Western and Central Pacific Fisheries Commission

SCIENTIFIC COMMITTEE
TWENTIETH REGULAR SESSION

Manila, Philippines
14 – 21 August 2024

FAD Minimum Data Fields to be Recorded by WCPFC Vessel Operators

WCPFC-SC20-2024/ST-WP-06
19 July 2024

PNA and Tokelau

Summary

At WCPFC12:

"596. The Commission agreed that vessel operators should provide data on FADs covering the following two 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.)"

In response, the Parties to the Nauru Agreement (PNA)[1] have developed requirements for provision of data on FAD design and construction and FAD activity by vessel operators which have been applied for licensed purse seine vessels from January 1st, 2022. This information is critical for scientific analyses to guide management of FADs in the waters of PNA and the WCPO, as well as to monitor compliance.

The provision of FAD data by vessel operators in this way is designed to improve the quality of FAD data, particularly on FAD design and construction and enable observers to focus more on monitoring the implementation of FAD-related CMM obligations. The main differences between the fields of FAD data now required to be provided by vessel operators and the current ROP minimum data fields for FAD data are:

a) requirements for quantitative and measurable information where the WCPFC ROP data fields require provision of qualitative information and descriptions,
b) more details including in data fields regarding the buoy and materials for each FAD component; and
c) more details related to Species of Special Interest (SSI) focusing on SSI entanglement.

SC19 agreed as follows in paras 95-98 of the SC19 Record:

"SC19 recognised the scientific value of the PNA's proposal on "Minimum Data Fields to be Recorded by WCPFC Vessel Operators" (SC19-ST-WP-05). Noting the current workload of observers, and some FAD data may be more effectively provided by vessel operators, SC19 agreed on the need for developing a FAD logbook for vessel operators as a priority.

SC19 noted that the PNA has developed the Standard Operating Procedures (SOPs) for the provision of FAD data by vessel operators for licensed vessels from January 2022 and IATTC have also adopted a FAD logbook, currently used for vessels operating in the EPO and in the overlap area. SC19 noted both could be used as the basis for discussion at FADMO-IWG.

SC19 recommended WCPFC20 considers this work be progressed intersessionally within the FADMO-IWG".

PNA have presented the set of fields in Table 1 to the FADMO-IWG. The FADMO-IWG09-01 Working Paper prepared by the FADMO-IWG Chair and Secretariat has advised that "*Table 1 of SC19-ST-WP-05 is robust enough to cover all the data fields identified in the IATTC FAD Data Collection".*

PNA has prepared modifications to the *Scientific Data to be Provided by the Commission* to support the submission of FAD Minimum Data Fields to be Recorded by WCPFC Vessel Operators. These are set out in WCPFC-SC20-2024/ST-IP-09).

[1] plus Tokelau

SC20 is invited to:

a) Note the revisions to the proposed FAD Minimum Data Fields to be Recorded by WCPFC Vessel Operators compared to those presented to SC19.
b) Note that these proposed fields have been submitted to the FAD Management Options Intersessional Working Group.
c) Consider the proposed revisions to the *Scientific Data to be Provided to the Commission* to include the proposed FAD Minimum Data Fields set out in WCPFC-SC20-2024/ST-IP-09).

Contents

1. Introduction

1. At WCPFC12:

> *"596. The Commission agreed that vessel operators should provide data on FADs covering the following two 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."*

In addition:

> *"597. The Commission noted that the FADMgmtOptions-IWG recommendations that:*
>
> *i. 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;*
>
> *ii. data collected by observers on FADs can be used for verification of FAD activities of vessels;*
>
> iii. *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."*

In response, the Parties to the Nauru Agreement (PNA)[1] have developed requirements for provision of data on FAD design and construction, and FAD activity, by vessel operators. These have been applied for trips in the waters of PNA and Tokelau by licensed purse seine vessels from January 1st 2022. Consistent with the WCPFC12 Decision above, the FAD data fields required to be reported by vessel operators are based on the WCPFC ROP Minimum Standard Data Fields and take into account the FAD data fields collected by IATTC. The required FAD data fields also take into account additional information currently collected in the GEN-5 "*FAD/Payao and Floating Objects*" form widely used by observers in the WCPO purse seine fishery.

2. This information is critical for scientific analyses to guide management of FADs in the waters of the PNA and the WCPO, as well as to monitor compliance. In particular, the last four most recent tropical tuna CMMs (CMM-2018-01, CMM-2020-01, CMM-2021-01 and CMM 2023-01) have included additional requirements related to FADs, including:

i) a limit on the number of active buoys monitored by a vessel at any given time;
ii) the requirement from 2020 to use Low-Entanglement risk FADs and now from 2024 to use Non-entangling FADs; and
iii) encouragement to use biodegradable FADs.

3. Scientific and compliance analyses have highlighted that critical information is missing in the current observer information, such as information related to FAD design and the type of materials (i.e. biodegradable or synthetic) and information on satellite buoys used. In addition, analyses of the PNA FAD tracking program as well as WCPFC scientific projects (project 88: FAD acoustic, project 110: Non-Entangling and Biodegradable FADs) highlighted the critical importance of better matching buoy ID between observer, logsheet and FAD Tracking data

for scientific and compliance needs. Limited recording of some of the fields in the ROP minimum FAD data fields which are difficult for observers to get access to, such as the buoy ID, also indicated that vessel operators would be better placed to record this information.

4. The proposed fields are set out in Table 1.

5. PNA presented the proposed fields to SC18 in WCPFC-SC18-2022/ST-IP/09. SC18 agreed as follows (para 33 of the SC18 Record):

> "*Noting the inconsistency in the data reporting requirements between the Scientific Data to be Provided by the Commission (SciData), and other WCPFC reporting obligations (e.g., in CMMs), and the need to improve the data available for stock assessments, SC18 recommended that the Scientific Services Provider undertake a review of the minimum data reporting requirements and report to SC19 in 2023. SC18 requested CCMs to submit proposals for additional or amended data field, with associated justification, before 30th March 2023. For example, the proposal for including FAD minimum data fields recorded by vessel operators in the SciData which was presented to SC18 should be forwarded to SC19 for consideration*".

6. PNA also presented the proposed fields to SC19 in FAD Minimum Data Fields to be Recorded by WCPFC Vessel Operators (25July2023) - Rev.01 | WCPFC Meetings. SC19 agreed as follows paras 95-98 of the SC19 Record:

> *SC19 recognised the scientific value of the PNA's proposal on "Minimum Data Fields to be Recorded by WCPFC Vessel Operators" (SC19-ST-WP-05). Noting the current workload of observers, and some FAD data may be more effectively provided by vessel operators, SC19 agreed on the need for developing a FAD logbook for vessel operators as a priority.*
>
> *SC19 noted that the PNA has developed the Standard Operating Procedures (SOPs) for the provision of FAD data by vessel operators for licensed vessels from January 2022 and IATTC have also adopted a FAD logbook, currently used for vessels operating in the EPO and in the overlap area. SC19 noted both could be used as the basis for discussion at FADMO-IWG.*
>
> *SC19 recommended WCPFC20 considers this work be progressed intersessionally within the FADMO-IWG.*

7. PNA have presented the set of fields in Table 1 to the FADMO-IWG. The FADMO-IWG09-01 Working Paper prepared by the FADMO-IWG Chair and Secretariat has advised that "*Table 1 of SC19-ST-WP-05 is robust enough to cover all the data fields identified in the IATTC FAD Data Collection".*

8. Since SC19, PNA have made some changes to the proposed fields. The more significant changes include:

- Removal of the *Buoy Communications ID* field to avoid confusion with the *Manufacturers Serial No.* field which is of prime importance.
- Insertion of *How FAD was Found* field.
- Removal of *Hanging structure Width* field.
- *Insertion of Panels or Sheets* for options for the *Main Appendages of Hanging Structure* field to provide for options now being taken by vessel operators to replace netting.
- Removal of the +/- 7cms mesh size options because they are no longer useful, with the change from

January 1 2024 to remove the mesh size as a factor in allowable FAD design, noting that the mesh size (cms) elements have been retained.

- Limitation of the FAD condition fields to Trial FADs.
- Removal of the *SSI Seen* fields because they are relatively ill-defined, and better collected by observers, while retaining the *SSI Entangled* fields.

2. Description and protocol for FAD minimum data fields

9. The main differences between the fields required in the proposed FAD minimum data fields to be provided by vessel operators and the current ROP minimum data fields for FAD data are:

a) **Quantitative and measurable information** where the WCPFC ROP data fields require provision of qualitative information and descriptions, such as "*Simple Diagram to be drawn by observer indicating dimensions*."; *"Observers are to describe the condition, attachments if any, and nature of the floating object when first investigated";* and "*Observer to record in writing any FAD information not covered by the fields"*.

b) **More details**, including in data fields regarding the buoy and materials for each component (i.e. raft, buoyancy device, wrapping, appendages, attractors), including details regarding whether a material is biodegradable or synthetic, and condition of FAD materials for trial FADs.

c) More details related to **Species of Special Interest (SSI)** focusing on SSI entanglement. This information is also recorded by the observer in the GEN-2 form. although it is not included in the WCPFC ROP Minimum Data Fields.

3. Implementation

10. The PNA requirements for FAD data to be provided by vessel operators are estimated to apply to more than 90% of the FAD sets in the industrial FAD fishery, excluding domestic purse seine fisheries of Indonesia and Philippines. Aligning the PNA and WCPFC FAD data requirements is important for ensuring compatibility on data standards across the range of the purse seine fishery.

11. It is expected that many of the more detailed technical data fields in the current ROP minimum data fields could be removed allowing observers to focus on collection of information for verification of FAD activities and FAD design and construction. There will need to be a period of trialling of the new data requirements for vessel operators including a period of overlap with current observer data collection to compare the data collected by both observers and check the quality of the data recorded by vessel operators.

12. The requirements are implemented through PNA FIMS adding on to the existing electronic forms on the iFIMS app which is an android app. The form is designed to be completed on the vessel and the data is sent daily to the PNA FIMS database. To streamline data entry, vessel operators are able to define Standard FAD Designs and populate all the fields for a particular FAD at once using the Standard FAD Design feature. The User Guide for the current app which includes some additional fields to those in Table 1 can be found on the PNA website at User Guide for FADs and FAD Activity (pnatuna.com).

13. The data is designed to be provided by the operators of all vessels engaged in FAD activity, including vessels other than purse seine vessels used for deploying, servicing, and retrieving FADs, but at this stage is only being applied by PNA to purse seine vessel operators.

14. The new PNA FAD data requirements are being implemented in association with the PNA FAD Tracking and FAD Buoy Registration arrangement which has been applied successfully from January 1, 2024.

15. The new PNA FAD Data requirements have been generally well accepted by vessel operators. A concern has been that the burden placed on key crew members from the additional data requirements is reducing their capacity to work on catching fish and adversely affecting the viability of vessels and the value of the purse seine fishery overall. The PNA position is that increasing information on FADs is being required from managers and vessels operators. Any vessel planning to continue using FADs should be planning to meet requirements for the provision of additional information on FADs.

16. PNA has prepared modifications to the *Scientific Data to be Provided by the Commission* to support the submission of FAD Minimum Data Fields to be Recorded by WCPFC Vessel Operators. These are set out in WCPFC-SC20-2024/ST-IP-09)".

17. PNA thank SPC for their very substantial contribution to the development of the new PNA FAD data requirements and this paper. PNA also appreciate the earlier advice and support of Pew Charitable Trusts, ISSF, and MRAG Asia Pacific in this work. Responsibility for this paper and the implementation of the PNA requirements for FAD data from vessel operators lies with the PNA Office.

4. Recommendation

18. SC20 is invited to:

d) Note the revisions to the proposed FAD Minimum Data Fields to be Recorded by WCPFC Vessel Operators compared to those presented to SC19.

e) Note that these proposed fields have been submitted to the FAD Management Options Intersessional Working Group.

f) Consider the proposed revisions to the *Scientific Data to be Provided to the Commission* to include the proposed FAD Minimum Data Fields set out in WCPFC-SC20-2024/ST-IP-09).

Table 1. FAD minimum data fields to be recorded by WCPFC vessel operators[2]

TRIP LEVEL INFORMATION		OBSV	LOG
Vessel Name	Record the full name of vessel (as per the main logsheet)	X	X
Departure Date	Record the UTC date the vessel departed from port (as per the main logsheet)	X	X
FAD ACTIVITY INFORMATION		**OBSV**	**LOG**
Date of new FAD activity	Record UTC date of each new FAD activity.	X	X
Time of new FAD activity	Record UTC time of each new FAD activity.	X	X
FAD Activity – **Code**	Describes the distinct activity that the boat is involved with the FAD. Refer to Table A1.	X	X
Latitude	Record Latitude where FAD activity occurred.	X	X
Longitude	Record Longitude where FAD activity occurred.	X	X
BUOY INFORMATION			
Buoy attached (Y/N)	Enter Y or N if there is a Buoy attached.		X
Buoy Manufacturers Serial No.	Enter the Buoy Manufacturers Serial No. ~~***or Communications ID link.***~~	X	X
~~***Buoy Communications ID***~~	~~***Enter the Buoy Communications ID***~~		~~***X***~~
Buoy Make/Model	Enter the Buoy Make/Model.		X
Buoy Type – **Code**	Enter the code for the Buoy type. Refer to Table A2.		X
Buoy Operator	Enter the Buoy operator (if known).		X
Buoy lifted (Y/N)	Enter Y or N if the buoy was lifted out of the water.	X	X
GENERAL FAD INFORMATION			
FAD ID or Markings	Enter any specific FAD ID or Markings.	X	X
Origin of FAD – **Code**	Select the Origin of the FAD (how did it get to be in the water) Refer to Table A3	X	X
How FAD was found - Code	***Indicate how the FAD was found. Refer to Table A4.***		***X***
FAD Type as found – **Code**	Indicate the type of FAD, as found. Refer to Table A5	X	X
FAD Lifted (Y/N)	Enter Y or N if the FAD was lifted out of the water.	X	X
FAD Type as left – **Code**	Indicate the type of FAD, as left. Refer to Table A5	X	X
FAD deployment date	Record date when FAD deployment occurred.	X	X
FAD deployment location	Record Latitude and Longitude when FAD deployment occurred.	X	X
RAFT DESIGN INFORMATION			
Raft Design – **Code**	Indicate the code corresponding to the type of raft design (see Table A6) and referring to relevant images in ANNEX 2.		X
Raft Main (1st) Materials – **Code**	Indicate the code corresponding to the raft main material (top/1st) (see Table A7).	X	X
Raft Main (1st) Materials %[3]	Enter Raft Main Materials (top/1st) percentage (%)		X

[2] Changes to the Tables since SC19 are indicated in ***bold, italics and underline***

[3] All % fields to be specified in 10% bins.

Raft Main (2nd) Materials – **Code**	Indicate the code corresponding to the raft main material (2nd) (see Table A7).	X	X
Raft Main (2nd) Materials %	Enter Raft Main Materials (2nd) percentage (%)		X
Raft Wrapping – **Code**	Indicate the code corresponding to the raft wrapping/covering (see Table A8).		X
Raft Buoyancy Devices – **Code**	Indicate the code corresponding to the raft buoyancy devices (see Table A9).	X	X
Net mesh size	If nets are used in any component of the raft, indicate the mesh size in centimetres.	X	X
Floating structure Width (m)	Enter the Floating structure Width in metres.	X	X
Floating structure length (m)	Enter the Floating structure Length in metres.	X	X
Condition raft	***Enter the condition of the Raft for Trial FADs*** (see Table A10)		X
HANGING STRUCTURE INFORMATION			
Hanging Structure dimensions	Enter 1–Known, 2–Unknown or 3–Estimated	X	X
~~***Hanging structure Width (m)***~~	~~***Enter the Hanging structure Width in metres.***~~		~~X~~
Hanging structure length (m)	Enter the Hanging structure Length in metres.	X	X
Hanging Structure – **Code**	Indicate the code corresponding to the type of Hanging Structure (see Table A11) and referring to relevant images in ANNEX 3.		X
Main Appendages (1st) – **Code**	Indicate the code corresponding to the main appendages (top/1st) of the hanging structure see Table A12).	X	X
Main Appendages (1st) %	Enter Main Appendages (top/1st) percentage (%)		X
Main Appendages (2nd) – **Code**	Indicate the code corresponding to the main appendages (2nd) of the hanging structure (see Table A12).	X	X
Main Appendages (2nd) %	Enter Main Appendages (2nd) percentage (%)		X
Net mesh size	If nets are used in any component of the hanging structure, indicate the mesh size in centimetres.	X	X
Attractors – **Code**	Indicate the code corresponding to the Attractors on the hanging structure (see Table A13).		X
Hanging weights – **Code**	Indicate the code corresponding to the Hanging weights used (see Table A14).		X
Hanging weight (kgs)	Enter the hanging weight in kilograms		X
Condition_Hanging	Enter the condition of the Hanging structure ***for Trial FADs*** (see Table A10)		X
GENERAL COMMENTS			
Comments	Enter any additional comments necessary	X	X
SPECIES OF SPECIAL INTEREST INFORMATION			
~~***SSI Seen (Y/N)***~~	~~***Enter Y or N if a Species of Special Interest (SSI) is seen***~~	~~X~~	~~X~~
~~***SSI Seen – Species code***~~	~~***Enter three-letter code (selected from FAO Species code list) for each SSI seen***~~	~~X~~	~~X~~
~~***SSI Seen – Weight (kgs)***~~	~~***Enter the estimated WEIGHT in kilograms of each SSI seen***~~	~~X~~	~~X~~
~~***SSI Seen – Number***~~	~~***Enter the NUMBER of each SSI seen***~~	~~X~~	~~X~~
SSI Entangled (Y/N)	Enter Y or N if a Species of Special Interest (SSI) is entangled	X	X

SSI Entangled – Species code	Enter three-letter code (selected from FAO Species code list) for each SSI entangled	X	X
SSI Entangled – Weight (kgs)	Enter the estimated WEIGHT in kilograms of each SSI entangled	X	X
SSI Entangled – Number	Enter the NUMBER of each SSI entangled	X	X

ANNEX 1 – FAD Logsheet Reference Code Tables

Note that these codes are found in the GEN-5 form, the PS-2 form or the GEN-2 form.

Table A1. Codes for FAD Activity

Code	Description for FAD Activities
1	Investigating (no other activity listed below)
2	Fishing Set (Retrieving FAD)
3	Fishing Set (FAD left in water after set)
4-a	Deployment – New FAD
4-b	Deployment – Retrieved FAD
4-c	Deployment – A FAD without buoy
5	Retrieving (without being set on)
6	Servicing or modifying raft and/or attachment
7	Detaching Buoy found attached
8	Attaching a Buoy to
9	Retrieving Buoy only
10	Transfer a Buoy to another vessel at sea
11	Transfer a Buoy from another vessel at sea
12	Retrieving a Buoy in port
13	Other Activity (please specify in COMMENTS)

Table A2. Codes for Buoy type

Code	Description for Buoy type
1	GPS Sphere type
2	Satellite with Echo-Sounder
3	Satellite with no Echo-Sounder
4	Other Activity (please specify in COMMENTS)

Table A3 Codes for Origin of FAD

Code	Description for ORIGIN of FAD
1	Deployed by your vessel this trip
2	Deployed by your vessel previous trip
3-a	Deployed by other vessel – another purse seine vessel
3-b	Deployed by other vessel – purse seine SUPPORT vessel
3-c	Deployed by other vessel – LONGLINE vessel
3-d	Deployed by other vessel – CARRIER or BUNKER vessel
3-e	Deployed by other vessel – Other
4	Drifting and found by your vessel
5	Other origin – (please specify in COMMENTS)

Table A4. Codes for How FAD was Found

Code	Description for How FAD was Found
1	Located by Electronic Transmission data
2	Located by sighting from (the vessel/helicopter/drone/radar)
3	Anchored FAD/payao (position recorded)
4	Located using information shared by other fishers
5	Other (please specify in COMMENTS)

Table A5. Codes for FAD as Found/Left

Code	Description for FAD Types
1	Drifting FAD (person-made)
2	Non-FAD (man-made)
3	Tree or logs (natural, free floating)
4	Tree or logs (converted into FAD)
5	Debris (flotsam bunched together)
6	Dead animal(s) (specify, i.e., whale, horse, etc.)
7	Anchored raft FAD or Payao
8	Anchored tree or logs
9	Other Activity (please specify in COMMENTS)
10	Drifting FAD (person-made) changed (FAD as Left Only)

Table A6. Codes for Raft Design (refer to ANNEX 2)

Code	Description of RAFT DESIGN
1	Bamboo with Floats Design 1
2	Bamboo with Floats Design 2
3	Bamboo Design 1
4	Bamboo Design 2
5	Bamboo Design 3
6	Burrito
7	Log
8	Payao
9	Small House
10	No Raft
11	Other (please specify in COMMENTS)

Table A7. Codes for Raft Main Materials

Code	Description for RAFT Main Materials
1	Bamboo
2	Timber/ planks/ pallets/ spools
3	Metal
4	PVC/ plastic
5	Other (please specify in COMMENTS)

Table A8. Codes for Raft Wrapping/Covering

Code	Description for Raft Wrapping/Covering
1-a	Canvas and/or canvas bags and/or cloth – Synthetic fiber
1-b	Canvas and/or canvas bags and/or cloth – Natural fiber
2-a	~~Non-entangling~~ Netting – Synthetic fiber – ~~Mesh Size (cms) (Mesh size >= 2.5 inch or >= 7cm)~~
2-b	~~Non-entangling~~ Netting – Natural fiber – ~~Mesh Size (cms) (Mesh size < 2.5 inch or < 7cm)~~
~~2-bc~~	~~Non-entangling Netting – Natural fiber – Mesh Size (cms) (Mesh size >= 2.5 inch or >= 7cm)~~
~~2-d~~	~~Non-entangling Net – Natural fiber – (Mesh size < 2.5 inch or < 7cm)~~
~~3-a~~	~~Entangling Net – Synthetic fiber – (Mesh size >= 2.5 inch or >= 7cm)~~
~~3-b~~	~~Entangling Net – Synthetic fiber – (Mesh size < 2.5 inch or < 7cm)~~
~~3-c~~	~~Entangling Net – Natural fiber – (Mesh size >= 2.5 inch or >= 7cm)~~
~~3-d~~	~~Entangling Net – Natural fiber – (Mesh size < 2.5 inch or < 7cm)~~
~~4~~3	Palm fronds
~~5~~4	No wrapping
~~6~~5	Other (please specify in COMMENTS)

Table A9. Codes for Raft Buoyancy Devices

Code	Description for Raft Buoyancy Devices
1	Plastic Buoys
2	Plastic Containers
3	Net Corks
4	Metal
5	Wood (e.g. balsa wood)
6	Other natural material (please specify)
7	No floats in addition to raft
8	Other Activity (please specify in COMMENTS)

Table A10. Codes for Condition of raft and hanging structure.

Code	Condition of raft and hanging structure
1	Excellent
2	Very Good
3	Good
4	Regular
5	Bad
6	Very Bad

Table 11. Codes for Hanging Structure Design (refer to ANNEX 3).

Code	Description for Hanging Structure Design
1	Design 1
2	Design 2
3	Design 3
4	Design 4
5	Design 5
6	Design 6
7	Design 7
8	Design 8

Table A12. Codes for Main Appendages of Hanging Structure.

Code	Description for Main Appendages of Hanging Structure
1-a	Open Net – Synthetic fiber ~~– (Mesh size >= 2.5 inch or >= 7cm)~~
1-b	***Open Net – Natural fiber*** ~~***Synthetic fiber – (Mesh size < 2.5 inch or < 7cm)***~~
~~***1-c***~~***2-a***	~~***Open Net – Natural fiber – (Mesh size >= 2.5 inch or >= 7cm)***~~ ***Sheets or Panels – Synthetic fiber***
~~***1-d***~~***2-b***	~~***Open Net – Natural fiber – (Mesh size < 2.5 inch or < 7cm)***~~ ***Sheets or Panels – Natural fiber***
~~***2***~~***3***-a	Cord/Rope – Synthetic fiber
~~***2***~~***3***-b	Cord/Rope – Natural fiber
~~***3***~~***4***	Palm fronds
~~***4***~~***5***	Bamboo
~~***5***~~***6***	Other wood/ pallets or spools
~~***6***~~	~~Metal~~
7	No hanging structure
8	Other (please specify in COMMENTS)

Table A13. Codes for Attractors.

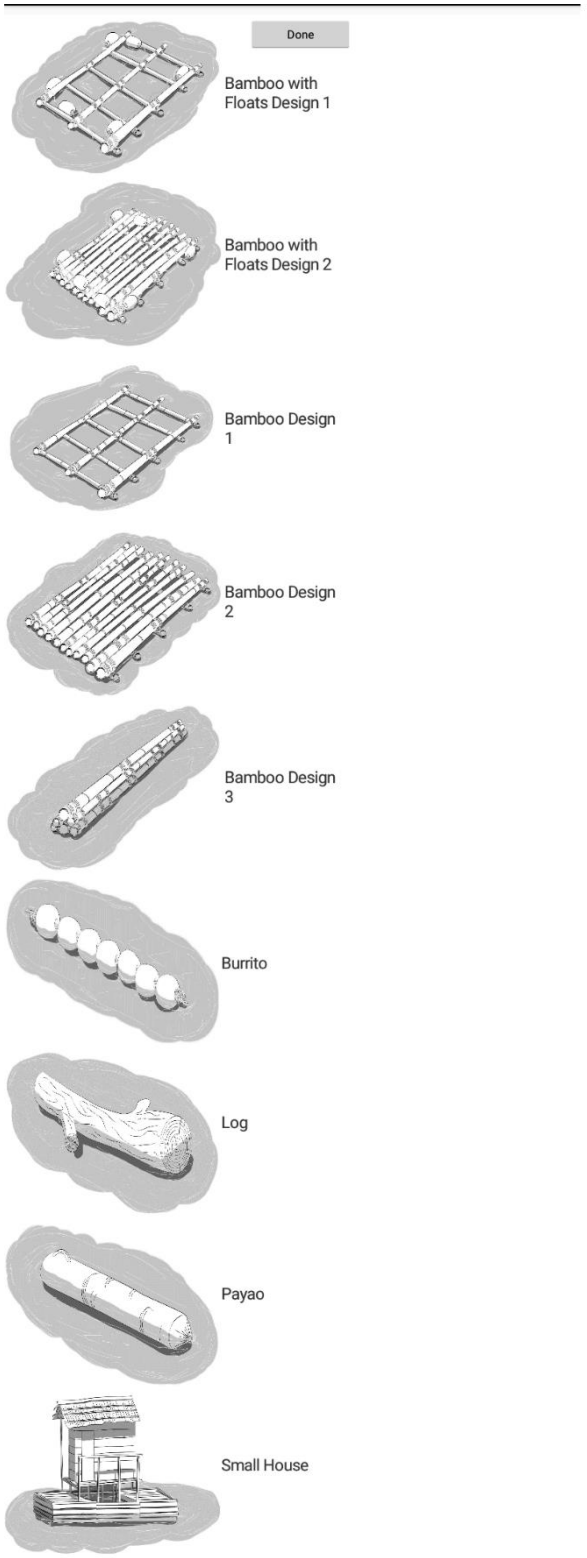
Code	Description for Attractors
1-a	Canvas and/or canvas bags and/or cloth – Synthetic fiber
1-b	Canvas and/or canvas bags and/or cloth – Natural fiber

2-a	Netting – Synthetic fiber ~~(Mesh size >= 2.5 inch or >= 7cm)~~
~~2-b~~	~~Netting – Synthetic fiber (Mesh size < 2.5 inch or < 7cm)~~
2-b~~e~~	Netting – Natural fiber ~~(Mesh size >= 2.5 inch or >= 7cm)~~
~~2-d~~	~~Netting – Natural fiber (Mesh size < 2.5 inch or < 7cm)~~
3	Palm fronds
4	No attractors
5	Other (please specify in COMMENTS)

Table A14. Codes for Hanging weights used.

Code	Description for Hanging weights used
1	Rock
2	Sand
3	Synthetic
4	Other (please specify in COMMENTS)

ANNEX 2: RAFT DESIGN



ANNEX 3: ~~*APPENDAGES*~~*HANGING STRUCTURE DESIGN*