Tuvalu Fisheries Department:
Coastal Section

FMMC1:

1st Fisheries Monitoring & Management Consultation in Funafuti 23-24 February 2017

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Contents

Terms

Acronym	Details
FCA	Funafuti Conservation Area
FMMC	Fisheries Monitoring & Management Consultations
FOFA	Fishermen On Funafuti Association
FTFF	Funafuti Fisherman's Association (Old name)
FUN	Funafuti
GOT	Government of Tuvalu
Lm	Length at Maturity
MFAT	NZ Ministry of Foreign Affairs & Trade
MPA	Marine Protected Area
MSY	Maximum Sustainable Yield
nm	Nautical miles
NZ	New Zealand
O&D	Operations & Development Section
PROP	Pacific Regional Oceanscape Programme
SCUBA	Self-contained underwater breathing apparatus
SPAGS	Spawning Aggregations
TAC	Total Allowable Catch
TFD	Tuvalu Fisheries Department
TFSP	Tuvalu Fisheries Support Programme

1 Summary

Because of the importance of coastal marine resources to livelihoods, and food security, the Coastal Fisheries Section of the Tuvalu Fisheries Department has been carrying out resource assessments and monitoring. These have been done to provide the information needed for assessing the health of stocks and, if needed, the basis for management. This has included creel and ciguatera surveys as well as socio-economic work. Creel surveys are especially suited to the task of monitoring fished resources because they provide information on the fishers, the resources being caught and the effort required in a way that can be used to assess the health of the fishery. The creel survey, which was begun in April 2015 and will be on-going indefinitely, included measuring the catches (numbers, sizes and weights) of fished species, assessing the health of the resources and identifying those that are showing signs of stress and which many be in need of management.

The results of the first Creel Report showed that coastal fisheries in Funafuti are overfished. A total of 14,508 specimens were landed and measured just in Funafuti during the survey, including 180 species of fishes in 30 families. Of the 22 species that could be assessed for signs of overfishing, 13 (60% of species) had 50% or more of the catch below the size at maturity. This means that the fishes are being caught and removed from the population *before* they can reproduce. The main fishes showing strong signs of overfishing in Funafuti included acanthurids (pone), carangids (ulua, kamai), serranids (gatala), lethrinids (noto) and lutjanids (taea). Two of the recommendations arising from that report were that: (1) Mechanisms for management need to be investigated for relieving pressure on overfished resources and deflecting at least some of the effort offshore so that coastal fisheries can recover; and (2) Awareness is needed on the results of the survey to begin the dialogue on management.

This Fisheries Monitoring & Management Consultation (FMMC) is the first of a series planned for 2017 to alert the public to the state of the marine resources in Funafuti and to begin the process of recovery back to productive levels. It is expected that a total of 4 consultations will be run during the year, culminating in a Funafuti Reef Fisheries Stewardship Plan (FRFSP). The meetings planned included: Initial Fisher's Meeting 9th February; FMMC1 23-24 February; FMMC2 27th April: Presentation of a proposed FRFMP; FMMC3 July: First draft of the FRFMP presented for discussion and adjustments; and added as a result of FMMC1, FMMC4 September: Adoption of the finalised FRFMP.

This report describes the results of the Initial Fisher's Meeting held on 9th February and first FMMC consultations run in February 2017. The four main objectives of the consultations were: (1) To share the findings of the Creel Survey with the Funafuti community; (2) Present of a range of commonly-used management options that could be used in Funafuti, and discuss the significance of the "Catch per unit of effort curve" as a way of understanding when and why overfishing occurs and what management aims to achieve; (3) Break into Working Groups to discuss the options and suggest approaches that might work in the local context and identify those that are not worth pursuing; and (4) Derive from the discussions a consensus mandate on how the members of the community would like to see TFD address the issue of overfished resources.

Participants strongly and emphatically agreed that the reef fishery should be managed to ensure food security for today and tomorrow. The fishery needs to be managed properly and immediately for the sake of our future generations. Some also suggested that the FCA should be recovered as part of this. Ideas on who should manage the fishery included TFD, the Kaupule and Falekaupule, the Government, and the community. The Fishers said that the fishers themselves should be part of management as they are responsible for the current state of the resources. Some said that all the

people now living on Funafuti should work together to manage the reef resources. The main concerns raised about management included a lack of staff, funding and equipment to manage the fishery, failure of the public to observe the rules and regulations. Some people pointed out that attitudes of the people on rules and regulations are poor. The groups said that some or all of the current management options being used in Funafuti are not working and there has been no increase in stock and any arrangements put in place should be maintained in the long term.

People suggested a wide range of options for management for Funafuti, covering monitoring, public awareness, training, creating and/or strengthening existing rules, a moratorium or other closures, strengthening the Funafuti Conservation Area, better boat identification, fish size limits, fishing gear restrictions, controlling pollution and habitat damage and utilising by-catch from transhipment vessels.

It was concluded that a management plan is indeed needed to relieve pressure on stressed resources and allow them to recover. The first draft of the management plan should be delayed to the July meeting, and an additional meeting scheduled for later in the year to finalise the plan. The final meeting should be in September. In the interim, individual surveys of outer islands fishers living in Funafuti (approximately 30) should be carried out by TDF in April-May to gather their views. There is a need to (eventually) gather size at maturity (Lm) data for assessing the health of the fisheries more broadly.

The FMMC-01 Draft Report (this report) should be completed before the next meeting with Funafuti community. At that time, TFD will present a workable management plan for the community to consider.

2 Introduction

Coastal marine resources in Funafuti are currently being exploited by traditional subsistence and small-scale artisanal fishers. Fisheries are a major source of employment and income for local fishers, including women who create and sell handicrafts, as well as the source of fish supplies for the community through roadside fish markets (Pita, 2005). Because of the importance of these resources to livelihoods, and food security, the Coastal Fisheries Section of the Tuvalu Fisheries Department has been carrying out resource assessments and monitoring over the past few years. The purpose of the studies has been to provide the information needed for assessing the health of stocks and, if needed, the basis for management. This has included creel and ciguatera surveys as well as socio-economic work.

Creel surveys are especially suited to the task of monitoring fished resources because they provide information on the fishers, the resources being caught and the effort required in a way that can be used to assess the health of the fishery. The purpose of the creel survey, which was begun in April 2015 and will be on-going indefinitely, included measuring the catches (numbers, sizes and weights) of fished species, assessing the health of the resources and identifying those that are showing signs of stress and which many be in need of management. Full results of the creel are found in the Creel Report No. 1 (Alefaio et al., 2016) which can be downloaded from www.tuvalufisheries.tv/library.

The results of the first Creel Report showed that coastal fisheries in Funafuti are overfished. A total of 14,508 specimens were landed and measured just in Funafuti during the survey, including 180 species of fishes in 30 families. Of the 22 species that could be assessed for signs of overfishing, 13 (60% of species) had 50% or more of the catch below the size at maturity. This means that the fishes are being caught and removed from the population *before* they can reproduce. The main fishes showing strong signs of overfishing in Funafuti included acanthurids (pone), carangids (ulua, kamai), serranids (gatala), lethrinids (noto) and lutjanids (taea).

Two of the recommendations arising from that report were that:

- Mechanisms for management need to be investigated for relieving pressure on overfished resources and deflecting at least some of the effort offshore so that coastal fisheries can recover; and
- Awareness is needed on the results of the survey to begin the dialogue on management.

This Fisheries Monitoring & Management Consultation (FMMC) is the first of a series planned for 2017 to alert the public to the state of the marine resources in Funafuti and to begin the process of recovery back to productive levels. It is expected that a total of 4 consultations will be run during the year, culminating in a Funafuti Reef Fisheries Stewardship Plan (FRFSP). The meetings planned are:

1. Initial Fisher's Meeting 9th February;
2. FMMC1 23-24 February;
3. FMMC2 27th April: Presentation of a proposed FRFMP;
4. FMMC3 July: First draft of the FRFMP presented for discussion and adjustments; and added as a result of FMMC
5. FMMC4 September: Adoption of the finalised FRFMP.

This report describes the results of the first consultations run in February 2017. The four main objectives of the consultations were:

1. To share the findings of the Creel Survey with the Funafuti community;
2. Present of a range of commonly-used management options that could be used in Funafuti, and discuss the significance of the "Catch per unit of effort curve" as a way of understanding when and why overfishing occurs and what management aims to achieve;
3. Break into Working Groups to discuss the options and suggest approaches that might work in the local context and identify those that are not worth pursuing; and
4. Derive from the discussions a consensus mandate on how the members of the community would like to see TFD address the issue of overfished resources.

3 Initial Fishers' Meeting 9 Feb 2017

An initial meeting was held between the Fishermen on Funafuti Association (FOFA) (recently renamed from Funafuti Fishermen's Association) members and the Fisheries Department Coastal and Operations & Development sections at the Vaiaku Lagi Hotel in early February. The meeting lasted a half day, with the purpose of informing fishermen, in advance, of the Creel Results and other fisheries information on artisanal tuna and ciguatera fish poisoning. The Operations & Development Section also provided information on sea safety and post-harvesting training. A total of more than 20 fishermen attended the meeting.

4 FMMC1: First Consultation with Stakeholders 23-24 Feb 2017

The Funafuti Monitoring and Management Consultation (FMMC) was the first consultation meeting to be done with local communities in Tuvalu as part of developing management for fished resources. Participation in the meeting was high, with a total of 85 attendees, 26% female and 74% male. Attendees were comprised of members of the Funafuti Kaupule, including the Pule Kaupule, Funafuti Community (41%), Matai of Funafuti (24%), Fishermen's Association (FOFA) (14%) plus representatives of Funafuti Women and Youth, and all of the outer islands.

The meeting was opened by Semese Alefaio, the Chair of the meeting. This was followed by prayer with Reverend Paneta. The Director of Fisheries then delivered an opening speech reminding participants of the importance of coastal fisheries to the welfare of the nation and the impacts that climate change will have on our resources. Participants were reminded of the critical importance of our coastal resources to livelihoods and were urged to consider the ways that we can manage our coastal resources. The Pule Kaupule Funafuti, Semi Vine, formally opened the meeting for presentations and discussions.

4.1 Session 1: Results of the Creel Survey and Status of the Resources

Details of the results of the creel survey maybe found in the 1st Creel Report (Alefaio et al., 2016) which can be downloaded from the Tuvalu Fisheries website[1]. In addition to creel results, the TFD staff presented concepts central to management of fisheries. This included presentations explaining the following concepts:

- Fisheries stock assessments and how they are used to assess whether a fishery is overfished;
- The kinds of fishery surveys that can be used to assess the resources, including creel surveys, oceanographic data, underwater counts of fishes and others;
- A definition of overfishing, which is fishing to the extent that fish can no longer sustain their population;

[1] www.tuvalufisheries.tv/library

- The basic aim of fisheries management, as a graphical representation of what happens as a resource is exploited at higher and higher levels of fishing pressure, and the idea of an optimum level of fishing (see Figure 1);
- Types of overfishing, including growth overfishing, recruitment overfishing, ecosystem overfishing and economic overfishing;
- How the size of fishes affects reproduction and the idea the smaller fish produce fewer eggs than larger fish, by as much as 1,000 times greater reproduction in larger fish;
- The significance of spawning aggregations (SPAGS) and why targeting them can severely damage a fishery;
- Results of the creel survey and status of Funafuti's resources;
- How the results of the creel survey inform us of the status of the resources and what needs to happen to improve the reef fisheries in Funafuti; and
- A description of the main recommendations from the creel survey.

The session was followed by a period for questions and comments covering the following topics:

- *Could artisanal tuna fishing be expanded beyond the 12 nm zone into the 200 nm EEZ?* Kasipo Teo, the Legal Officer, suggested we are under UNCLOS rules and there is an issue of capacity. Outboards cannot travel more than 12 nm.
- *Does the TFD creel survey possibly show accurate results? Should we limit our fishes?* Yes, the results are reliable.
- *Are the data / results accurate enough (1 year only) to determine fish stocks?* At this stage the method does not estimate the size of stocks. It uses the sizes of fishes caught as an indicator of health of the fishery. It is easy to measure the sizes of fishes and the published Lm values are likely to be accurate. The data collected and stored in the database are accurate.
- *Could fishermen move out to open ocean using GPS?* GPS would be a valuable tool, that is why they are included in the grab bags.
- *Do you as fisheries officer have ever survey or know that how much does other mammals of the sea like sharks, whales etc. consume or harvest on small or reef fish comparing to the man's consumption?* No, we have not measured that. We assume that natural losses of fishes to predation, disease, disasters etc are a natural part of the resource and will continue regardless of human activities. Semese Alefaio explained the importance of sharks in our resources.
- *Could TFD possibly determine the timing of spawning fish species?* Yes, we can work on that. Semese Alefaio said that the TFD staff still working on the surveys and that further technical work will be carried out in the future.

Figure 1: The basic aim of Fisheries Management

This figure shows the relationship between fishing effort and catch and the target for management. At the beginning of a fishery, when no human is fishing, the catch is zero. When people first start to fish the total catch increases with increasing effort. When effort increases above the capacity of the fishery to replenish itself the catch starts to decline again, while more and more effort is put in by people to try and get more catch. We are somewhere along the decline now in Funafuti, shown by the "we are here" arrow below. The aim of fisheries management is to find ways to allow the fished populations of resources to recover back up to optimum levels. The star shows the part of the graph where the effort is reduced to a point where the catch is the most the fishery can produce. This is the golden point, the optimum, where the fishery could be said to be sustainable and most productive.

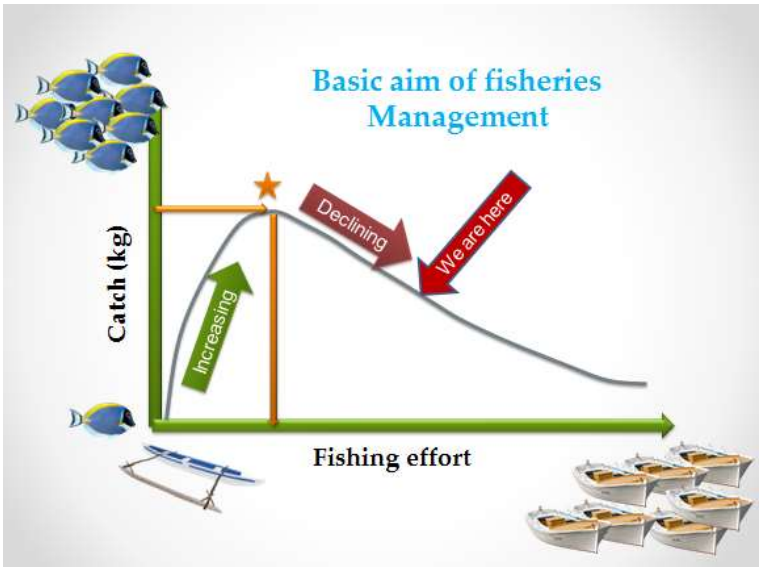

Figure 2: Presentation on status of the resources

4.2 Session 2: Management Options

During this session, TFD presented some of the more common options used for the management of reef fisheries for consideration by participants in the working groups session to follow. A range of management options was presented as ways to reduce effort and protect reproduction in ways that allows resources to recover and yield more fish. In addition, participants were asked to start

thinking about who would manage the fishery and with what kinds of support as these would need to be considered as part of choosing any options for management. It was also pointed out that several options may need to be used, as a single one may be insufficient to create an outcome of better fisheries.

1. Marine Protected Areas (MPAs) were presented as no-take areas (not LMMAs which might allow for fishing). The purpose would be to protect species and their habitats, allowing fishes and invertebrates to grow to reproductive size. Perhaps even more importantly they allow fishes to grow large and contribute many more eggs than smaller ones. MPAs can also improve resilience of the atoll and contribute to tourism (Figure 3);
2. Protecting Spawning Aggregations (SPAGs) was presented as an option for ensuring fishes which tend to aggregate to spawn are able to reproduce effectively. Aggregations function to bring eggs and sperm close enough together in the water that they can meet and fertilise. If the fishes are taken during spawning, this may not occur and reproduction can be severely reduced.
3. Fish size was discussed as the number of eggs and young depends on the size of the adults. For example, a 30cm snapper may produce 360,000 eggs during a spawning period, while a 60 cm fish of the same species can produce 3.4 million eggs. Given that probably only 1 in a million survives to the point we can fish it, this difference is significant and needs to be taken into account;
4. Total Allowable Catch (TAC) and Bag Limits. TAC refers to the total catch limit allowed in a fishery to restrict harvest rates to a sustainable level in a year. Bag limits are a related idea and refer to individual catches (by persons or vessels) aimed at distributing or sharing the TAC to the users.

Figure 3: Visualisation of the impact of an MPA on fisheries

A 'paper park' is an MPA that exists in name and legislation alone. Without participation by the community and no enforcement fishes do not recover and there is no export of adults, juveniles or eggs to other parts of the atoll.

5. Size Limits were introduced as a way of ensuring fishes can breed. This relies on information on the size of fishes at maturity (Lm) which needs to be determined for each species and in each location (Lm in Tuvalu might be different from Lm in Fiji for the same species). As a rule of thumb, it is a good target to ensure that every fish reaches a size that it can breed at least once;
5. Greater focus on Pelagic Species was presented as a way of reducing the pressure on overfished coastal resources, while ensuring that people have access to fish needed for food security and

livelihoods. This measure may require assistance with vessels, fish aggregating devices and sea safety, as it requires fishers to access offshore resources. As offshore pelagic species like tuna are virtually unlimited, this measure would ensure fish can always be accessed while stocks of coastal species are recovering;

6. Seasonal Closures were presented as a way to protect spawning and limit fishing pressure; and
7. Gear Restrictions include limits on mesh size of nets, times of spearfishing, use of self-contained underwater breathing apparatus (SCUBA) gear, and hook sizes and types. Explosive and chemical fishing methods are outlawed in most fisheries as on their own they can damage a fishery and the habitats supporting it.

In Tuvalu, some of these measures may already have been put in place. These include and MPA in Funafuti, locally-managed marine areas (LMMAs) on the outer islands, restrictions on the use of spears and nets and a ban on use of SCUBA in Funafuti. A range of other options exist and were not discussed in detail. These included species closures, reducing the number of fishers, moratoria (shutting down the fishery for a certain time period) and re-stocking programmes.

Some of the questions asked at the end of this session included:

- *If Tuvalu restricts species like groupers, other countries like Fiji will harvest them.* In response to this question staff pointed out that reef fishes and sharks do not migrate, only species such as tunas, oceanic sharks and turtles migrate such distances.
- *When do Management Options start?* The response given by staff was that fish are already hard to catch nowadays, so now is the time to consider managing the fisheries.
- *Why do we have ciguatera and how can it be controlled?* The nature of ciguatera fish poisoning was described, including the presence of toxic dinoflagellates, concentration through the food web in reef fishes and possible causes of outbreaks, including damage to reefs and nutrient enrichment.
- *How will restricting fishermen or fishing methods affect food security?* These options will affect fishing, at least initially while the resources recover – after that catches could be expected to improve. The best approach would be to ensure fish can be caught offshore to ensure the supply.

4.3 Session 3: Working Groups on Suitable Management Options

Participants were divided into four groups to discuss and share their ideas on the following five questions:

- Should this fishery be managed? Should it be recovered to a more productive level?
- Who should manage the fishery?
- What concerns, issues for management for your group?
- Are the management options already in place in Funafuti working (FCA, spearing, nets, SCUBA)?
- What management options might work in Funafuti? Which ones we should develop? Include any new ideas and options not already discussed here.

The four working groups convened were:

1. The Funafuti Falekaupule and Kaupule
2. Women, youth and other members of the public
3. Fishermen on Funafuti Association
4. Outer Island Leaders

Two officers from TFD joined each of the working groups as facilitators and to record the discussions. The tables below (Table 1-Table 5) summarise the outcomes of the discussions within each group.

Participants strongly and emphatically agreed that the reef fishery should be managed to ensure food security for today and tomorrow. The fishery needs to be managed properly and immediately for the sake of our future generations. Some also suggested that the FCA should be recovered as part of this.

Ideas on who should manage the fishery included TFD, the Kaupule and Falekaupule, the Government, and the community. The Fishers said that the fishers themselves should be part of management as they are responsible for the current state of the resources. Some said that all the people now living on Funafuti should work together to manage the reef resources.

The main concerns raised about management included a lack of staff, funding and equipment to manage the fishery, failure of the public to observe the rules and regulations. Some people pointed out that attitudes of the people on rules and regulations are poor.

The groups said that some or all of the current management options being used in Funafuti are not working and there has been no increase in stock and any arrangements put in place should be maintained in the long term.

In terms of what options might work in Funafuti, people suggested:

- It was recognised that the creel survey is going well and there was support for it to be continued;
- Training people in monitoring activities;
- Encourage people to fish outside but not in our closed coastal environment;
- Training in fishing skills so people can access other resources, especially the deep ocean;
- Community and school awareness activities;
- Strengthening plans and creating new by-laws, rules to improve coastal marine resources;
- Strengthen the Funafuti Conservation Area (FCA).
- Boats should have their IDs in big letters so they can be identified if they fish in the FCA;
- Introduce size limits, net restrictions;
- Investigate harmful fishing methods;
- Introduce seasonal or zoning closures;
- Enforcing existing rules;
- A one year moratorium on reef fishing;
- Improve sense of ownership;
- Gear restrictions (spear fishing, lamautu, tulituli, kupega, SCUBA);
- Control oil spills and other forms of pollution;
- Protection from anchor damage; and
- Utilising the by-catch from the transhipment vessels as a way to access non-reef resources.

One issue raised concerned the use of Funafuti lagoon for transhipment: *"the Funafuti community got nothing a share while fishing vessel using the lagoon for discharge*" and "*if a fishing vessel got penalize, Funafuti community got nothing (no share) the penalty goes into the government, to reconsider this issue*".

Importantly, the Funafuti Fishermen's Association recognised that "*it is our duty as fishermen to manage our fishery to sustain our resources"* including the breeding seasons. Failure to do so "*will affect our food security*". They also agreed that the FCA rules should be enforced.

Table 1: Summary of Results to Question 1

Should this fishery be managed? Should it be recovered to a more productive level?

Group	Outer Island Leaders	Kaupule/ Falekaupule	Women/Youth	Fishers
Yes !!!	✓	✓	✓	✓
Food Security	✓			
Future Generations	✓			
To increase Fish production		✓		✓
Sustain resources			✓	

Table 2: Summary of Results to Question 2

Who should manage the fishery?

Group	Outer Island Leaders	Kaupule/ Falekaupule	Women/Youth	Fishers
TFD	✓		✓	90 %*
Funafuti Community	✓	✓	✓	
Falekaupule	✓	✓	✓	
Kaupule	✓	✓	✓	90 %*
GOT	✓		✓	
Fishers				10 %

**Shared*

Table 3: Summary of Results to Question 3

What concerns, issues for management for your group?

Group	Outer Island Leaders	Kaupule/ Falekaupule	Women/Youth	Fishers
Lack Equipment/Funding/Resources	✓			
Staff	✓			
Enforcement	✓	✓		
Overfishing	✓	✓		
Attitude of people (rules)		✓	✓	
Destructive fishing		✓		
Anchor damage		✓		
Oil spill		✓	✓	
Pollution and waste		✓		
Ownership (crown land)		✓		
Knowledge		✓		
FCA Poaching			✓	
People will be affected			✓	
Cooperation Kaupule + Fishers				✓
Policies /rules				✓

Table 4: Summary of Results to Question 4.

Are the management options already in place in Funafuti working? (FCA, spearing, nets, scuba.)

Group	Outer Island Leaders	Kaupule/ Falekaupule	Women/Youth	Fishers
Not working	✓		✓	
Partly	✓	✓		
Maintain existing rules	✓			
FCA Partly		✓		✓
No rules Spear		✓		
No rules SCUBA		✓		
Not aware of rules			✓	
Some not penalised			✓	

Table 5: Summary of Results to Question 5

What management options might work in Funafuti? Which one we should develop? Suggest others

Group	Outer Island Leaders	Kaupule/ Falekaupule	Women/Youth	Fishers
Fix FCA	✓			✓
Training	✓		✓	
Awareness	✓			
Enforce existing rules	✓			✓
By-laws	✓		✓	
Utilise by-catch	✓			
Seasonal closures		✓		
Spearing rules		✓		✓
SCUBA rules		✓		
Monitoring supported			✓	✓
Offshore fishing			✓	
Fishing techniques			✓	
Mesh sizes				✓
No destructive methods				✓
Spawning season				✓

Figure 4: Working groups

Additional questions and discussions during this session covered the following topics:

- Are children and young persons included in fisheries management?
- Size limits issues and using drones for improving monitoring of the FCA?
- A ban selling of fish or businesses, and instead distributing catches to neighbour;
- Support for Climate change considerations affecting coastal fisheries, need more funding;
- Awareness program to be carried out for children and young people about the importance of fisheries management so they change their mind-set for future generations;
- Sustainable use of our resources is the key to be taken into account. The importance of policy and fisheries by laws is the key to fisheries management;
- Boats to be numbered in big letters so that it is easier to identify who is fishing in the FCA; and
- Continuing fishing for business.

4.4 Session 4: Outcomes. A Consensus on a Mandate for TFD to Manage the Funafuti Reef Fisheries

The purpose of this session was for an open discussion, bringing all the ideas developed during the meeting together so that TFD would be given a mandate (or not) to develop a management plan for the Funafuti Reef Fisheries.

The participants expressed an agreement with the following strategies to improve the reef fishery:

- Ensure the FCA is a completely no-take MPA;
- Protect SPAGS;
- Size limits to protect breeding (may include gears);
- Deflect to Pelagic Fishing; and
- Temporary ban on algal feeders to reverse algal blooms.

Additional concerns from the community referred to environmental issues that were currently affecting the marine environment and the resources. These problems include sewage, pollution such as oil spills and rubbish, and coastal engineering impacts on the marine environment.

The FMMC1 concluded with participants requesting that TFD propose a management plan using the best options for consideration by the community at the next FMMC meeting (planned for April).

5 Lessons learned

The main lessons learned during the meeting that will be used to guide TFD in developing a proposal for the next FMMC meeting were:

- The participatory approach to developing a management plan was supported by the participants and they look forward to further involvement;
- The participants were very supportive of the creel data collection and want TFD to continue;
- The Kaupule should manage the fishery with assistance from Fishermen's Association, TFD and the community;
- Fishermen were willing to accept 10% management within the Fishermen's Association, allowing them to use internal sanctions to ensure compliance;
- Funafuti people wanted to lead in the development of management options for their island;
- The meeting did not want to specify any particular management options for TFD to prepare, stating instead that we should develop something for another meeting in April. They needed more time to consider the question;

- Outer islands fishers' views need to be captured better as many are not in the Fishermen's Association; and
- The format of a 1.5 day workshop was considered appropriate and future workshops should follow this pattern.

6 Recommendations

The following recommendations are made as a result of this first FMMC meeting:

- A management plan is indeed needed to relieve pressure on stressed resources and allow them to recover;
- The first draft of the management plan should be delayed to the July meeting, and an additional meeting scheduled for later in the year to finalise the plan. The final meeting should be in September;
- Individual surveys of outer islands fishers living in Funafuti (approximately 30) should be carried out by TDF in April-May to gather their views;
- There is a need to (eventually) gather size at maturity (Lm) data for assessing the health of the fisheries more broadly; and
- The FMMC-01 Draft Report (this report) should be completed before the next meeting (April) with Funafuti community. At that time, TFD will present a workable management plan for the community to consider.

7 References

Alefaio, S., M. Finauga, S. Italeli, L. Kaitu, U. Kaly, P. Lopati, F. Makolo, M. Petaia, M. Taufilo, H. Taula, and F. Tetoa, 2016, Tuvalu Fisheries Creel Survey Report No. 1, Funafuti, p. 21.

Pita, E., 2005, Tuvalu Integrated framework diagnostic trade integration study: Fisheries - Tuvalu's pathway to trading, Tuvalu Integrated Framework for Trade Related Development Assistance Diagnostic Integration Study, ADB, AusAID, NZAid, World Bank, WTO, UNDP, p. 33.

8 Annexe: FMMC1 Attendees

8.1 Participants

Name		Gender	Representative of
1.	Ailesi Apelaamo	Male	Funafuti Community
2.	Amosa	Male	Funafuti Youth
3.	Andrew Ionatana	Male	Funafuti Community
4.	Anitelea Omeli	Male	Matai Funafuti
5.	Apelaamo	Male	Matai Funafuti
6.	Aric Vave	Male	FOFA
7.	Elia	Male	Matai Funafuti
8.	Eneli O. Andrew	Male	Funafuti Community
9.	Faiatea Latasi	Male	Kaupule Funafuti
10.	Fakaifou	Male	Fishermen on Funafuti Association (FOFA)
11.	Fialei Sikela	Female	Funafuti Community
12.	Fuliga Hauma	Male	FOFA
13.	Ima	Female	Funafuti Youth
14.	Ioapo T	Male	FOFA
15.	Iosia T Apelu	Male	Funafuti Community
16.	Isaia V Taape	Male	Vaitupu Community
17.	Kaiau N	Male	Matai Funafuti
18.	Kaitu	Male	Matai Funafuti
19.	Kakee P Kaitu	Male	Matai Funafuti
20.	Kasia Tusitala	Female	Funafuti Community
21.	Katalake	Male	FOFA
22.	Kauvaka Petaia	Male	Funafuti Community
23.	Kietie	Female	Funafuti Community
24.	Laisini Papamau	Male	Nukulaelae Community
25.	Lameko Isaia	Male	Funafuti Community
26.	Lauina	Male	Matai Funafuti
27.	Lauli T	Male	Funafuti Community
28.	Launiu Pelosi	Male	Nanumea Community
29.	Leke Telia	Male	Funafuti Community
30.	Leupena	Male	Matai Funafuti
31.	Liki Bruce	Female	Matai Funafuti
32.	Lita Faailoga	Female	Matai Funafuti
33.	Liti Pouesi	Female	Funafuti Youth
34.	Logo Maleko	Male	FOFA
35.	Lopati	Male	FOFA
36.	Luisa	Female	Funafuti Community
37.	Malia O'Brien	Female	Matai Funafuti
38.	Malua Kilifi	Male	Nui Community
39.	Mate S	Male	Funafuti Community
40.	Melina Tili	Female	Funafuti Community
41.	Mesako U	Male	Funafuti Community
42.	Pasefika	Male	FOFA
43.	Penehuro Hauma	Male	Nanumaga Community
44.	Penieta Tui	Male	Matai Funafuti
45.	Popu L	Male	Funafuti Community
46.	Puaese Uoli	Female	Funafuti Women

Name		Gender	Representative of
47.	Pualuku Roy	Female	Matai Funafuti
48.	Puasina Valow Bott	Female	Funafuti Community
49.	Puaula Satalaka	Male	Funafuti Community
50.	Puava Lalua	Female	Matai Funafuti
51.	Puavasa Matanle	Female	Funafuti Community
52.	Puga Naseli	Male	Matai Funafuti
53.	Rev. Paneta	Male	Funafuti Community
54.	Roy Lameko	Male	Funafuti Community
55.	Sala Livi	Female	Funafuti Community
56.	Seanoa	Male	Matai Funafuti
57.	Selepa	Female	Funafuti Community
58.	Semi Saaga	Male	FOFA
59.	Semi Vine	Male	Pule Kaupule Funafuti
60.	Setema Talesi	Male	Matai Funafuti
61.	Siaosi	Male	Funafuti Community
62.	Sikela Ulumutu	Male	Funafuti Community
63.	Singkiagi Taulamati	Male	Funafuti Community
64.	Soloseni Penitusi	Male	Funafuti Community
65.	Suka	Male	Matai Funafuti
66.	Tauli Apinelu	Female	Funafuti Community
67.	Tauloto	Male	Malosiga Funafuti
68.	Tausili Kalepou	Female	Funafuti Community
69.	Teala Enele	Female	Matai Funafuti
70.	Teleke	Male	Funafuti Community
71.	Telifa Letueti	Female	Funafuti Community
72.	Temalie	Female	Funafuti Youth
73.	Teosa	Male	CA
74.	Teoti P	Male	Funafuti Community
75.	Tianamo Lusia	Male	Niutao Community
76.	Timo Viliamu	Male	Matai Funafuti
77.	Toakimafi	Male	FOFA
78.	Tofiga	Male	FOFA
79.	Tolue Niu	Male	Funafuti Community
80.	Tumua Latasi	Male	Funafuti Community
81.	Tutasi Toma	Male	Nukufetau Community
82.	Ueli	Male	Funafuti Community
83.	Vaaguna Penileta	Male	Kaupule Funafuti
84.	Vavao	Male	Niutao Community
85.	Veni Bataka	Male	FOFA

8.2 Staff & Observers

Name		Gender	Affiliation
86.	Foe Tetoa	Male	Funafuti data collector Officer
87.	Fulitua Pakasoa	Female	Deputy DOF (Admin)
88.	Garry Preston	Male	Fisheries Technical Adviser
89.	Hetoa Taula	Male	Fisheries Compliance Officer (Coastal)
90.	Jonimila Isala	Female	Fisheries Clerk (Admin)
91.	Kasipo Teo	Female	Fisheries legal officer (Admin)
92.	Lavea'i Ioane	Female	New Zealand Minsitry of Foreign Affairs & Trade (MFAT)
93.	Lotokufaki Paka	Female	Principal Fisheries Officer (Coastal)
94.	Maani Petaia	Male	Fisheries Officer OI (Coastal)
95.	Manuao Taufilo	Male	Fisheries coastal officer OI (Coastal)
96.	Matelina Stuart	Female	Fisheries Librarian &PR officer (Admin)
97.	Nelly Seniola	Male	Napa II Officer (O&D)
98.	Nikolasi Apinelu	Male	Permanent Secretary, Ministry of Natural Resources
99.	Paeniu Lopati	Male	Fisheries Officer (Coastal)
100.	Pafini Fepuali	Male	Fisheries officer (O&D)
101.	Pannei Togapili	Male	Fisheries Driver
102.	Puakena Boreham	Female	Minister for Natural Resources
103.	Puasina Tito	Female	Fisheries EO (Admin)
104.	Samasoni Finikaso	Male	Director of fisheries
105.	Semese Alefaio	Male	Senior Fisheries Officer RA&M (Coastal)
106.	Simeona Italeli	Male	Assistant Fisheries Officer (Coastal)
107.	Siouala Tupulaga	Female	SFO Licencing Officer (Oceanic)
108.	Ursula Kaly	Female	Inshore Fisheries Adviser
109.	Viliamu Petaia	Male	Fisheries Training & development officer (O&D)