SCIENTIFIC COMMITTEE
TWELFTH REGULAR SESSION

Bali, Indonesia
3-11 August 2016

First Meeting of the FAD Management Options – Intersessional Working Group Summary Report

SC12-WCPFC12-03
(WCPFC12-2015-22_Rev2)

The Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean

First Meeting of the FAD Management Options – Intersessional Working Group
Bali, Indonesia
27 to 28 November 2015

SUMMARY REPORT_as at 22 December 2015 (WCPFC12-2015-22_rev2)[1]

[1] Rev 2 issued 22 December 2015, is a clean version of rev1 that accepts all track changes.

AGENDA ITEM 1 - WELCOME AND OPENING

1.1 Opening

1. The FAD Management Options – Intersessional Working Group (FADMgmtOptions-IWG) Chair, Brian Kumasi (PNG) welcomed participants to the first meeting of the working group, noting that the large number of participants at the meeting reflected significant interest in the FADs issue. Tonga led the group in a prayer.

2. The WCPFC Executive Director, Feleti Teo, OBE joined the Chair in welcoming participants and made some opening remarks (**Attachment A**).

3. The Chair commented that almost 10 years ago WCPFC started looking at the effects of FADs through the regional tuna tagging program, and the Commission was still working on the topic. The work of the FADMgmtOptions-IWG is becoming increasingly important within the WCPFC – especially in the context of awareness of FAD management having grown in the public consciousness through social media and civil society groups. The Chair pointed out that the Commission has not yet taken the steps required to address the issue in a coordinated way and the issue would be an important one for the Commission to work through over the next couple of years. The FADMgmtOptions-IWG should provide guidance to the Commission to come up with an effective management regime for FADs.

4. The following members, cooperating non-members and participating territories (CCMs) attended the FADMgmtOptions-IWG: American Samoa, Australia, China, El Salvador, European Union, Federated States of Micronesia, Fiji, France, Indonesia, Japan, Kiribati, Korea, Republic of the Marshall Islands, Nauru, New Zealand, Papua New Guinea, Philippines, Samoa, Solomon Islands, Chinese Taipei, Tokelau, Tonga, Tuvalu, United States of America, Vanuatu,

5. Intergovernmental organisations Pacific Islands Forum Fisheries Agency (FFA), the Parties to the Nauru Agreement (PNA), and the Secretariat of the Pacific Community (SPC) attended.

6. Observers representing Conservation International, Greenpeace, the International Seafood Sustainability Foundation (ISSF), Masyarakat Dan Perkanan Indonesia (MDPI), Marine Stewardship Council, The Pew Charitable Trusts and WWF also attended. The list of participants can be found at **Attachment B**.

1.2 Adoption of agenda

7. The FADMgmtOptions-IWG briefly discussed a proposed change from the original posted agenda as item 3.4 – data standards was a significant piece of work in its own right. This became agenda item 5 – Review data standards in the revised agenda, which was subsequently adopted (WCPFC-FADMgmtOptionsIWG01-01_rev1). The Agenda as adopted is provide in **Attachment C**.

1.3 Meeting arrangements

8. The Compliance Manager, Dr Lara Manarangi-Trott, advised on the WCPFC Secretariat staff supporting the meeting: the Finance Manager, Aaron Nighswander, the Science Manager, SungKwon Soh, the new Legal Advisor, Penelope Ridings, the IT Manager, Sam Taufau, the ROP coordinator, Karl Staisch, and Lucille Martinez and Arlene Takesy providing registration and administrative assistance. Staff from the Indonesian Ministry of Marine Affairs and Fisheries were also generously assisting with administrative arrangements, and the meeting would be rapporteured by Dr Jane Broweleit. The Compliance Manager explained arrangements for internet, meeting rooms and breaks.

AGENDA ITEM 2 - MEETING OBJECTIVES

2.1 Review Terms of Reference and intersessional activities

9. At WCPFC11, the Commission agreed to form a FAD Management Options – Intersessional Working Group to review reference papers on FADs as well as relevant information and advice from SC and TCC. This working group would provide recommendations on a variety of FAD-related issues including collection of additional data on FADs and their use in WCPO fisheries, FAD identification and use of electronic signatures, FAD monitoring, tracking and control and FAD management options, and advise on options for FAD marking and monitoring for WCPO-wide application. The Terms of Reference is WCPFC11 Summary Report: Attachment E.

2.2 Agree on meeting objectives

10. The Chair noted the work that had been done by the working group since its establishment, as well as feedback the Chair had received around a possible structure for the discussions. The Chair noted that the business of the working group had predominantly been conducted by electronic means this year. In March 2015, a web page for the FADMgmtOptions-IWG was made available on the Commission website in order to gather available information. The Chair noted that it had been clear at SC11 that a face-to-face meeting would better advance the group's work. With funding from Australia through the FFA, the Chair attended the Majuro workshop on options to help improve WCPFC bigeye conservation and management hosted by the Western Pacific Regional Fishery Management Council and the Marshall Islands Marine Resource Authority in August 2015. A discussion paper was circulated after the Majuro workshop, which also called for a formal meeting of the FADMgmtOptions-IWG. The Chair received two responses from CCMs on the discussion paper and three from observers, and these had been taken on board. The purpose of the Chair's paper and the formal meeting was for the working group to consider what it wanted to achieve in terms of a Commission process, and a system the group was comfortable putting forward around marking and identification. The Majuro workshop made it clear that WCPFC did not have a research plan for FAD work. Work is being done on FAD data, but bycatch mitigation and FAD design are generally taken up by interested members. Additionally, the terms of reference for the FADMgmtOptions-IWG is ambiguous about what additional data is required to be collected.

11. The Chair suggested that research priorities should be determined as a priority by the working group. Regarding FAD marking and identification, the Chair commented that two proposals had been put forward to past Commission meetings that the working group could consider, and noted WCPFC discussions about a FAD logbook and electronic marking and tracking of FADs, and the new IATTC measure relating to physical marking of FADs. Regarding the FADMgmtOptions-IWG meeting and future work, the Chair expressed his hope that the group could agree and recommend to the Commission that there needs to be a research plan for FADs. The Chair asked the working group to determine the skeleton of a research plan and a harmonised system for FAD marking and identification which parties would be comfortable using, for formal submission to SC12 and TCC12 and for WCPFC13 to adopt. The Chair asked that the FADMgmtOptions-IWG also look at data standards, noting that any adopted system needed to be agreeable by all parties and the FAD marking data fields to be collected needed to be developed as standards for cross-platform implementation. The Chair noted his expectation that work on item d "FAD Management Options" from the Terms of Reference would be held at a later time, and was expected to be informed by the priority tasks for this meeting.

12. The meeting concurred with the suggestions made by the Chair and participants agreed that the objectives of this meeting was to develop recommendations on:

i. Research Plan on FADs;
ii. Marking and Monitoring of FADs; and

iii. Data Standards.

AGENDA ITEM 3 - DEVELOP RESEARCH PLAN ON FADS

3.1 Key research priorities

SPC-OFC

13. Dr G. Pilling (SPC-OFC) presented a summary of ideas for a research plan on FAD impacts, FAD management and aims to develop a scientific and practical understanding of the dynamics and behaviour of the system in order to improve stock assessments, reduce FAD impacts on bigeye tuna, minimise reductions in catch of yellowfin and skipjack tunas and reduce unwanted bycatch. Pilling noted activities taking place in this area already including a FAD tracking trial by the PNA in 2016 and EU funded research focusing on some of these areas. Pilling spoke to a number of areas of possible FAD research:

- Area 1 – FAD design, particularly tangling/non-entangling subsurface structures and length of subsurface structures. This would look at what was going on underneath FADs to investigate the impact of those structures on fishing and any differential effect on species catches. It may require FADs of specific designs to be deployed and was related to studies planned under Phase 2 of the EU bigeye mitigation project. Critical questions included whether certain designs differentially caught bigeye and might result in regulations aiming for bigeye tuna-friendly FADs.

- Area 2 – Tuna behaviour, gathering information on bigeye, skipjack, yellowfin vertical behaviour in relation to drifting FADs. This work needs to focus on the western Pacific, bigeye tuna/skipjack/yellowfin tuna archival tagging on drifting FADs/TAO buoys/acoustic FADs. This work would inform whether net depth changes can be effective in differentially reducing bigeye tuna catch.

- Area 3 – bigeye tuna hotspots. Both SC and the Majuro workshop raised the issue of why a few vessels have a relatively high proportion of bigeye tuna in their catch. This work would focus on what they were doing differently and would look at purse-seine logsheet data in more detail to indicate geographic hotspots or operational methods that result in high bigeye tuna catches.

- Area 4 – acoustic-equipped FADs. This would focus on the question of whether acoustically-equipped drifting FADs could provide useful fishery-independent information on tuna abundance in near real time. This might require a specific research project, with drifting FADs and appropriate equipment deployed and monitored over time by scientists (potentially expensive but allowing control over the FAD design and instrumentation). A focus would be information on how long it takes to build up a fishable biomass underneath the FAD, and whether there was evidence of FADs 'competing' for fish (in combination with information on FAD density).

- Area 5 – fleet behaviour. This would ask how developing FAD technology has affected fleet behaviour, whether effective fishing effort has increased due to the deployment of more advanced FAD designs and equipment (effort creep) and whether it can be quantified. Initial investigations may identify whether changes over time can be identified from existing information, or whether a longer-term study was required.

14. In response to Greenpeace's query about whether the research could answer the question of carrying capacity – how many FADs could be deployed in the Pacific – the Chair asked to defer management options discussions until the data was collected to enable a proper assessment of options.

15. One CCM suggested other issues for consideration for the research plan under Area 2 – tuna behaviour, suggesting that other species including sharks should also be considered in the research plan.

16. It was suggested that approaches to improve species discrimination with acoustic information should be included in the research plan. Industry expressed interest in research on the target strength of individual tuna species to assist with discrimination between tuna and bait. SPC agreed that species target strength and the need for improved acoustic discrimination were key areas for further research. The Chair noted presentations by Marine Instruments from the Majuro workshop had looked at the issue of target strength. The Chair commented that there was exciting potential for such work for estimating biomass on a FAD but it did depend on the position of the FAD and the angle of the sonar.

17. In response to the Pew Charitable Trusts suggestion that the research plan look at the relationship between FAD catch rates and different zones in the WCPO, SPC noted that this could be included in the bigeye tuna hotspots analysis proposed. SPC further noted that the overall number of sets on FADs in the tropical WCPO has levelled out but the catch has not. FAD density was a difficult issue to examine, as logsheets and observers focused upon FADs that were set upon. However, SPC noted that the PNA FAD tracking work which was starting next year would help to provide information on this issue. The Chair commented that FAD density would need to be considered when looking at the hotspots, as well as bigeye tuna catch in relation to the size of the overall catch, and noted that further east larger bigeye tuna are caught and in higher densities.

18. USA commented that it was important to identify the research questions that needed to be answered to address specific management needs, and to consider applying a cost-benefit analysis to the research priorities which related to what the Commission would get out of this research. Some research was straightforward, for example there was existing data available regarding hotspots, but the working group should consult with the scientists to discuss what specific research will materially reduce the uncertainties in the stock assessment models and how they are used. In relation to non-entangling or environmentally safe FADs, USA noted that regulators would require hard science in order to prohibit some types of FADs.

19. ISSF commented that it had been advocating for some time that WCPFC adopt reporting requirements for vessel operators, to determine the number of FADs used. If such a requirement was in place data would be available, and WCPFC would be able to see the number of FADs changing over time.

20. Pew and WWF informed the working group that they had submitted an information paper to FADMgmtOptions-IWG webpage and noted that working group had arisen from the need to address bigeye mortality. These organisations agreed that the research to be done should be prioritised (WCPFC-2015-FADMgmtOptions-IWG01-OP01).

21. PNA members stated that they were implementing a requirement that vessels wanting to fish in PNA waters allow their FADs to be tracked electronically, for data collection and compliance purposes. It was suggested that the research plan should include an assessment of how FAD research would feed into WCPFC compliance processes. A number of Pacific Island governments deploy inshore FADs for use by artisanal and local fishermen and typically anchored within 12nm of shore where industrial purse-seine vessels were not allowed to operate, and it was suggested that the research plan extend to anchored FADs.

22. The Chair suggested that the member liaise directly with SPC as an SPC member country on discussions about members' inshore areas, separately from the working group and noted two key themes from the discussions which would be captured during the research plan's drafting: the need to prioritise and discern what is immediately workable to inform the assessment, and a need to focus on the management objective behind the research area.

3.2 Review current research activities and data collection

EU FAD Research

23. The EU presented some current research relating to FADs, including: non-target species (by-catch reduction, development of biodegradable and non-entangling FADs acoustic telemetry; small size target species reduction; post-release survival (whale and silky sharks); FAD monitoring and management, including evaluating the potential of FADs as scientific platforms, and ways to incorporate additional sensors; fishing effort, strategies and technologies to improve CPUE; FAD densities and trajectories; new indices of abundance; FAD fishery exploitation effects on habitat, biodiversity, ecology, biology, behaviour and movement (including ecological trap). Cooperation with industry was underway on non-entangling FADs and good practise release operations. EU informed the working group about the EU-funded CECOFAD project, whose aims are to define a unit of fishing effort for purse-seiners using FADs that accounts for different factors influencing catchability, to standardize CPUE series of the EU purse seine fleet for juveniles and adults of the three tropical tuna species and to provide information on catch composition around FADs and estimate impacts on other marine organisms (e.g. by-catch of sharks, rays, turtles). EU work in the IATTC area includes a July 2015 – August 2016 project supporting research on the effectiveness of various materials and designs of non-entangling and biodegradable FADs and an October 2015 – August 2017 WCPFC project to conduct analytical work integrating a range of purse-seine data; an 18 month science-industry collaboration (pending) to trial the performance of non-entangling shallow draft drifting FADs to minimise interactions with bigeye tuna; and an 18 month project estimating the post-release survival rates of shark species and rays captured by purse-seine and longline fisheries in the WCPO.

24. The FADMgmtOptions-IWG engaged in discussions around FADs with shallow streamers and purse-seine net depth, with one industry representative noting that nets with a set depth always go to that set depth, so it would be difficult for industry if the Commission were to limit how deep nets are set. It was noted that, based on previous experience, it was possible that shallow FADs were less successful at attracting bigeye tuna.

25. The USA noted that the FAD design research links to work being done in the eastern Pacific Ocean (EPO) and a project which would build on information available through IATTC that SPC might progress. A concern was expressed about any delay in the SPC project in coming up with designs for non-entangling FADs. This CCM noted that one of the objectives of the EU-supported project is to clarify the important issue of the ways FADs affect CPUE, and made a comment that the research on handling techniques for bycatch species has direct relevance to the WCPFC especially with respect to whale sharks.

26. In response to a question from the Chair about FAD density and trajectories showing how the CPUE has changed, the EU clarified that the information shown in the presentation corresponded to precise trajectories. The EU expressed the intention of informing SC on the main outcomes of the research initiatives that are in progress.

27. The EU supported prioritising looking at how to mitigate the impact on bigeye tuna, but noted that FADs impact other species, especially bycatch and certain types of sharks, and non-bigeye tuna FAD

impact research was also important. The EU supported pursuing research around non-entangling and biodegradable FADs and drew the working group's attention to the EU-financed FAD research project CECOFAD, which includes ecosystem impacts. It should be finished shortly with final results being made available. EU provides around USD 1 million a year for projects financed through WCPFC, some of which supports FAD-related research and commented that the research priorities are not set by the EU alone but take into account discussions which take place within the Commission. The EU had set aside €200,000 for bigeye tuna FAD impact mitigation in 2015 and an extra €400,000 for 2016 and will work with SPC to identify valuable projects in which to invest. EU decided, in consultation with SPC, to wait for the result of the ISSF shallow FADs project currently taking place in the Eastern Pacific to see if it was worth replicating in the western and central Pacific.

28. The Chair noted that that there had been tagging work conducted in the Seychelles which looked at silky sharks and rainbow runners and this could be something SPC could pick up in the research plan.

Pew and WWF discussion paper (WCPFC-2015-FADMgmtOptions-IWG01-OP01)

29. On behalf of Pew and WWF, Pew presented a discussion paper assessing various FAD management options' potential effectiveness, drawing from studies submitted to the Commission. These observer organisations assessed that options amending the FAD closures, changing FAD construction and/or deployment, changing purse-seine netting and/or deployment, and species discrimination with advanced buoys all performed poorly in reducing bigeye mortality. They either did not have an effect or the reliability of the evidence did not warrant their implementation – for example because fish continue to aggregate during the closure, vessels were more efficient in fishing on FADs, and total purse-seine closures penalise the free school method without contributing additional conservation benefits. Pew noted that options that performed well were purse-seine bigeye quotas and incentivizing reductions in FAD sets, both of which would require allocation decisions. Pew commented that the discussions on research were productive but the FADMgmtOptions-IWG needed to progress to looking at management options as soon as possible. Pew recently published an updated analysis on the total number of FADs deployed globally: employing a lower bound and a higher bound, for the reference year 2011 it conservatively estimated that 121,000 FADs were deployed in 2013. The update paper, using the reference year of 2013, estimated a 14% increase in the number of FADs deployed annually since 2011.

30. The economic driver for fishing on FADs was noted by an industry representative; especially while the price of skipjack was low there remained an incentive to catch bigeye tuna and yellowfin.

31. Japan asked about how to implement a bigeye tuna quota to the purse-seine sector, noting the challenge of monitoring the amount of catch landed by the fleet.

32. Pew noted that SPC has been improving purse-seine estimation methods and mentioned that spill sampling tracks closely the amount as if all the fish were counted. It would require a spill box to be installed on the vessel, but was a realistic option available now. Pew commented that an overage or buyback system has been discussed in WCPFC in the past.

33. SPC noted that the spill sampling approach is improving catch composition data. This will improve over time with E-reporting and observers submitting reports electronically, but explained that there was a certain level of delay in the process.

34. USA commented that it has spent time and effort looking at quotas and ITQs. There were problems with establishing and allocating quotas and this CCM concluded that while it was theoretically applicable, at this time it would not be operationally viable as it would require near-real time recording of quotas, which is not yet possible in WCPFC.

35. PNA announced that its members plus Tokelau that take part in the Vessel Day Scheme will be introducing differential pricing for FAD and free school sets. It would be a fairly small differential initially increasing over time to provide a sufficient incentive to reduce the use of FADs. Additionally, PNA commented on the working group's discussions of research to mitigate bigeye tuna catches and other bycatch, stressing that the purse-seine fishery was an economically important fishery for PNA member states and they did not want the research program to just look at bycatch impacts but also operational impacts on skipjack with an aim to improving the economic efficiency of that fishery.

36. The Chair noted earlier comments about the pace of the FADMgmtOptions-IWG's work and moving more expeditiously to management options. The Chair suggested that if the meeting produced an agreed position on research for the Commission to take forward, this objective would be assisted.

Conservation International

37. Conservation International brought the working group's attention to work they had recently published on a research agenda to reduce mortality of FAD-related bigeye tuna, addressing Areas 1, 2 and 5. Conservation International explained that the report makes the case that if WCPFC is able to use new technology to significantly reduce the catch of bigeye tuna around FADs, many of the problems facing the Commission will resolve. The Conservation International report covers the possible development of more advanced acoustic technology, where fishers could see FADs and the percentage of bigeye tuna on them more accurately, indicating that they should not fish it. This observer noted FAD-related research taking place, including by ISSF, regarding what might attract or repel yellowfin and bigeye tuna.

3.3 General discussion – Identify data and information gaps to meet key research priorities

38. Discussions on this agenda took place under agenda item 3.4.

3.4 Develop draft research plan

39. The Chair asked that the FADMgmtOptions-IWG discuss key analytical questions for the research plan including specific analyses, explaining that the Secretariat and SPC would meet during the meeting to flesh out those ideas. The Chair noted feedback relating to the research agenda being strongly linked to objectives and sought agreement on a recommendation that the Commission adopt a research plan to look at broad categories including FAD design and tuna behaviour, hotspots, acoustic FAD information, and fleet behaviour, on which specific analysis would be done to inform discussions about FADs and their management. The Secretariat and SPC would be tasked to draft a research plan for SC and TCC's input prior to WCPFC13. A skeleton document would be produced during this meeting which would inform later discussions on management options. The Chair explained that it was not intended to exclude work already underway by other organisations and coastal states, and the FADMgmtOptions-IWG would put forward to the Commission a recommendation that discussions begin on FAD management options next year. There were no objections.

40. A brief discussion took place around the phrase 'net depth' and whether this meant the appendage or the depth of the net. One CCM reiterated that setting lengths for purse-seine nets was not practical as the nets cost USD700,000 each and fish down to a set depth of 200 metres.

41. Referencing Area 3 (bigeye tuna hotspots) of the draft shell document, Japan made a general comment that 9-14 vessels were responsible for 25% of the bigeye purse seine tuna catch in 2010-2013 (Paragraph 468 of the SC11 summary report). The work in the research plan should include analysis of its operation to understand why these vessels caught large amounts of bigeye tuna.

42. One CCM expressed the view that the system should take into account what is in place in coastal states, clarifying that the working group was discussing a research plan and data for use by WCPFC and was not able to dictate how national or regional systems are developed or used by coastal states.

43. On the morning of the second day of the meeting, the Chair circulated a document prepared by the Chair, Vice-Chair, Secretariat and SPC on 'draft consultation document - key elements of a research plan' which drew on the SPC presentation. The Chair asked for participants' general comments on the research plan and priorities before finalising recommendations.

44. Korea noted that its priority was reducing the number of deployed FADs, recognising that FADs diminish resources, including juvenile tunas, and gradually move to other research. This CCM gave higher priority to Areas 1 and 3 because they directly related to temporal and spatial impact and considered that Areas 2, 4 and 5 could be later priorities. On objectives, Korea took the view that the current WCPFC measure should be fully implemented and the socio-economic impact of the FAD reduction should be minimized.

45. Pew supported prioritising two lines of work not currently conducted by other parties: Area 5 – because understanding FAD-related effort creep was critical as WCPFC was an effort-based management regime – and Area 3, because this information could improve stock assessments. Secondary priorities would be research on FAD designs and net settings, noting that others are doing this research.

46. EU considered Areas 1 and 3 to be priorities. Japan's research priorities were Areas 3, 1 and 5, covering bycatch of bigeye tuna, hotspots and improvement of tropical tuna stock assessments. Japan also expressed a view that the main purpose of the research plan should be reduction of the bigeye purse seine catch.

47. The IWG recognized the importance of further research and data collection being undertaken to support/inform further discussions on candidate FAD management options within the WCPFC context.

48. The IWG considered a consultation document containing an outline of a draft research plan on FADs which was developed during the 2016 meeting. The outline contains broad categories including FAD design and tuna behaviour, hotspots, acoustic FAD information, and fleet behaviour on which specific analysis would be done to inform discussions about and the management of FADs. IWG participants could provide any editorial comments on Attachment D to the FADMgmtOptions-IWG Chair, for consideration in a revised document to be presented to WCPFC12.

49. The IWG recommends that the Commission task the Secretariat and Scientific Services Provider to work with the FADMgmtOptions-IWG Chair and Vice-Chair to further develop the draft research plan in 2015, based on Attachment D or its revision. The draft research plan for FADs would be considered a living document and would go to SC and TCC for their input prior to WCPFC13. The draft plan should incorporate some consideration of costs and benefits of various research and data collection activities to assist with informing prioritizing the work. Consideration should also be given within the plan toaddressing both target and non-target species.

AGENDA ITEM 4 - MARKING AND MONITORING OF FADS

4.1 Objectives for Marking and Monitoring of FADs

PNA FAD tracking and management trials

50. M. Brownjohn from the PNA Office presented an overview on the FAD tracking and management trials PNA members were conducting. Brownjohn commented that FADs tend to aggregate smaller, lower value fish which depresses the fishery value and the economics of processing in the region. PNA estimates that the number of FADs is rising but the number of sets remain fairly flat as the number of boats and days are set and limited by the Vessel Day Scheme. The current PNA estimate, based on declarations, is that 80,000 FADs are deployed a year. PNA noted that the 14.8 million square kilometre PNA fishery is a skipjack fishery, with most of the catch taken in-zone, and FADs go wherever the currents send them – once deployed, they can pull fish from the EEZs they pass through, causing potential economic losses even when no sets are made. Brownjohn commented that during FAD closures, monitoring and deployment of FADs still takes place. A lot of bigeye tuna is caught in the WCPFC/EPO border area; bigeye tuna may be more vulnerable in this area. Regarding advances in FAD technology, Brownjohn noted that in the late 1980s and early 1990s, FADs were tracked by VHF radio buoys which had a limited range (around 60 miles), so a boat could only fish a small number of FADs as that was all they could monitor. In the 1990s, technology shifted to satellite-capable buoys which could operate in a much wider spatial area and achieve a high FAD-set CPUE. Technology has now shifted to solar powered sonar-capable FADs and Brownjohn opined that this technology may be negating the impact of conservation measures, especially CMM 2008-01 and CMM 2013-01. PNA has taken initiatives including penalties on sets on FADs and incentives to free school (the MSC certification) but with FAD closures being a crude tool, a better solution was needed. A trial starting on 1 January 2016 will make it mandatory for all FADs in PNA waters to be registered. PNA hopes for recovery and redeployment of FADs to reduce marine debris, and will be running trials on proximity alerts to improve compliance.

USA proposal

51. At the request of the Chair the USA spoke to a proposal which it had put forward to two Commission meetings but which had not been adopted (latest version: WCPFC10-2013-DP05). The proposal contained a number of elements which, if they had been adopted, would have put the Commission in a more solid position today regarding FADs and their impact, key of which were the data collection and analysis elements. The proposal focused on the tropical fishery (20°N-20°S) and only included unanchored FADs. Before the Commission can begin to manage the FADs issue, it needs to have a better handle on the number of FADs deployed and the USA proposed two ways to do this: 1) require vessel operators to use a log book or report to identify the buoy or FAD every time one was retrieved or deployed or 2) create an identification system, depending on the percentage of non-electronically buoyed FADs being used, which is a large unknown. The USA commented that if you accept that all FADs are electronically buoyed, then monitoring electronic identifiers may be all that is required, but if there are significant numbers of non-electronically buoyed FADs they need to be marked to estimate their numbers. USA referred the working group to SC11-2014-ST-IP09, concerning ROP data relating to FAD design, concluding that there is little prospect of effectively determining observer-collected data trends without a unique identifier on each FAD. The USA proposal addressed other issues relating to data collection and, specifically, the need for observer data, and proposed a two pronged approach: vessel operators would be required to work with observers to provide some information (e.g. FAD IDs in cases where observer safety was an issue) and the observer would collect other information, independent of the vessel. During discussions on the proposal at the time, USA noted that this element was found to be problematic, garnering considerable resistance by some CCMs to requiring their fleets to collect FAD data, however, over time this position appears to have softened. The proposal looked at non-entangling FADs and the need for additional research. USA commented that if the solid research supported the use of non-entangling FADs it would support their employment through a WCPFC measure. The USA proposal called for consistency with the IATTC marking scheme for vessels fishing in

the EPO. Lastly, the USA noted that general reporting by the ROP continues to be needed by the Commission today.

52. Japan supported consistency between IATTC's measure and WCPFC.

53. PNA Office commented that its members had looked at the issue of responsibility for collection of data on FADs and the scope of that data collection. PNA Members consider that the FAD data in the ROP Minimum Data Fields is best provided by vessel operators as a flag state responsibility. This includes the data on FAD design and construction, and the data on FAD activities. Observers would continue to have a monitoring role in verifying the FAD data provided by the vessel operator. PNA Members also consider that the requirements for FAD data should be set out in the same way as the other WCPFC data requirements. This means that the standards for the data to be provided should be agreed and clearly specified. Then it will be up to CCMs and fleets to decide how the data will be provided. For PNA fleets there will be the option of providing this data through iFIMS.

54. The US presenter commented that it did not matter which system it used, and recognised that there would be potentially different reporting mechanisms. USA suggested that vessel operators would need to buy-in as having operator data allowed for verification. USA suggested the group consider what information would be collected.

55. PNA Office commented that a next step would be to combine the GEN-5 form fields with the data fields in electronic FAD logbooks. Progress could be made quickly enough for SC and TCC to consider it next year.

56. ISSF was glad that data will become mandatory through either iFIMS or logbooks, and expressed the hope that this would happen soon. ISSF suggested it was important to collect data from the tender vessels as well.

57. Japan noted the reporting requirement on FAD design and construction of FAD to be encountered provokes discussion on practical implementation of the definition of FAD, e.g. in case small debris such as plastic bags is found out in the net during net-howling, is it recorded FAD?.

58. The Chair noted agreement on a way forward regarding monitoring of FADs, and turned to the issue of marking. The Chair commented that satellite buoys may work for one component of the fishery but the working group needed to have a view on physical marking.

59. It was noted that IATTC had recently established a marking system (Resolution C-15-03, Collection and analyses of data on Fish Aggregating Devices, requiring the code to be painted on the upper portion of the attached radio or satellite buoy) but WCPFC had not yet provided direction on the issue.

60. One CCM considered that the proposal could be a pragmatic way forward, by having the electronic code or physically marking the FAD, and referred the group to the Resolution's footnote 1. The measure takes into account instances where there is not a satellite buoy. It was noted that if the group recommended a marking system, a technical discussion would need to take place and the IATTC measure's footnote could provide a baseline.

61. One CCM noted that some coastal states have regulations in place requiring FAD markings and this discussion needed to look to the future and improving FAD identification. It was asked whether a registry of FADs was being considered. There were feasibility issues around physical marking of buoys and FAD attachments and a cost-benefit analysis would be needed.

62. It was noted that IATTC did not agree to a registry or active monitoring and the activities PNA members were implementing was different to a more simplistic of accounting of FADs and a form of reporting.

63. Referring the IATTC's rule (thee code shall be painted on the upper portion of thee attached radio or satellite buoy) Japan commented that technological developments should be taken into consideration when devising a WCPFC rule as radio and satellite buoys become smaller over time.

64. Different to the IATTC area, it was noted that the vast majority of the purse-seine fishing in the WCPO is undertaken in national jurisdictions, making information on FAD fishing relatively more important for the coastal states in the WCPO.

65. A commercial representative from New Zealand commented that FADs in their national waters are marked and such marking was not difficult. This CCM commented that clarification was needed around whether a FAD drifting into an area in which its owner has no access agreement and no fishing days was 'fishing'.

4.2 Roundtable views of Participants – updates on current initiatives being implemented or under development in the region or in other regions

66. Discussions under this agenda item took place under agenda item 4.1.

4.3 Develop outline or key components of a WCPFC scheme

67. Early in the meeting, the Chair asked interested participants to hold discussions in the margins of the working group meeting to draft some language around a marking system for consideration as the basis for a recommendation from the working group. On 28 November 2015, the Chair circulated a document prepared by the Chair, Vice-Chair, Secretariat and SPC on 'elements of a marking and identification system'which included draft Minimum Data Fields for Observer Reporting or FAD Logbook. This information is currently collected through the GEN-5 forms through the ROP. The document also incorporated fields in the IATTC FAD measure. The Chair asked if this document could form the basis for a FAD marking and identification recommendation, noting that this would also be the basis of consultation documentation going forward. There were no objections to this. Participants considered the draft document and provided general comments on the draft FAD marking and monitoring plan which would go to SC12 and TCC12 for their review and comment.

68. A number of views came out of this discussion, including: the document needs to be clear on the purpose of the initiative; administration and business compliance costs need to be identified; the definition of 'FAD' was excessively broad; what FADs should be marked, feasibly, needs to be determined; accessibility, mark-ability and expected benefits need to be determined; defining objectives may go beyond the working group's mandate and a feasibility study should look at the costs of a physical marking system and all elements including tracking.

69. The IWG noted the main recommendation from the SC10 paper (SC10-2014/ST-IP-09 / FADIWG-Ref02) on FAD design which was that "the development of a unique identifier system which is essential to track FADs and derive estimates on FAD effort levels, number of FADs used per boat, effect of "fish aggregation" time over catches, etc."

70. The IWG recognized the importance for further analyses and work on management options for being able to uniquely identify FADs that are deployed in the WCPO tuna fisheries.

71. The IWG considered a document that outlines the elements of a marking and identification system which was developed during the 2015 meeting. IWG participants could provide any editorial comments on Attachment E to the FAD-MgmtOptions-IWG Chair, for consideration in a revised document to be presented to WCPFC12. The Chair confirmed that the document would remain a "living document".

72. The IWG recommended that a consultancy is undertaken early in 2016 to produce a report on options and considerations for Marking and Identification of FADs to be deployed for consideration at SC12 and TCC12. The consultancy should among others take into consideration electronic signature and physical marking aspects from the 2016 PNA trial tracking programme and that used in other tuna RFMOs. The consultancy should also provide advice on the feasibility of options of physical marking of the buoy, physical marking of the buoy and the FAD attachment, and electronic identification - with the costs and benefits of each option. The consultancy should also take into account Attachment E or its revision.

73. The FADMgmtOptions-IWG Chair and Vice-Chair are tasked to work with the Secretariat, interested CCMs and other parties, to develop a draft terms of reference for the consultancy for consideration at FAC9 and WCPFC12. (Attachment F)

AGENDA ITEM 5 - REVIEW DATA STANDARDS FOR PAPER-BASED AND E-FORMS

74. Discussions under this agenda item took place under agenda item 4, with the FADMgmtOptions-IWG asked to consider standards for FAD data.

75. The IWG recommends that vessel operators provide data on FADs covering 2 major areas:

- **a. FAD design and construction of FAD to be deployed or encountered (materials, electronics, size etc.)**
- **b. FAD activity (deploying, retrieving, setting, visiting, loss etc.)**

76. The FAD data fields to be reported by vessel operators should be based on the WCPFC ROP Minimum Standard Data Fields and the data fields (collected by other RFMOs).

77. The IWG recommended that a consultancy is undertaken in early 2016 to produce the draft data fields to be reported by vessel operators for consideration at SC12 and TCC12.

78. Data collected by observers on FADs can be used for verification of FAD activities of vessels.

79. The FAD data should be provided to the Commission via flag State electronically using appropriate systems such as FAD e-logbooks or information systems such as PNA iFIMS etc.

AGENDA ITEM 6 - GENERAL DISCUSSION AND NEXT STEPS

6.1 General discussion on next steps

80. A number of views were expressed during this discussion, including: the terms of reference for the consultancy should be developed in a timely manner and completed as a matter of priority in early

2016, assuming funds are made available, so that a report is available well in advance of SC12; the consultancy should be brought to the attention of the WCPFC Finance and Administration Committee for budgeting; WCPFC did not have a FAD measure to provide a definition for the consultancy, but CMM 2008-01 has a definition which includes any group of objects of any size and CMM 2009-02; a definition could be taken from the USA proposal (DP05); anchored FADs could be included in the definition although the main focus of that proposal is drifting FADs and it could be modified to include anchored FADs; a modification deleting 'whale sharks' and replacing it with 'dead or living animals' should be considered; the consultant needs to answer whether there was any merit to having a FAD marking system and, if yes, what the most efficient way of implementing such a system would be; the consultancy should not detract from the substantive research agenda discussed during the meeting.

81. The FADMgmtOptions-IWG Vice-Chair, temporarily sitting in for the Chair, agreed that objectives would need to be clearly defined and a draft terms of reference scope and costing could be circulated in coming days. The Vice-Chair suggested that absent objections the scoping document would use the USA proposal definition, commenting that when the USA was formulating that definition it had looked at a number of definitions and noted that PNA and various governments have definitions. To address concerns, the draft will seek to be as inclusive as possible. The draft which would be developed before WCPFC12 would not be a fully developed terms of reference document but a one page prospectus describing the project and objectives.

6.2 Notes on linkages to other IWGs and work of other subsidiary bodies

82. The Chair asked the Chairs of other WCPFC bodies for their views and comments.

83. The ERandEMWG Chair, K. Smith (Australia) commented that in general the terms of reference for the ERandEMWG anticipate extra or additional areas for discussion, and noted that the standards approach in that working group has applicability to these discussions. Once the FADMgmtOptions-IWG has further defined the data requirements, the ERandEMWG could assist in the development of data standards.

84. The ROP-IWG Chair, R. Clarke (USA) expected that there would be modifications to the observer's tasks, on top of and potentially modifying the reporting requirements in GEN-5. The ROP-IWG Chair noted that the duties of observers were growing significantly and suggested the FADMgmtOptions-IWG remain cognisant of that and ensure that what observers are asked to collect is something that is really needed, and can be done safely (especially in the case of FADs and buoys). Any data collection from buoys would need to be facilitated cooperatively by the vessel. The ROP-IWG Chair did not think that this work would require significant input by the ROP-IWG; it could probably be done through the Secretariat in consultation with the regional coordinators meeting which typically takes place annually.

6.3 Develop workplan for 2016 (- 2017?)

85. Discussions informing a plan for this work took place under a number of other agenda items. Subsequent to the FADMgmtOptions-IWG, the Secretariat will prepare a draft workplan which summarizes the pieces of work and their timelines for 2016 (**Attachment G**).

6.4 Report to WCPFC12

86. The Chair advised that the meeting report would be prepared quickly and made available once comments on the draft 'elements of a marking and identification system' and draft 'elements of a research plan' consultation document were provided to the Chair or Secretariat by 30 November 2015. Comments

for inclusion in the Chair's draft terms of reference for the engagement of a consultant to conduct the FAD work were required by 2 December 2015, in time to make the WCPFC Finance and Administration Committee aware of recommendations from the FADMgmtOptions-IWG.

AGENDA ITEM 7 - OTHER MATTERS

87. There was no discussion under this agenda item.

AGENDA ITEM 8 - CLOSE

88. The Chair noted that FAD management was an increasingly important priority for the Commission and expressed appreciation that the working group's participants were prepared to take the time to discuss these issues a week in advance of the Commission meeting.

89. On behalf of the Secretariat, the Compliance Manager thanked SPC for its support and the Chair for his leadership of the FADMgmtOptions-IWG over the last twelve months and strong commitment to achieving outcomes from this formal meeting including agreed recommendations for WCPFC12.

90. The Chair thanked the Secretariat, the rapporteur, the PNA and FFA Secretariats and observers that participated in the meeting, and noted that from the outset of the working group's activities observers played an active and important role.

91. The meeting closed at 12:30pm on 28 November 2015.

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ATTACHMENTS

Attachment A.	Opening Remarks by the Executive Director Feleti P Teo
Attachment B.	List of Participants
Attachment C.	Agenda
Attachment D.	Outline of a draft research plan on FADs
Attachment E.	Key elements for Marking and Identification of FADs system
Attachment F.	Draft TOR for consultancy
Attachment G.	Draft Workplan for FADMgmtOptionsIWG in 2016

Attachment A

INTERSESSIONAL WORKING GROUP ON FAD MANAGEMENT OPTIONS
[27 – 28th November, 2015 in Bali, Indonesia]

Opening Remarks by Executive Director Feleti P Teo

Chair, I thank you for availing me this opportunity to make some opening remarks.

I join you in welcoming the participants to Bali and to this meeting of the IWG on FADs Management Options.

This meeting kicks start the series of meeting here in Bali leading up to the 12th annual regular session of the Western and Central Pacific Fisheries Commission.

Chair, I could not help but observe that the regular session of the Commission is still a week away, and I hope delegates do not run out of steam by the time we get to it. So please pace yourself and take time to absorb the sights and sounds of Bali before the main show begins.

Chair, before I proceed further let me acknowledge our gracious host the Government of Indonesia through its officials present today and their efforts in facilitating our arrival in Bali and for the support rendered to the Secretariat for the meetings arrangements.

I also acknowledge the presence and participation of senior officials of member countries and participating territories and cooperating non-members and the Commission observers.

I also acknowledge and commend your good efforts Chair and your Vice Chair; Ray Clarke from the USA for leading the charge in preparations for this meeting.

The bulk of the work of the working group, as per its terms of reference, has been transacted before this meeting. The Secretariat and indeed the Commission is indebted to you Chair, for your leadership and guidance in steering the work of the working group to this stage.

Chair, as you proposed, the work of the working group is in three stages. The first is to consolidate the list of reference papers. The second is the development of a draft consultation document. And thirdly to review progress and decide on next steps.

We have accomplished the first two stages, so our objective for the next two days is to review progress and decide on next steps.

The meeting agenda has identified three key targeted areas to progress the work of the working group, including a research plan on FADs; marking and monitoring of FADs; and data standards.

Chair, the work of this working group is quite important in the Commission overall conservation and management efforts.

Since the introduction of FAD use in the early 1990s, there has been a corresponding expansion of the purse seine fishery, resulting in the predominance of purse seine caught tuna in the WCPO. As we saw, in 2014 the purse seine fishery has grown significantly reaching a record high of 71% of the total WCPO catch.

The use of FADs, however, has also led to significant amount of juvenile yellowfin and bigeye tuna being caught on FAD associated purse seine and ring net sets.

Chair, as we all know the latest scientific advice is that bigeye tuna is in an overfished state and overfishing is occurring. A 36% reduction in fishing mortality from the average levels for 2008 – 2011 would be expected to return fishing mortality to sustainable levels.

In response to the scientific advice, the Commission has recognized that implementation of conservation and management measures to reduce bigeye tuna is among the priority tasks. This is reflected in the Commission agenda and the inclusion of a dedicated agenda on the review of the tropical tuna CMM 2014-01.

And managing the use of floating objects, including FADs, is one of the key components necessary to mitigate the catches of juvenile bigeye and yellowfin.

So the Commission is eagerly awaiting the outcomes of your work and its contribution to the Commission search for meaningful conservation and management measures to address the critical status of the bigeye stock.

Chair, I didn't intend to take up much more of your valuable time, but I felt I need to re-emphasize the importance of your work and the valuable contribution it will make to the Commission's management efforts.

Chair, I wish you and the participants well and my staff as always stand ready to support your work.

I thank you Chair.

Attachment B

Western and Central Pacific Fisheries Commission

LIST OF PARTICIPANTS

CHAIRMAN

Brian Kumasi
Fisheries Manager Tuna
National Fisheries Authority
11 Floor Deloitte Tower, Douglas Street, Port Moresby, Papua New Guinea
+67571868761
bkumasi@fisheries.gov.pg

AUSTRALIA

Trent Timmiss
Senior Manager, Tuna and International Fisheries
Australian Fisheries Management Authority
73 Northbourne Av, Canberra, ACT 2601
+61408286855
trent.timmiss@afma.gov.au

Kerry Smith
Senior Manager
Australian Fisheries Management Authority
c/o PO Box 7051, Canberra BC.
+61 2 6225 5555
kerry.smith@afma.gov.au

CHINA

Xiaojie Dai
Shanghai Ocean University
999 Hucheng Huan Road,201306,Shanghai, CHINA
86-15692165351
xjdai@shou.edu.cn

Davy Chen
Assistant Secretary General
China Overseas Fisheries Association
No.5 Nongzhanguan Nanlu, Chaoyang, B
8610-65850612
1528957706@qq.com

Chen Xuejian
Director of Department of High Seas Fisheries
China Overseas Fisheries Association

Sun Chong
Manager
Zhongyu Global Seafood Corp.
sunchong@cnfc.com.cn

EUROPEAN UNION

Angela Martini
International relations officer
European Commission
B 1049
angela.martini@ec.europa.eu

Josu Santiago
Head of Tuna Reseacrh Area
AZTI
Txatxarramendi ugartea, 48395 Sukarrieta, Spain
+34 664303631
jsantiago@azti.es

Antonio Lizcano
Fisheries Officer
Secretary General for Fisheries
C/ Velazquez, 144, Madrid (Spain)
alizcano@magrama.es

Hilario Murua
Head of Projects
AZTI Tecnalia
Herrera Kaia, Portualde z/g, 20110 Pasaia (Gipuzkoa), Spain
00 34 667174433
hmurua@azti.es

Gorka Merino
Fisheries Scientist
AZTI
Herrera kaia pasealekua z/g, 20110 Pasaia, Gipuzkoa (SPAIN)
gmerino@azti.es

Javier de la Cal
Regional Sales Manager
Satlink S.L.
Avenida de la Industria 53, 28108, Alcobendas (Madrid), Spain
+34672281590
jdc@satlink.es

FEDERATED STATES OF MICRONESIA

Eugene Pangelinan
Executive Director
National Oceanic Resource Management Authority
P.O. Box PS122, Palikir, Pohnpei FM 96941
691-320-2700
eugene.pangelinan@norma.fm

Justino Helgen
VMS/Compliance Manager
NORMA
P.O BOX PS 122 Kolonia,Pohnpei 96941
320-2700/5181
justino.helgen@norma.fm

Limanman Helgenberger
Chief, Management & Development
NORMA
Pohnpei, FSM
691-320-2700
liman.h@norma.fm

FIJI

Aisake Batibasaga
Director of Fisheries
Ministry of Fisheries and Forests
Department of Fisheries, Takayawa Building, Toorak, Suva Fiji
+679 3301611
abatibasaga@gmail.com

FRANCE

Thomas Roche
Policy officer
Ministry of Ecology, Sustainable Developpement and Energy - Directorate for Sea Fisheries and Aquaculture
Tour Sequoia - 92055 La Defense cedex - France
+33140819751
thomas.roche@developpement-durable.gouv.fr

INDONESIA

Fayakun Satria
JL. Cilalawi 1 Jatiluhur Purwakarta Jawa Barat
(+62) 2642318361
fsatria70@mail.com / fsatria_2@yahoo.com

Anung Widodo
Senior Researcher on Research Center For Fisheries Management and Conservation
Ministry of Marine Affairs and Fisheries
Jln. Pasir Putih I Ancol Timur, Jakarta Utara 14430
+62 21 6414686
anungwd@yahoo.co.id

Yayan Hernuryadin
Assistant Deputy Director for Fishery Resources Management in Indonesia EEZ and High Seas
Ministry of Marine Affairs and Fisheries
Jln. Medan Merdeka Timur No. 16, Gedung Mina Bahari II, Lantai 10 Jakarta Pusat, 10110 Indonesia
+62 21 3519070 ext. 1002
boyan_nuryadin@yahoo.coid
/sdi.djpt@yahoo.com

Novia Tri rahmawati
Officer on Sub-Directorate of Fishery Resources Management in Indonesia EEZ and High Seas
Ministry of Marine Affairs and Fisheries
Jln. Medan Merdeka Timur No. 16, Gedung Mina Bahari II, Lantai 10 Jakarta Pusat, 10110 Indonesia
+62 21 3519070 ext. 1002
sdi.djpt@yahoo.com

JAPAN

Takashi Koya
Counsellor
Fisheries Agency Government of JAPAN
81-3-3502-8459
takashi_koya@nm.maff.go.jp

Mako Iioka
Fisheries Agency Government of JAPAN
1-2-1, Kasumigaseki, Chiyoda-ku, Tokyo
81-3-3502-8459
mako_iioka@nm.maff.go.jp

Akihito Fukuyama
General Manager
Japan Far Seas Purse Seine Fishing Association
海外まき網漁業協会
14-10 Ginza 1Chome,
Chuo-ku, Tokyo 104-0061, JAPAN
〒104-0061　東京都中央区
銀座　1丁目　14-10
81-3-3564-2315
fukuyama@kaimaki.or.jp

Hiroshi Nishida
Scientist
FRA, Japan
Orido, Shimizu, Shizuoka Japan
hnishi@affrc.go.jp

Yuji Uozumi
Visiting Scientist
National Research Institute of Far Seas Fisheries
FRA
5-7-1 Orido Shimizu Shizuoka Japan
uozumi@affrc.go.jp

KIRIBATI

Maruia Kamatie
FIsheries Advisor
Ministry of Fisheris and Marine Resources Development
Bairki, Tarawa, KIRIBATI
686 21099
maruiak@mfmrd.gov.ki

Mbwenea Teioki
Senior Fisheries Officer
Ministry of Fisheries and Marine Resources Development
Bairiki Tarawa
686 21099
mbweneat@mfmrd.gov.ki

Mbwenea Teioki
Senior Fisheries Officer
Ministry of Fisheries and Marine Resources Development
Bairiki Tarawa
686 21099
mbweneat@mfmrd.gov.ki

Anthony Kim
Director
Kirikore Fisheries Co., Ltd
P.O.Box 64 Bairiki Tarawa Republic of KIRIBATI
+686-21099
anthony.oceans5@gmail.com

REPUBLIC OF KOREA

Hongwon Kim
Deputy Director
Ministry of Oceans and Fisheries of Korea
Government Complex Sejong 94, Dasom 2-Ro, Sejong City, Korea
+82-44-200-5338
hiro9900@korea.kr

Jung-re Kim
Advisor/ International Fisheries Affairs Specialist
Ministry of Oceans and Fisheries of Korea
Government Complex Sejong 94, Dasom 2-Ro, Sejong City, Korea
+82-44-200-5398
rileykim1126@gmail.com

Sunghyun Oh
Deputy Director
Ministry of Oceans and Fisheries
94, Dasom 2-Ro, Sejong Self-governing City, 339-012
+82-44-200-5366
shoh0604@korea.kr

Ilkang Na
Assistant Manager
Korea Overseas Fisheries Association
Seoul, Korea
82-2-589-1614
ikna@kosfa.org

REPUBLIC OF THE MARSHALL ISLANDS

Samuel K. Lanwi, Jr.
Deputy Director
Marshall Islands Marine Resources Authority (MIMRA)
blanwi@gmail.com

Glen Joseph
Director
Marshall Islands Marine Resources Authority
gjoseph101@gmail.com

Berry Muller
Chief Fisheries Officer - Oceanic Division
Marshall Islands Marine Resources Authority
P.O. Box 860 Majuro, MH 96960
(692) 625-8262
mullerbk@gmail.com

NAURU

Murin Hazlitt Jeremiah
Oceanic Manager Nauru Fisheries Marine and Resource Authority
Nauru Fisheries Marine and Resource Authority
mhzjere@gmail.com

NEW ZEALAND

Andrew Smith
Operations Manager
Talleys Group Ltd
P O Box 7064, Nelson, New Zealand
0064 3548 0109
lisa.chinnock@nn.talleys.co.nz

Geoff Tingley
Fishery Technical Director
Sustainable Fisheries Partnership
Wellington, New Zealand
+64 (0)21 047 8587
geoff.tingley@sustainablefish.org

Don Syme
Senior Policy Analyst
Ministry for Primary Industries
Pastoral House, 25 The Terrace Wellington,
New Zealand
0064-4-8194634
don.syme@mpi.govt.nz

PAPUA NEW GUINEA

Thomas Usu
Tuna officer
Fisheries Management FishMan

Robert Matau

Maurice Brownjohn
Board Member
National Fisheries Board

Deborah R. Telek
Manager, Port Moresby
South Seas Tuna Corporation Limited
PO Box 376, Port Moresby 121, National Capital District, PAPUA NEW GUINEA
+67572204519
deborah.telek@gmail.com

Steven Bill Klembassa
Assistant Manager Compliance - Tuna Operations
PNG National Fisheries Authority
PO Box 2016, Douglas Street, 11th Floor
Deloitte Tower, Port Moresby
+675-320 1950/1300
sklembassa@fisheries.gov.pg

Killian S. Anoser
Director-Economics
Prime Minister & NEC (PNG)
P.O. Box 639, Waigani, NCD
(675) 76768513
killian.anoser@yahoo.com

PHILIPPINES

Elaine G. Garvilles
Aquaculturist II / Assistant National Tuna Coordinator
Bureau of Fisheries and Aquatic Resources (BFAR-NFRDI)
5F Corporate 101 Bldg Mother Ignacia Avenue, Quezon City
+6323725063
egarvilles@yahoo.com

SAMOA

Joyce Samuelu Ah Leong
Assistant Chief Executive Officer
Ministry of Agriculture and Fisheries
joyce.ahleong@maf.gov.ws

Dimary Ulberg-Stowers
Senior Fisheries Officer
Fisheries Division, Ministry of Agriculture and Fisheries
Apia, Samoa
+685 20369
dimary.stowers@maf.gov.ws

SOLOMON ISLANDS

Sylvester Diake
Under Secretary
Ministry of Fisheries and Marine Resources
sdiake@fisheries.gov.sb

Amanda Hamilton
Senior Manager - Fisheries Policy and Regulation
National Fisheries Developments Ltd.
ahamilton@trimarinegroup.com

Walter Diamana
Assistant Secretary (Ag), Regional Cooperation Branch
Ministry of Foreign Affairs and External Trade

CHINESE TAIPEI

Chi-Chao Liu
Section Chief
Fisheries Agency, Council of Agriculture
6F., No.100, Sec. 2, Heping W. Rd., Zhongzheng Dist., Taipei City 100, Taiwan (R.O.C.)
chichao@ms1.fa.gov.tw

Joseph Chia-Chi Fu
Secretary
Oversea Fisheries Development Council
Joseph@ofdc.org.tw

Wen-Ying Wang
Specialist
Fisheries Agency, Council of Agriculture
No.100, Sec.2, Heping W. Rd., Zhongzheng Dist.,Taipei, Taiwan
wenying@ms1.fa.gov.tw

Peter Sheu
General Secretary
Taiwan Tuna Purse Seiners Association
peter@ttpsa.org.tw

Ren-Fen Wu
Director of Information Division
Oversea Fisheries Development Council
3 F., No. 14, Wenzhou St., Daan District, Taipei, Taiwan
886-2-23680889 ext. 118
fan@ofdc.org.tw

Shan-Wen Yang
Secretary
Overseas Fisheries Development Council of the Republic of China
shenwen@ofdc.org.tw

Teresa Hsu
Manager
Fong Kuo Fishery Co. Ltd.
Rm 423 No 2 Yu Kang E 2nd Rd. Kaohsiung, Taiwan, 806, R.O.C.
twthsu@fongkuo.com.tw

TONGA

Tuikolongahau Halafihi
Principal Fishery Officer
Tonga Fisheries Department
Fisheries Department, PO Box 871, Nuku'alofa, Tonga
(676) 8413964
supi64t@gmail.com

TUVALU

Falasese Tupau
Permanent Secretary
Ministry of Natural Resources
Vaiaku, Funafuti, Tuvalu.
+688 20160
falasese@yahoo.com

Samasoni Finikaso
Director of Fisheries
Government of Tuvalu
Fisheries Department, Ministry of Natural Resources, Funafuti, TUVALU.
+688 20836
samfinikaso70@gmail.com

Garry Preston
Fisheries Department Advisor
Fisheries Department, Ministry of Natural Resources
Private Mail Bag, Vaiaku, Funafuti, Tuvalu
+688 903011
preston.garry@gmail.com

Kasipo M. Teo
Fisheries Legal Officer
Ministry of Natural Resources
Vaiaku, Funafuti, Tuvalu
kasipo_teo@yahoo.com.au

Ionatana Solomua
Principal Fisheries Officer - Oceanic
Tuvalu Fisheries Department
Department of Fisheries, Private Mail Bag, Vaiaku, Funafuti, Tuvalu
+688900335
tualen@gmail.com

Afaseni Hopi
Managing Director
TTFH Co., Ltd
afahop@gmail.com

UNITED STATES OF AMERICA

Raymond Clarke
Supervisory Fishery Biologist
DOC/NOAA/NMFS/PIRO
raymond.clarke@noaa.gov

VANUATU

Naviti William
Manager Compliance
Vanuatu Government, Fisheries Department
VMB 9045 Port Vila
678-7748507
wnaviti@vanuatu.gov.vu

Jason Raubani
Manager Management & Policy Division
Vanuatu Fisheries Department
PMB 9045
678 7742101
jraubani@vanuatu.gov.vu

PARTICIPATING TERRITORIES

AMERICAN SAMOA

Domingo Ochavillo
Chief Fisheries Biologist
American Samoa Department of Marine and Wildlife Resources
Pago Pago, American Samoa
684-633-4456
ochavill@gmail.com

TOKELAU

Feleti Tulafono
Offshore Fisheries Officer
EDNRE
Fakaofo, Tokelau
+690 3134
ftulafono@gmil.com

Stan Crothers
stancrothers@gmail.com

Lesley Gould
Senior Fisheries Analyst
Ministry for Primary Industries
25 The Terrace, Wellington 6140, New Zealand
+64 4 819 4639
Lesley.Gould@mpi.govt.nz

COOPERATING NON-MEMBERS

EL SALVADOR

Oscar Gustavo Alvarez
El Salvador
El Salvador
ogacvm@gmail.com

OBSERVERS

CONSERVATION INTERNATIONAL

Johann Bell
Fisheries Consultant
Conservation International
b.johann9@gmail.com

PACIFIC ISLAND FORUM FISHERIES AGENCY (FFA)

James Movick
Director General
Forum Fisheries Agency
1 FFA Rd, Honiara Solomon Islands
james.movick@ffa.int

Wez Norris
Deputy Director-General
Forum Fisheries Agency
Honiara
+6777482900
wez.norris@ffa.int

Manu Tupou-Roosen
Legal Counsel
Forum Fisheries Agency
1 FFA Rd, Honiara Solomon Islands
manu.tupou-roosen@ffa.int

Samasoni Sauni
Fisheries Management Adviser
Forum Fisheries Agency
1 FFA Rd, Honiara Solomon Islands
21124
samasoni.sauni@ffa.int

Tim Adams
Forum Fisheries Agency
1 FFA Rd, Honiara Solomon Islands
21124
tim.adams@ffa.int

Lisa Williams-Lahari
Media Officer, FFA
Forum Fisheries Agency, FFA
1 FFA Rd, Honiara SOLOMON ISLANDS
+677 7574230
media@ffa.int

GREENPEACE

Cat Dorey

Vince Cinches
Philippine Oceans Campaigner
Greenpeace Southeast Asia
Room 201 JGS Building, #30 Scout Tuason Street, 1103 Quezon City, the Philippines
+639175363754
vcinches@greenpeace.org

INTERNATIONAL SEAFOOD SUSTAINABILITY FOUNDATION (ISSF)

Victor Restrepo
Vice President - Science
International Seafood Sustainability Foundation
805 15th Street NW, Suite 708, Washington DC 20005
17032268101
vrestrepo@iss-foundation.org

MASYARAKAT DAN PERKANAN INDONESIA (MDPI)

Sven Blankenhorn
Fishery Consultant
Fair Trade USA
Makassar, Indonesia
+62 815 2522251
sblankenhorn@fairtradeusa.org

MARINE STEWARDSHIP COUNCIL (MSC)

Adrian Gutteridge
Fisheries Assessment Manager
Marine Stewardship Council
6/202 Nicholson Parade, Cronulla, NSW, Australia
+61 405 390 660
adrian.gutteridge@mswc.org

THE PEW CHARITABLE TRUSTS

Amanda Nickson
Director - Global Tuna Conservation
Pew Charitable Trusts
901 E Street NW, Washington, DC 20004
202-674-9829
anickson@pewtrusts.org

David Gershman
Senior Associate
The Pew Charitable Trusts
901 E Street NW, Washington, DC, 20004, USA
+1-202-540-6406
dgershman@pewtrusts.org

Henry DeBey
Senior Associate
The Pew Charitable Trusts
901 E Street NW
2025406347
hdebey@pewtrusts.org
Sandra Jen
Consultant Environmental Policy & Law
PEW Charitable Trusts
sjen@sjenconsult.org

PARTIES TO THE NAURU AGREEMENT (PNA)

Les Clark
Consultant
Ray Research
64 3 356 2892
les@rayfishresearch.com

Sangaa Clark
Policy Advisor
PNA Office
sangaa@pnatuna.com

Tom McClurg
Observer
5 Willeston St., Wellington NZ
+64 21 2854005
tom@toroastrategy.co.nz

WORLD WIDE FUND FOR NATURE (WWF)

Bubba Cook
WWF WCP Tuna Programme Manager
World Wide Fund for Nature
PO Box 6237, Marion Square
+64278330537
acook@wwf.panda.org

Muhammad Maskur Tamanyira
Capture Fisheries Officer
World Wide Fund for Nature (WWF)
Pemuda 1, no.2, St., Denpasar, Bali
+628128238607
mtamanyira@wwf.or.id

WCPFC SECRETARIAT

Feleti P. Teo, OBE
EXECUTIVE DIRECTOR
WCPFC
Kaselehlie Street, PO Box 2356 Kolonia
Pohnpei FM 96941
691-320-1993
feleti.teo@wcpfc.int

Lara Manarangi-Trott
COMPLIANCE MANAGER
WCPFC
Kaselehlie Street, PO Box 2356 Kolonia
Pohnpei FM 96941
691-320-1993
lara.manarangi-trott@wcpfc.int

SungKwon Soh
SCIENCE MANAGER
WCPFC
Kaselehlie Street, PO Box 2356 Kolonia
Pohnpei FM 96941
691-320-1993
sungkwon.soh@wcpfc.int

Aaron Nighswander
FINANCE & ADMIN. MANAGER
WCPFC
Kaselehlie Street, PO Box 2356 Kolonia
Pohnpei FM 96941
691-320-1993
aaron.nighswander@wcpfc.int

Sam Taufao
IT MANAGER
WCPFC
Kaselehlie Street, PO Box 2356 Kolonia
Pohnpei FM 96941
691-320-1993
sam.taufao@wcpfc.int

Karl Staisch
OBSERVER PROGRAMME COORDINATOR
WCPFC
Kaselehlie Street, PO Box 2356 Kolonia
Pohnpei FM 96941
691-320-1993
karl.staisch@wcpfc.int

Lucille A. Martinez
ADMINSTRATIVE OFFICER
WCPFC
Kaselehlie Street, PO Box 2356 Kolonia
Pohnpei FM 96941
691-320-1993
lucille.martinez@wcpfc.int

Arlene Takesy
EXECUTIVE ASSISTANT
WCPFC
Kaselehlie Street, PO Box 2356 Kolonia
Pohnpei FM 96941
691-320-1993
arlene.takesy@wcpfc.int

Penelope Ridings
LEGAL ADVISOR
pennyridings@yahoo.com

Jane Broweleit
RAPPORTEUR
Jane.broweleit@gmail.com

Satya Mardi
SUPPORT
Ministry of Marine Affairs and Fisheries
Directorate General of Capture Fisheries
Jalan Medan Merdeka Timur No.16
Jakarta, Indonesia
Ph: +62 21 3519070
Fax: +62 21 3453008
sdi.djpt@yahoo.com

Rizal Rifai
SUPPORT
Ministry of Marine Affairs and Fisheries
Directorate General of Capture Fisheries
Jalan Medan Merdeka Timur No.16
Jakarta, Indonesia
Ph: +62 21 3519070
Fax: +62 21 3453008
sdiltpk@gmail.com

Attachment C

1st MEETING OF THE FAD MANAGEMENT OPTIONS INTERSESSIONAL WORKING GROUP

Stones Hotel, Bali, Indonesia

27 – 28 November 2015

AGENDA

AGENDA ITEM 1. WELCOME AND OPENING (9am)

1.1 Opening

1.2 Adoption of agenda

1.3 Meeting arrangements

AGENDA ITEM 2. MEETING OBJECTIVES

2.1 Review Terms of Reference and intersessional activities

2.2 Agree on meeting objectives

- **Develop Research Plan**
- **Marking and Monitoring**
- **Data Standards**

AGENDA ITEM 3. DEVELOP RESEARCH PLAN ON FADS

3.1 Key research priorities

- **Regional level**
- **Views of participants**

3.2 Review current research activities and data collection

3.3 General discussion - Identify data and information gaps to meet key research priorities

3.4 Develop draft research plan – to WCPFC12, suggest send to SC12

AGENDA ITEM 4. MARKING AND MONITORING OF FADS

4.1 Objectives for Marking and Monitoring of FADs

4.2 Roundtable views of Participants – updates on current initiatives being implemented or under development in the region or in other regions

4.3 Develop outline or key components of a WCPFC scheme

AGENDA ITEM 5. REVIEW DATA STANDARDS FOR PAPER-BASED AND E-FORMS

AGENDA ITEM 6. GENERAL DISCUSSION AND NEXT STEPS

6.1 General discussion on next steps

6.2 Notes on linkages to other IWGs and work of other subsidiary bodies

6.3 Develop workplan for 2016 (- 2017?)

6.4 Report to WCPFC12

AGENDA ITEM 7. OTHER MATTERS

AGENDA ITEM 8. CLOSE

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Attachment D

Outline of a draft research plan on FADs

Research Area	Management Focus	Data Requirements	Priority
Area 1 – FAD Design	• Management focus – reducing BET impacts through FAD design • Management focus – reducing unwanted bycatch through FAD design	Observer GEN-5, PS-3, Logsheet information Experimental Surveys	Low – Medium – High?
Area 2 – Tuna Behavior	• Management focus – reducing BET impacts through regulation such as fishing net depth changes • Assessment focus – better understanding of catchability on FADs	Acoustic tagging information by spp Observer GEN-5, PS-1, PS-3 Logsheet information	Low – Medium – High?
Area 3 – BET Hotspots	• Management focus – spatial/temporal management of fleets • Management focus – operational practices that reduce BET catches • Assessment focus – better understanding of regional structure for assessments	Logsheet information Observer GEN-5, PS-1, PS-3	Low – Medium – High?
Area 4 – Acoustic FAD Information	• Management focus – Limits of time-in-the-water for FADs? • Management focus – development of FAD design guidelines • Management focus - FAD density	FAD sonar information FAD design (observer GEN-5?) Logsheet information FAD tracking (locations, density)	Low – Medium – High?

Research Area	Management Focus	Data Requirements	Priority
	limits (numbers of FADS in a particular region??) • Assessment focus – independent ground-truthing of biomass estimates from stock assessment • Assessment focus – potential fishery-independent source of relative biomass change (?) • NOTE from the discussion – need for study on discrimination of species in acoustic signal		
Area 5 – Fleet Behavior	• Management focus – refinement of PS management through different effort metrics (understanding FAD-related effort creep) • Assessment focus – understanding changes in catchability of FAD component of BET fishing relative to MFCL catchability estimates	Fleet information VMS FAD tracking Observer GEN-1, PS-1 Logsheet information	Low – Medium – High?

Points from the discussions to be considered in the further development of the draft research plan

1. the need to prioritise and discern what is immediately workable to inform the assessment,
2. a need to focus on the management objective behind the research area; and
3. consider research undertaken by other parties, so as not to duplicate efforts being pursued by others.

Attachment E

DRAFT KEY ELEMENTS OF A FAD MARKING AND IDENTIFICATION SYSTEM

The IWG should recommend that the same standards-based approach used for the provision of other fishery data also be used.

FAD MARKING, IDENTIFICATION AND USE OF ELECTRONIC SIGNATURES

FADs can be found in various shapes and sizes ranging from submersed float lines with coconut palm appendages, foam filled steel drums held in place by a concrete anchor, to large flat rafts with structures built on top to house a FAD keeper to ward off poachers.

In 2014 SPC conducted a preliminary analysis of the ROP data on FAD design and activities related to FADs in the WCPFC-CA. The SPC/FFA GEN-5 form is specifically designed for the collection of information related to the nature of the FAD, the main materials and attachments, the dimensions and information that could allow for the individual identification of FADs. However, the analysis found that it was difficult to ascertain the fate of the FAD after a set due to the lack of a unique identifier. The main recommendation from the analysis is the development of a unique identifier system.

Need to introduce a common marking system and standards for marking and identification for cross platform application.

In 2013, the United States proposed a conservation and management measure (CMM) on FAD data collection and analysis that would have tasked the TCC and Commission to develop a FAD identification scheme. This was considered a first step in any rational FAD management scheme. This FAD identification scheme would have at a minimum considered:

1) A unique identification number with a specific numbering system and format to be adopted by the Commission
2) Identification that should be easy to apply to the FAD that should be applied in such a manner that it will permit its identification and should not become unreadable or disassociated from the FAD.

Although the proposal was not adopted at WCPFC10, since that time other tuna RFMOs have adopted similar resolutions with FAD marking and identification provisions and these are described in more detail below.

Generally there is consensus on the need for marking on FADs prior to deployment, some practical issues were recognised as needing further consideration with respect to marking on FADs encountered. Marking can be achieved through satellite buoys electronic signatures but there are also areas in the region where non-instrumented FADs are used as such there may be utility in having a physical marking system for non-instrumented FADs.

Compatibility with existing arrangements in Coastal State's EEZs and for a feasibility study to be done to inform the IWG on the costs and benefits of a physical marking system.

Members raised the point that it is important when developing a marking and identification system to maintain compatibility with existing arrangements in EEZs. Other members noted the importance of

harmonising with the marking and identification systems already adopted by other tuna RFMOs, particularly in the Eastern Pacific Ocean.

DATA COLLECTION

Generally there seemed to be agreement that members have are comfortable in looking at the raft of information being collected through the GEN-5 forms on FAD monitoring and the fields outlined in the IATTC resolution and where appropriate work on the transfer of the collection of FAD data from observers to vessel operators, with observers having a verification role.

SC9 has already reviewed the data collected on FAD design/construction and agreed that it is adequate and none of the existing fields should be deleted and that the IWG recommend that the vessel operator and the flag state should be responsible for reporting of FAD deployment, use and loss

MINIMUM DATA FIELDS FOR OBSERVER REPORTING

WCPFC FAD Data Fields	**Standard**
Name of Observer	Full name of observer -first name first - last name last
Vessel Name	Full name of vessel including numbers
Vessel IRCS	Vessel Radio Call-sign (If none WIN identification)
Observer Trip Number	Trip number allocated by observer provider
Page Number	Number pages used
Date FAD Sighted	Record date of FAD sighting
Time FAD Sighted	Record ships time FAD sighted
Latitude of FAD	Record position of FAD using Latitude
Longitude of FAD	Record position of FAD using Longitude
How FAD is Detected	Record the primary method using codes to locate the FAD Codes for how FAD is Detected - 1 Seen from vessel (No other Method), 2 Seen from Helicopter, 3 Marked with Radio Beacon, 4 Bird radar, 6 Information from other vessel, 7 Anchored (GPS), 8 Marked with Satellite/GPS beacon, 9 Navigation Radar, 10 Lights, 11 Flock of Birds sighted from vessel, 12 Other - please specify in comments,13 Being deployed (so not detected), 20 Unknown
FAD Anchored or Drifting	Indicate whether the floating object is an anchored Floating object or not.

Materials FAD is Made From (Main Materials and Attachments)	Record main components that make up the floating object.
Electronics Associated With FAD	Record whether any electronics were associated with the floating object? Codes for Electronics associated with FAD - 1 Radio buoy (with identification), 2 Radio buoy –unidentified, 3 GPS buoy (with identification), 4 GPS buoy - unidentified, 5 Sounder buoy, 6 Sounder buoy – unidentified, 7 Light buoy, 8 Other (describe), 20 Unknown (describe in comments).
Origin of FAD	Observer is to try to find out the origin of the object – how did it get to be in the water, etc.? Codes for Origin of FAD - 1. Your Vessel deployed this trip, 2. Your vessel deployed previously, 3. Other Vessel's – with permission, 4. Other vessel's – without permission, 5. Other vessel consent unknown, 6. Drifting and found by your vessel, 7. Deployed by FAD auxiliary vessel, 8. Origin unknown, 9. Other origin (Specify)
FAD Activity	Observer's best describe the activity that the boat is involved with the FAD. Codes for FAD Activity - 1. Setting on FAD, 2. Deploying FAD, 3. Servicing FAD, 4. Retrieving FAD, 5. Vessel drifting beside FAD attracting fish away from FAD before carrying, 6. Vessel setting close to FAD specify estimated distance in comments, 7 Vessel using lights of boat or light boat to attract fish from FAD during night, 8 Other (Describe), 9 Investigate floating object using sonar/sounder
Estimate Size of FAD	Record the width, breadth, and depth of the main body of the object as found or deployed.
Comments	Observer to record in writing any FAD information not covered by the fields.

EXAMPLE LOGBOOK FIELDS REQUIRED BY ICCAT

a) FAD design and construction
- FAD Marking
- Associated Beacon ID
- FAD Type
- Type of the associated beacon and/or electronic devices
- FAD Floating Part (Dimensions/Materials)
- FAD underwater hanging structure (Dimensions/Materials)
- Observation

b) FAD activity
- FAD Marking
- Beacon ID
- FAD Type
- Type of visit
- Date
- Time
- Latitude
- Longitude
- Estimated Catch
- Bycatch

EXAMPLE LOGBOOK FIELDS REQUIRED BY IATTC

Ref: IATTC Res. C-15-03 Collection and analyses of data on Fish-Aggregating Devices

a) An inventory of the FADs present on the vessel specifying in particular for each FAD:
- i. FAD identification1;
- ii. FAD type (e.g., drifting natural FAD, drifting artificial FAD); and
- iii. FAD design characteristics (dimension and material of the floating part and of the underwater hanging structure), which can be provided by good-quality photographs.

b) For every FAD activity, the:
- i. Position;
- ii. Date;
- iii. Hour;
- iv. FAD identification1;
- v. FAD type (e.g., drifting natural FAD, drifting artificial FAD);
- vi. FAD design characteristics (dimension and material of the floating part and of the underwater hanging structure);
- vii. Type of the activity (set, deployment, hauling, retrieving, loss, intervention on electronic equipment, other (specify)); and
- viii. Results of any set in terms of catch and by-catch.

Attachment F

Draft Prospectus for obtaining consultant services to evaluate aspects related to Fish Aggregating Devices employed of fished upon in the Western and Central Pacific.

Purpose: The purpose of this contract is to provide a report to inform the WCPFC Commission and the relevant subsidiary bodies on aspects related to the use and monitoring of FADs deployed and encountered in the WCPO.

Objectives: Evaluate, based on as broad a spectrum of existing information sources, the need and viability of a common marking system for FADS deployed / encountered in the WCPO.

Provide a quantitative cost-benefit analysis of implementing a spectrum of FAD marking and monitoring systems for FADS deployed / encountered in the WCPO.

In completing the above respond to the following questions:

1. Is there any merit (e.g. a positive cost / benefit analysis) of establishing a manual FAD marking system for the specific purpose of enabling improved scientific data collection. (The analysis shall include administrative and business compliance costs)

2. If there is merit in establishing a manual FAD marking system what would be the most efficient way of implementing such as system?
   (What are the design specifications and projected costs for implementing an effective manual FAD marking system?)

3. What would be proposed definitions for "FADs deployed" and "FADs encountered", in any future data reporting by vessel operators?

[Other elements?]

Deliverable(s): A report shall be provided in draft to the Secretariat by the date designated below. The Secretariat will review the draft and provide comments within 30 calendar days. The consultant shall respond to all comments made and provide a final draft within 30 calendar days of receipt of the Secretariat draft review.

Timeframe: The draft report shall be provided by XX days after being informed by the Secretariat of initiation of the contract period. Under no circumstances shall the final report not be provided after July1, 2016.

Qualification(s) of a prospective consultant:

Estimated price range: This study is envisioned to be a "desk review" and significant travel is not anticipated. However, if after consultation with prospective bidders that travel should be incorporated – that modification shall be made by the Expectative Director. The anticipated cost is projected to be between X and Y.

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Attachment G

Draft Workplan for FADMgmtOptionsIWG in 2016

Objective	Date	Responsibility
A. Develop FAD Research Plan		
A. 1. Further develop draft research plan	Jan – Feb 2016	Secretariat / SPC-OFP FADMgmtOptions-IWG Chair Vice-Chair
A. 2. Consider draft research plan	Aug 2016 (SC12) Oct 2016 (TCC12 and FADIWG)	CCMs, SC and TCC, FADMgmtOptionsIWG,
A. 3. Adoption of decision/s	Dec 2016 (WCPFC 13)	CCMs and Commission
B. TOR a. Collection of additional data on FADs and their use in WCPO fisheries		
B.1 Development of an initial list of FAD related data fields to be reported by vessel operators based on ROP minimum standard data fields, and the data fields (collected by other RFMOs).	Jan – Feb 2016	Secretariat / SPC-OFP
B.2 Consultancy considering the work by Secretariat/SPC-OFP and provides a cost-benefit analysis (see Attachment F)	Complete by June 2016	Secretariat (consultant)
B.3 Consider report of consultant and develop recommendations for WCPFC12	Aug 2016 (SC12) Oct 2016 (TCC12 and FADIWG)	CCMs, SC, TCC FADMgmtOptionsIWG
B.4 Adoption of decision/s	Dec 2016 (WCPFC 13)	CCMs and Commission
C. TOR b. FAD marking, and identification, and use of electronic signatures; TOR c. FAD monitoring, tracking and control TOR e. Advise on options for FAD marking and monitoring for WCPO wide application		
C.1 Consultancy (see Attachment F)	Complete by June 2016	Secretariat (consultant)
C.2 Consider report of consultant and develop recommendations for WCPFC12	Aug 2016 (SC12) Oct 2016 (TCC12 and FADIWG)	CCMs, SC, TCC FADMgmtOptionsIWG
C.3 Adoption of decision/s	Dec 2016 (WCPFC 13)	CCMs and Commission
D. TOR d. FAD Management Options		
D.1 Discussion paper on FAD Management Options	31 March 2016 (Intersessional)	FADMgmtOptions-IWG Chair
D.2 Review and submit comments on discussion paper	30 May 2016 (Intersessional)	CCMs, PNAO, FFA, Industry, SPC and NGOs
D.3 Revised discussion paper developed	June 30 2016	FADMgmtOptions-IWG Chair
D.3 Consider revised discussions paper	Aug 2016 (SC12) Oct 2016 (TCC12 and FADIWG) Dec 2016 (WCPFC13)	CCMs, SC and TCC, FADMgmtOptionsIWG, Commission