG agreed that Dr Dichmont should be allowed to return for all discussions and recommendations made under Agenda item 4.

In line with the requirements as a RAG scientific member who has declared interests under an agenda item, Dr Hillary left the room. The remaining members of TTRAG agreed that Dr Hillary should be allowed to return for all discussions and recommendations made under Agenda item 4.

In line with the requirements as a RAG scientific member who has declared interests under an agenda item, Dr Pepperell left the room. The remaining members of TTRAG agreed that Dr Pepperell should be allowed to return for all discussions and recommendations made under Agenda item 4.

In line with the requirements as a RAG scientific member who has declared interests under an agenda item, Dr Campbell left the room. The remaining members of TTRAG agreed that Dr Campbell should be allowed to return for all discussions and recommendations made under Agenda item 4.

In line with the requirements as the RAG AFMA member who has declared interests under an agenda item, Mr Auld left the room. The remaining members of TTRAG agreed that Mr Auld should be allowed to return for all discussions and recommendations made under Agenda item 4.

4.1 Status of tuna and billfish research projects

77. TTRAG discussed the current research projects relating to the ETBF and WTBF. Dr Robert Campbell stated that there were no new updates to his project; *"Data management, provision of fishery indicators and implementation of the harvest strategies for Australia's tropical tuna fisheries"*. The information and analyses provided earlier on the fisheries data summaries and CPUE standardisations are an outcome of this project.

78. For the *"Eastern Tuna and Billfish Fishery size monitoring program 2013-2015"*, funding has been approved for a further 3 years; 1 July 2015 – 30 June 2018. The program was also amended and funded to include the WTBF. The final report from the 2013-2015 period was due on 30 June 2015 and this will be distributed to TTRAG when available.

79. In relation to the MSE project, TTRAG noted the summary provided by Dr Rich Hillary. Industry members reaffirmed their concern that the Harvest Strategy should not be run for Swordfish if the international effort increases. All TTRAG members agreed with this concern, however, Australia still takes a large proportion of the overall catch of Swordfish, of the south-western Swordfish stock, in the Western and Central Pacific Ocean. For the moment, the application of the harvest strategy for Swordfish in the ETBF continues to be appropriate. Unfortunately, the MSE indicated that it is very difficult to identify the catch level at which the harvest strategy will become ineffective for Swordfish. The Swordfish catch in Region 5 has actually been relatively constant over the last 10 years. Australia takes approximately 64% of the catch, but if this drops to 50% then the appropriateness of the harvest strategy will be reviewed again. Over the past few years, the TACC for Swordfish has been effectively "fully fished", indicating that the current management arrangements for Swordfish continue to be appropriate.

80. It was further noted by TTRAG that the MSE project is complete and the report provided to TTRAG is still in draft form. However, work is continuing and both the domestic and international catches of Swordfish are being monitored. A large amount of work has been done regarding the use of the harvest strategy with all the quota species and TTRAG should have confidence in this.

81. Regarding the *"Determination of Swordfish growth and maturity"* project being undertaken by CSIRO, TTRAG noted that the preliminary work has been completed, but there is still 6-9 months of work to be done before the project is completed. The current information available indicated that there were several methodological differences between the Hawaiian and Australian growth studies, which may have accounted for the differences in the results.

82. For Dr Robert Campbell's project; *"Developing innovative approaches to improve CPUE standardisation for Australia's multi-species pelagic longline fisheries"*, a milestone report has been has been provided to TTRAG. The project began in July 2014 and a multi-species workshop was also held at CSIRO in Hobart that month. There is a focus on how to differentiate between fishing trips that target certain species, it is not as simple as recording what is being targeted on each trip. Circumstances may change during a trip that affects the species targeted or several species may be targeted in a single trip. The time of year/season and location can also affect the species being targeted, so it is quite a complex issue. There is still another year to go for this project, but some results should be available for consideration at the March 2016 TTRAG meeting.

4.2 Research update

83. The AFMA member summarised the timetable for research. An Annual Research Plan is required to be developed each year by the RAG and this was completed for the ETBF and WTBF at the March 2015 meeting. TTRAG members noted that one of the included priorities required some re-wording to more specifically state the information required and the AFMA member and Dr Cathy Dichmont (scientific member) agreed to complete this out of session. The updated priority/Annual Research Plan will be distributed to TTRAG members for comment.

84. TTRAG also noted that AFMA has approved funding for a preliminary project; *"Determination of the stock structure of three tropical tuna species across the western Pacific Ocean at scales of relevance to the ETBF: a scoping study"*. This study will be undertaken by Dr Karen Evans, CSIRO, and results should be available later in 2015. A full study is expected to be undertaken in July 2016.

5 RAG workplan

No pecuniary interests were declared under this agenda item.

5.1 2016/17 RBCC and TACC setting process/timetable

85. TTRAG members noted that the RBCC and TACC setting process for 2016/17 is the same as previous years. The current meeting has reviewed the CPUE standardisations and the RBCCs and RAG advice for each of the five quota species will be detailed at the following TTRAG meeting. The RAG advice document will then be provided to the TTMAC and the AFMA Commission for consideration when setting the TACCs. The TTMAC will hold a meeting in late October or early November. In late November/early December, the Annual meeting of the WCPFC will be held and any outcomes from this meeting will also be provided to the AFMA Commission to be considered when setting the TACCs. The AFMA Commission will determine the TACCs for Albacore Tuna, Bigeye Tuna, Yellowfin Tuna, Broadbill Swordfish and Striped Marlin out-of-session in early January 2016.

86. TTRAG further noted that TTMAC membership was renewed as of 1 July 2015 and there were several changes to the membership. The new TTMAC is comprised of a Chair, an AFMA member, four industry members and two industry invited participants, an environment/conservation member, a scientific member (also involved with TTRAG), a recreational/charter fishing member and a recreational/charter fishing invited participant.

5.2 Standard agenda for RAG meetings

87. The AFMA member introduced this agenda item and explained that having a standard outline for an agenda for RAG meetings would help to formalise discussion and ensure that all issues are covered at the right meetings throughout the year.

88. TTRAG agreed on the following topics to be included as standard items on the agenda for each meeting during the year:

March:

- Outcomes from TTMAC/AFMA Commission meetings
- Annual research plan (key research projects and any relevant presentations)
- Review of bycatch species
- Review of monitoring (summaries of e-monitoring/observer data collected should also be distributed to the wider industry)
- Review of the harvest strategy
- Any new issues relevant to the fisheries

June/July:

- Fisheries data summaries
- CPUE standardisations review
- Review of harvest strategy
- RBCC and TACC setting process/timetable

September/October:

- RAG advice to the MAC and AFMA Commission
- Recommended Biological Catches
- Update from WCPFC Scientific Committee

89. TTRAG noted that these standard agendas can still be adjusted according to need/timing as necessary before each meeting, but they are intended as a general guide for each meeting.

6 Other business

No pecuniary interests were declared under this agenda item.

90. The AFMA member informed TTRAG that a RAG self-assessment is now required to be completed each by members each year. Members were given a questionnaire and a summary of the results is included at **Attachment B**.

91. Dr Robert Campbell informed TTRAG members that an information paper submitted to the recent SC11 meeting (and posted on the WCPFC Scientific Committee website) reports the results of a study which found that Yellowfin Tuna caught around the Philippines are genetically distinct from Yellowfin Tuna caught within the Bismark Sea. If substantiated, this would indicate evidence for regional stock structure of Yellowfin Tuna within the WCPO.

92. TTRAG members noted that in general, the TACCs for each quota species is never completely caught by industry. The main reason for this is that several people hold on to their quota every year and never actually catch it or lease it out. This can often also depend on economics and the market trends. In this regard, AFMA considers the TACC to be fully caught when catches reach 90%. The undercatch and overcatch provisions for the fishery also affect the percentage of the TACC caught.

93. An industry member queried the regulations regarding processing fish at sea. Currently this is not permitted, but with the implementation of e-monitoring this rule could be changed. The AFMA member stated that he will talk to AFMA compliance and investigate the possibility of getting this rule changed. Removing the ban on processing fish at sea will significantly reduce freight costs for industry.

94. Dr Julian Pepperell stated that he has a PhD student currently looking at genetics of Black Marlin and is interested in the ETBF and possibly attending a TTRAG meeting. TTRAG agreed that he would be very welcome to attend a meeting in Mooloolaba and it would be a good experience for him.

7 Date and venue for next meeting

95. TTRAG members agreed to tentatively hold the next TTRAG meeting on 22-23 October in Mooloolaba.

The TTRAG Chair closed the meeting.

Attachment A

Tropical Tuna and Billfish Fisheries Resource Assessment Group (TTRAG) 12

Venue – The Yacht Club, Mooloolaba

Thursday 23 – Friday 24 June 2015

Commencing at 8:30am

DRAFT AGENDA

1. Preliminaries

1.1. Welcome and apologies
1.2. Pecuniary interest declarations
1.3. Adoption of agenda
1.4. Acceptance of minutes
1.5. Actions arising/out-of-session developments

2. Update of key fishery events

2.1. Current catches and effort in the domestic fishery – verbal updates since the last TTRAG Meeting (March 2015) from industry, recreational fishing members and scientists.
2.2. MAC/AFMA Commission outcomes
2.3. CSIRO workshop outcomes
2.4. E-monitoring

3. Harvest strategy

3.1. Fisheries Data Summaries
3.2. CPUE Standardisations
3.3. ATBF Harvest Strategy Framework

4. Research

4.1. Status of tuna and billfish research projects
4.2. Research Update

5. RAG Workplan

5.1 2016/17 RBCC and TACC setting process/timetable
5.2 Standard agenda for RAG meetings

6. Other Business

7. Date and venue for next meeting

Attachment B

Resource Assessment Group
Self-assessment questionnaire

Summary of responses

RAGs are to conduct a self-assessment of their performance at least once every year against the following performance indicators set by AFMA and report the outcome to the AFMA Commission. TTRAG completed the following assessment in July 2015.

Performance Indicator:	**Assessment**
(1) The RAG's performance as a forum for the discussion of scientific matters relevant to the management of Commonwealth fisheries. **Rating scale**: 1. Unsatisfactory; 2. needs improvement; 3. satisfactory; 4. well balanced; 5. outstanding.	**Average rating**: 4 Rating range: Well-balanced - Outstanding
(2) Standard of liaison by the RAG with the MAC and AFMA staff to ensure that the range of scientific issues is given proper attention. **Rating scale**: 1. Inadequate; 2. links need to be improved; 3. effective; 4. liaison is effective in both directions; 5. outstanding.	**Average rating**: 3 Rating range: Links need to be improved – Liaison is effective in both directions.
(3) Quality of meeting papers. **Rating scale**: 1. Sub-standard; 2. contain sufficient information but could be better; 3. satisfactory; 4. provide balanced and easy to understand account of most issues; 5. concise, well written and comprehensive.	**Average rating**: 4 Rating range: Satisfactory – Concise, well written and comprehensive.
(4) Quality of Chair's performance. **Rating scale**: 1. Inadequate and could prejudice outcomes; 2. needs improvement; 3. effective; 4. effective and facilitates superior discussion; 5. outstanding (fair and unbiased).	**Average rating**: 3 Rating range: Needs improvement – Outstanding (fair and unbiased)
(5) Quality of other RAG Member's performances. **Rating scale**: 1. Ineffective; 2. unsatisfactory in one or two areas; 3. effective; 4. effective with most RAG advice consistent with AFMA's obligations; 5. highly effective.	**Average rating**: 4 Rating range: Effective – Highly effective.

Performance Indicator:	Assessment
(6) Quality of RAG Executive Officer's support services. **Rating scale**: 1. Ineffective; 2. unsatisfactory in one or two areas; 3. effective; 4. effective and responsive to needs of RAG and Members; 5. highly effective.	**Average rating**: 4 Rating range: Effective and responsive to needs of RAG and members – Highly effective.
(7) Level of confidence that the RAG's views and recommendations are conveyed effectively to the MAC and the AFMA Commission. **Rating scale**: 1. Inadequate with insufficient clarity; 2. room for improvement in regard to difficult issues; 3. effective; 4. effective and timely in most cases; 5. highly effective.	**Average rating**: 5 Rating range: Effective and timely in most cases – Highly effective.
(8) Rating the dynamics of the RAG when in session over the last year. **Rating scale**: 1. Dysfunctional; 2. adversarial along sectoral lines; 3. reasonably effective; 4. effective with most issues being resolved by weight of argument; 5. highly effective.	**Average rating**: 4 Rating range: Effective with most issues being resolved by weight of argument – Highly effective.