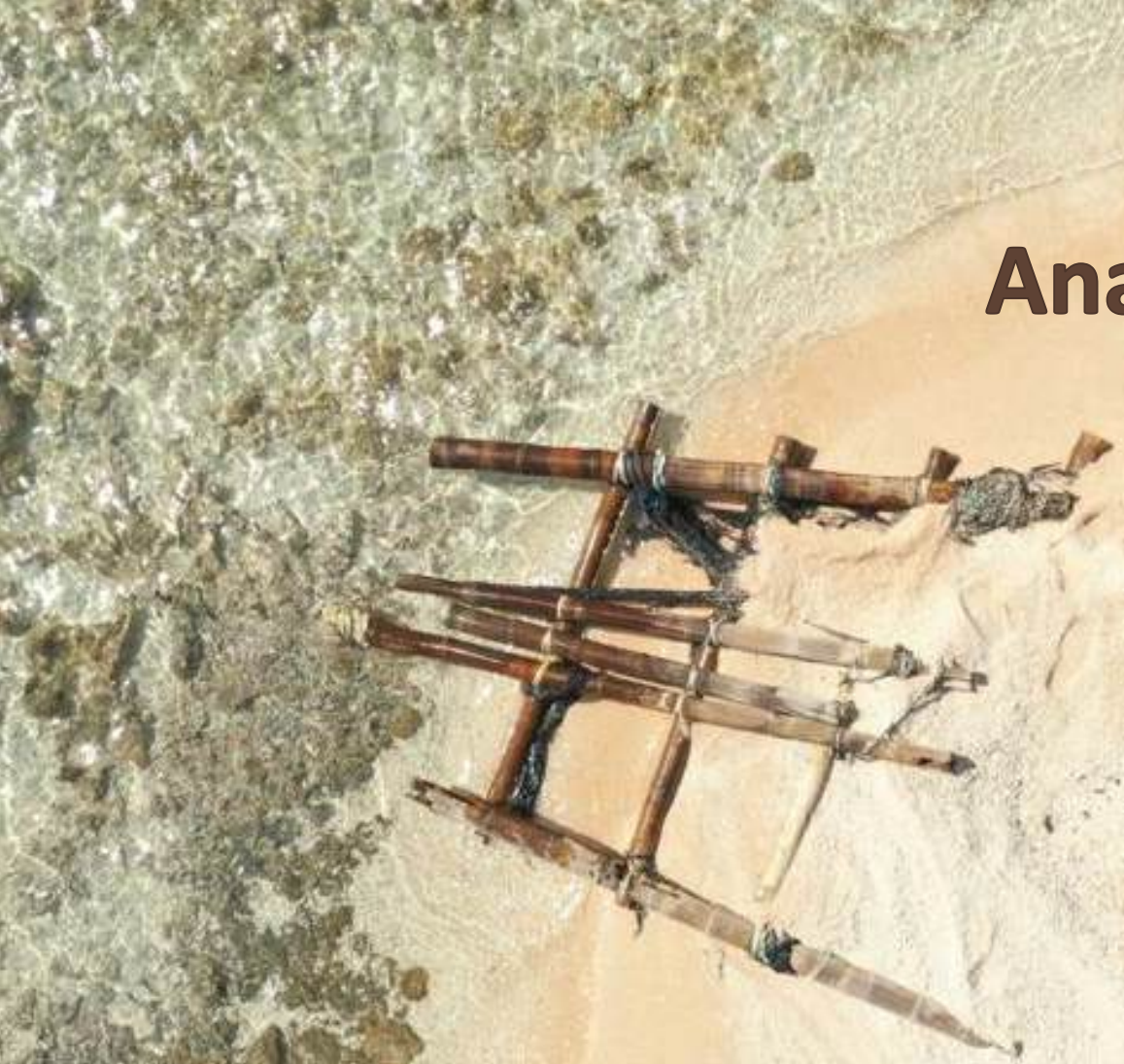


Analyses of the regional database of stranded drifting Fish Aggregating Devices (dFADs) in the Pacific Ocean: a 2024 update

FAD-WG-2025 FAD-09-INF-A

Jennyfer Mourot

9th Meeting of the Ad Hoc Working Group on FADs

28th & 29th of May 2025, San Diego

- 46,000–65,000 deployments / year estimated in the Pacific Ocean (*Escalle et al., 2021; Lopez et al., 2021*)
- Deployment in the equatorial area
- High rate of FAD loss and abandonment
- Stranding events highly underestimated with trajectory data only
- Lack of information on the environmental impacts linked to FADs loss and abandonment

Plastic pollution (macro & micro)

Navigation hazard

Ghost fishing

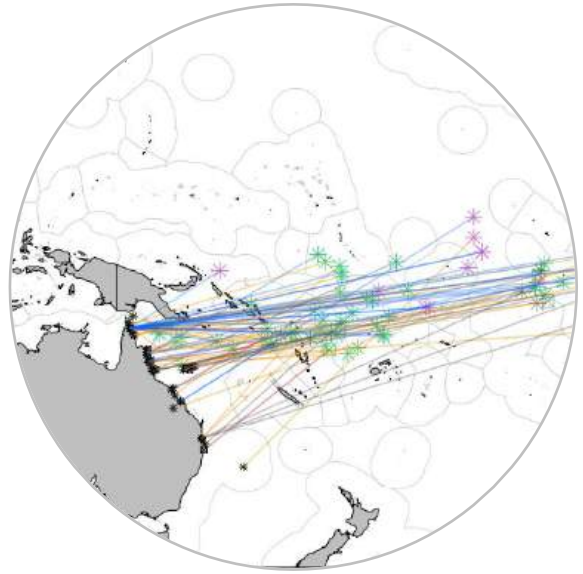
Ecosystems damages

Economic cost for removal

Three main objectives

(i)
characterize and quantify stranding events using data collected directly *in-situ*, and **evaluate the environmental impact**;

(ii)
assess the design and materials currently used in the dFAD construction and compare it to the designs and materials of dFAD found stranded in the WCPO;



(iii)
highlight any origin areas of dFAD found stranded and **owner fleets**.

Data collected in-situ

Awareness and communication materials

➔ voluntary-based data collection program on stranded FADs in the EPO have been initiated by the IATTC, using the same formats (Fuller et al. FAD-09-04)

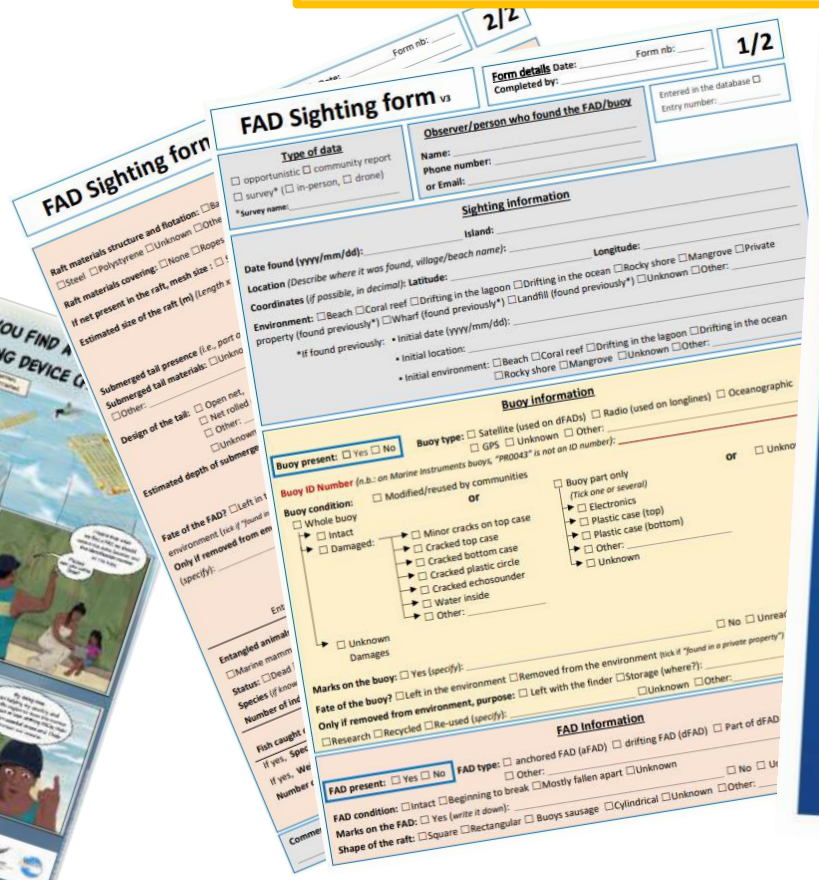
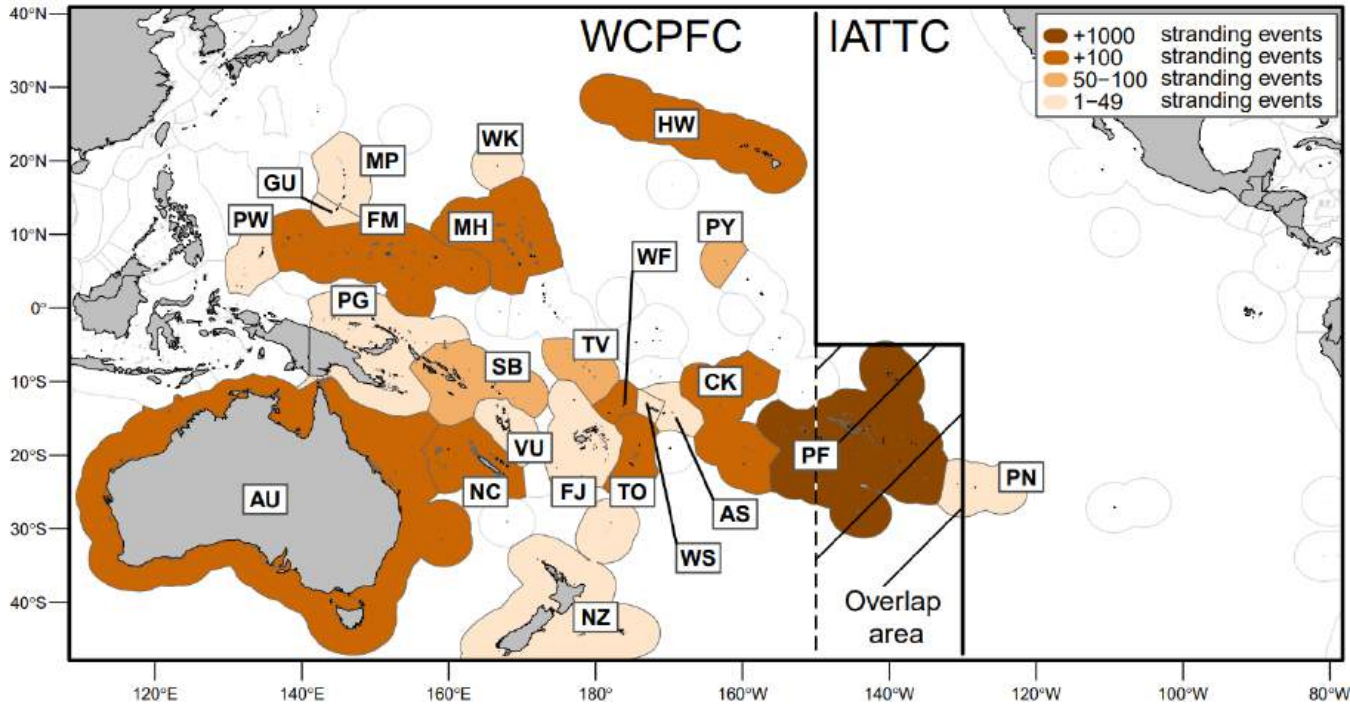


Table 1.

PICT	Start of the programme	Events recorded
French Polynesia	2019	1,539
Australia	2004	393
Cook Islands	2020	310
Wallis and Futuna	2020	268
Kingdom of Tonga	2023	201
Federated States of Micronesia	2021	187
Hawai'i (US)	2014	127
New Caledonia	2022	103
Republic of the Marshall Islands	2021	102
Solomon Islands	2024	93
Palmyra (US)	2009	86
Tuvalu	2022	61
Samoa	2024	28
American Samoa	2024	21
Guam	2024	8
Republic of Palau	2024	8

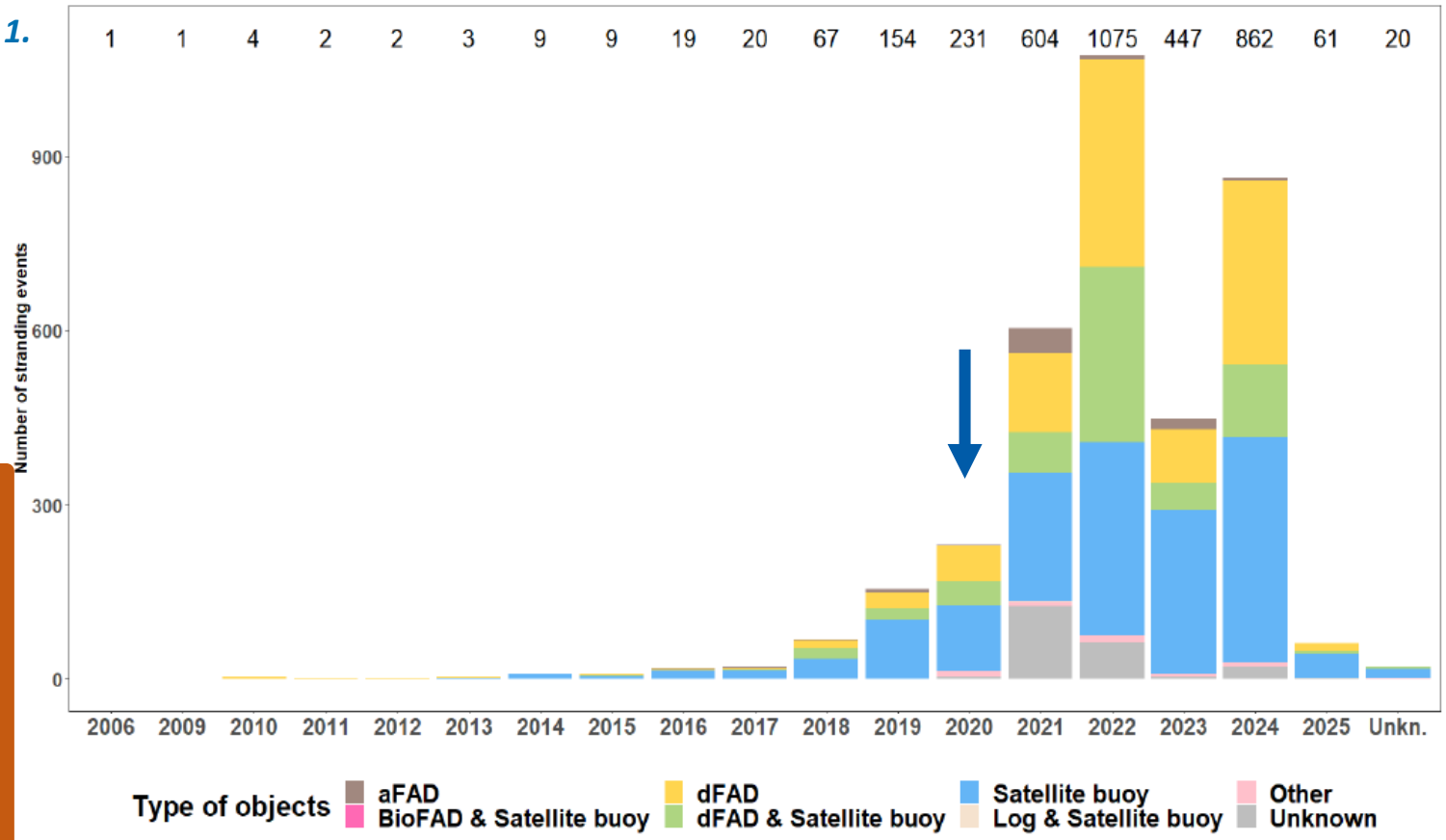


Pitcairn	Opportunistically	21
Vanuatu	Opportunistically	20
Wake Island (US)	Opportunistically	8
Papua New Guinea	Opportunistically/under discussion	4
Fiji	Opportunistically	2
New Zealand	Opportunistically	2
Alaska (US)	Opportunistically	1
Northern Mariana Islands (US)	Opportunistically	1

Total of stranding events **3,591**

Pacific Community
Communauté du Pacifique

Figure 1.




© Database FP

Table 2.

		FADs (1,904)		
		Presence	Absence	Unknown
Buoy (2,448)	Presence	22%	44%	3%
	Absence	31%	0.0%	0.1%
	Unknown	0.7%	0.1%	0.3%

Figure 3.

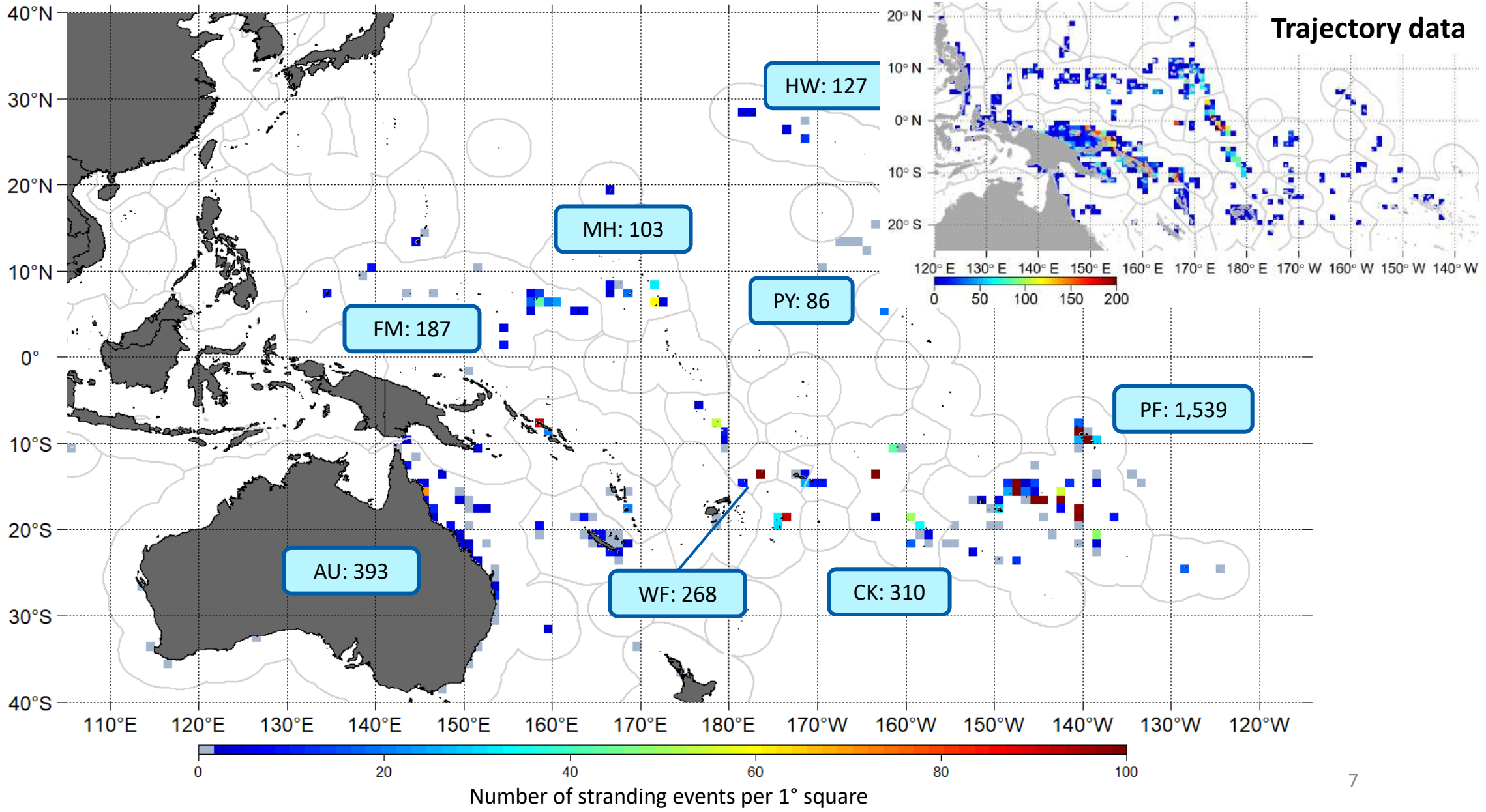

Trajectory data
HW: 127
MH: 103
FM: 187
PY: 86
PF: 1,539
AU: 393
WF: 268
CK: 310
40°N
30°N
20°N
10°N
0°
10°S
20°S
30°S
40°S
110°E
120°E
130°E
140°E
150°E
160°E
170°E
180°E
170°W
160°W
150°W
140°W
130°W
120°W
0
20
40
60
80
100
Number of stranding events per 1° square
20° N
10° N
0° N
10° S
20° S
120° E
130° E
140° E
150° E
160° E
170° E
180° E
170° W
160° W
150° W
140° W
0
50
100
150
200

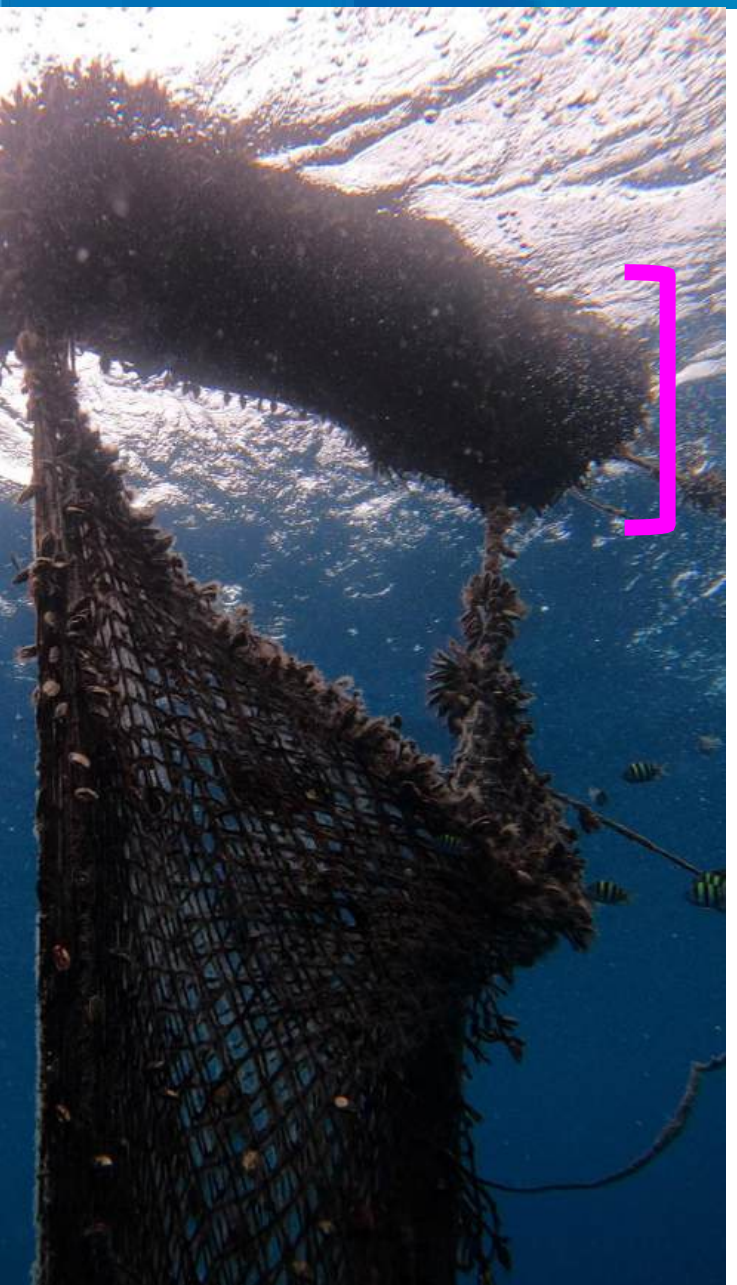
Table 4.

Environment	Total	DFAD with tail**	DFAD without tail**	AFAD
Anchored	0.03%	*NA*	*NA*	1.1%
Beach	37.2%	27.1%	56.5%	47.2%
Coral reef	4.3%	10.2%	5%	7.9%
Drifting in the lagoon	1.3%	2.8%	1.1%	4.5%
Drifting in the ocean	6.7%	19.2%	2.8%	4.5%
Mangrove	0.3%	*NA*	0.3%	6.7%
Previously collected* Private property, landfill, wharf	32.3%	35.9%	12.3%	18.0%
Shore	7.0%	3.4%	19.7%	10.1%
Unknown	10.9%	1.5%	2.3%	*NA*

<10% 10-20% 20-30% 30-40% 40-50% >50%

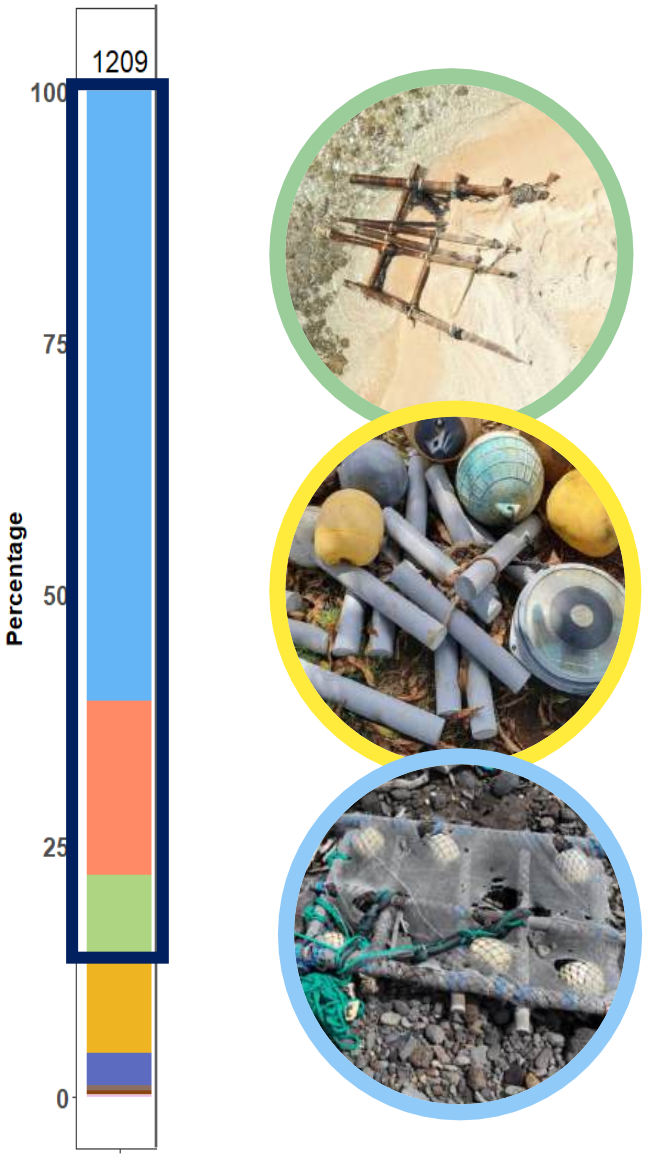






Raft covering & Structure and flotation materials

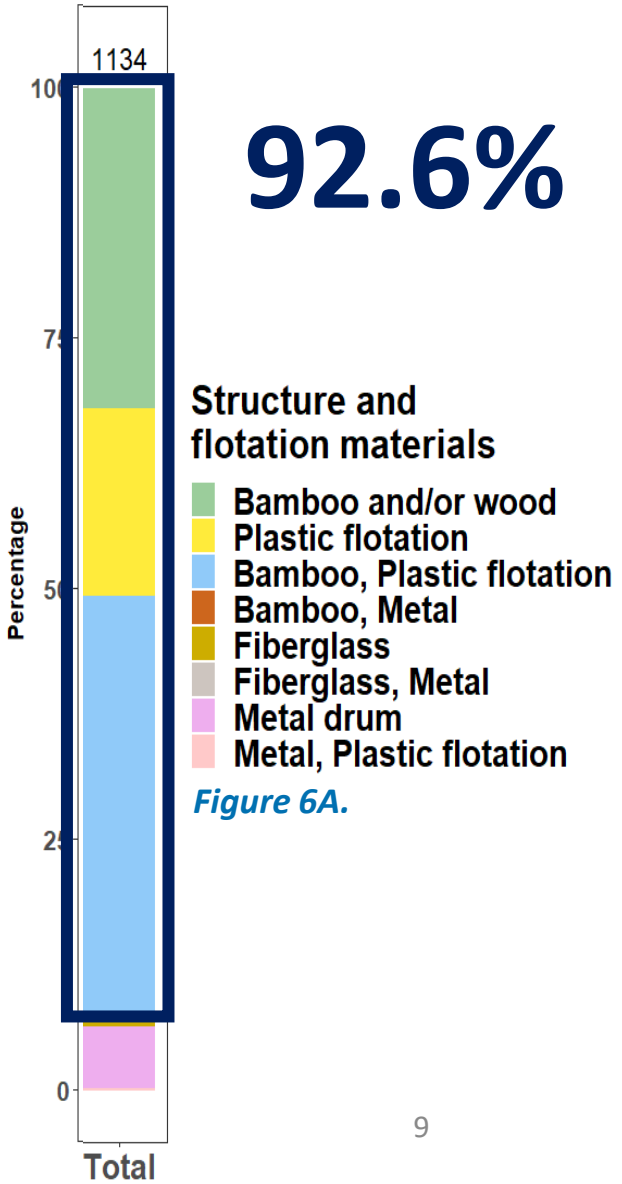
85.8%



Covering materials

- Net, Rope
- Net
- Rope
- No covering
- Net, Rope, Plastic materials
- Rope, Plastic materials
- Plastic materials
- Net, Clothe
- Clothe

Figure 6B.

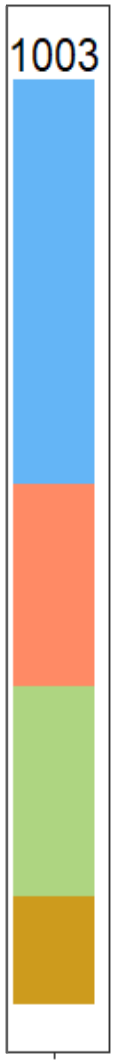


92.6%

Structure and flotation materials

- Bamboo and/or wood
- Plastic flotation
- Bamboo, Plastic flotation
- Bamboo, Metal
- Fiberglass
- Fiberglass, Metal
- Metal drum
- Metal, Plastic flotation

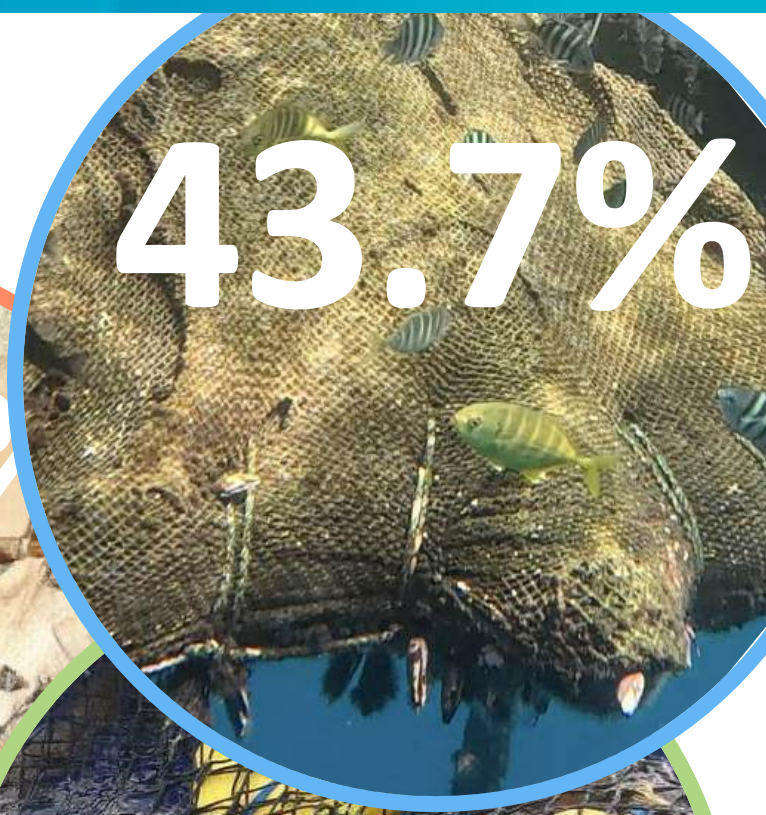
Figure 6A.

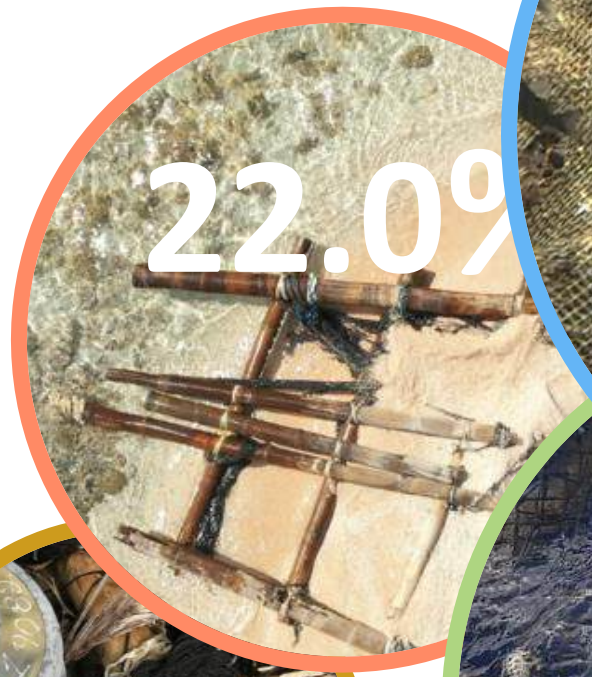


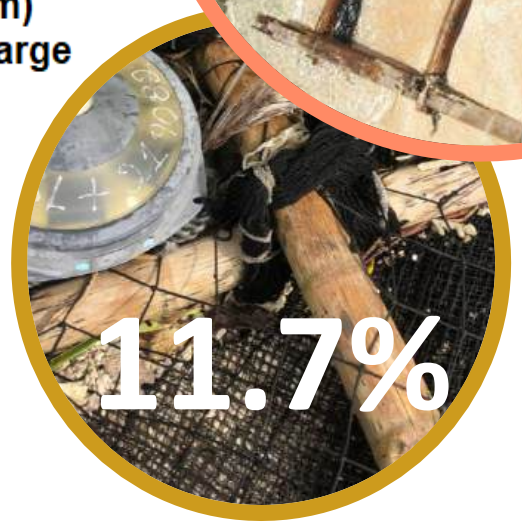
Mesh size

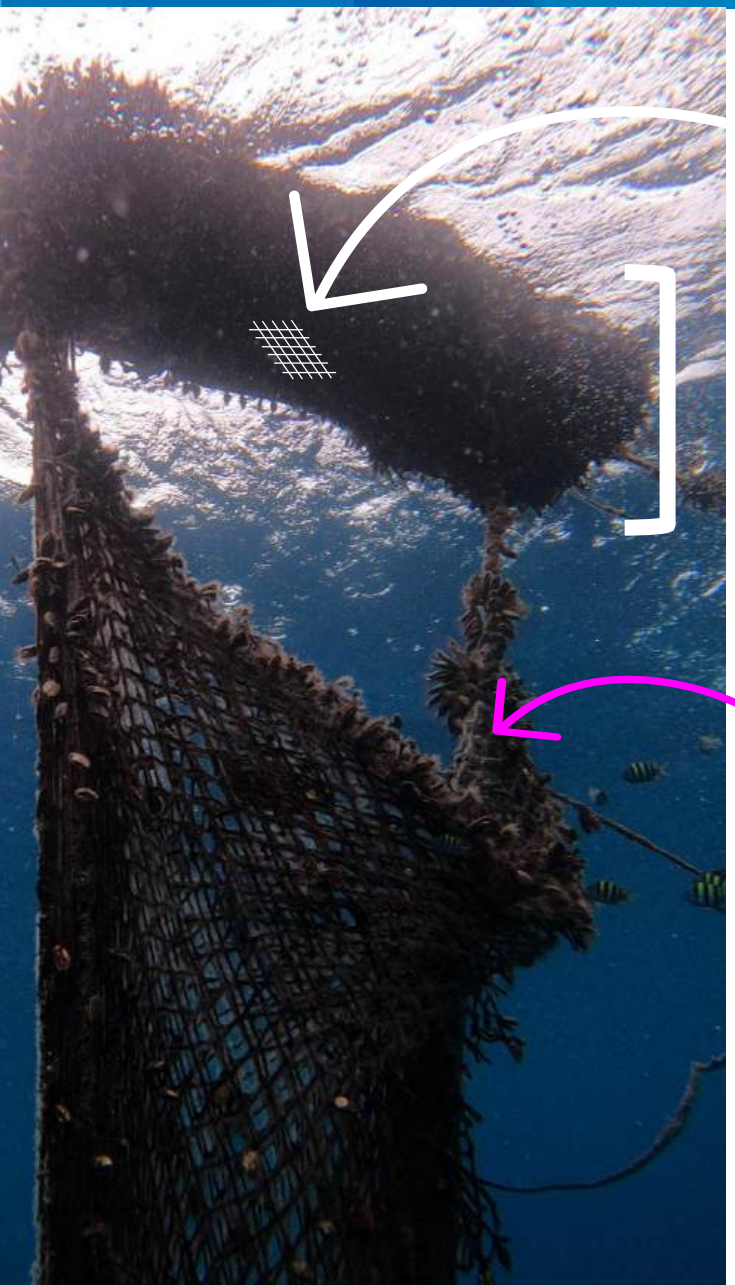
- Small (<7cm)
- No net
- Large (>7cm)
- Small and large

Figure 7.





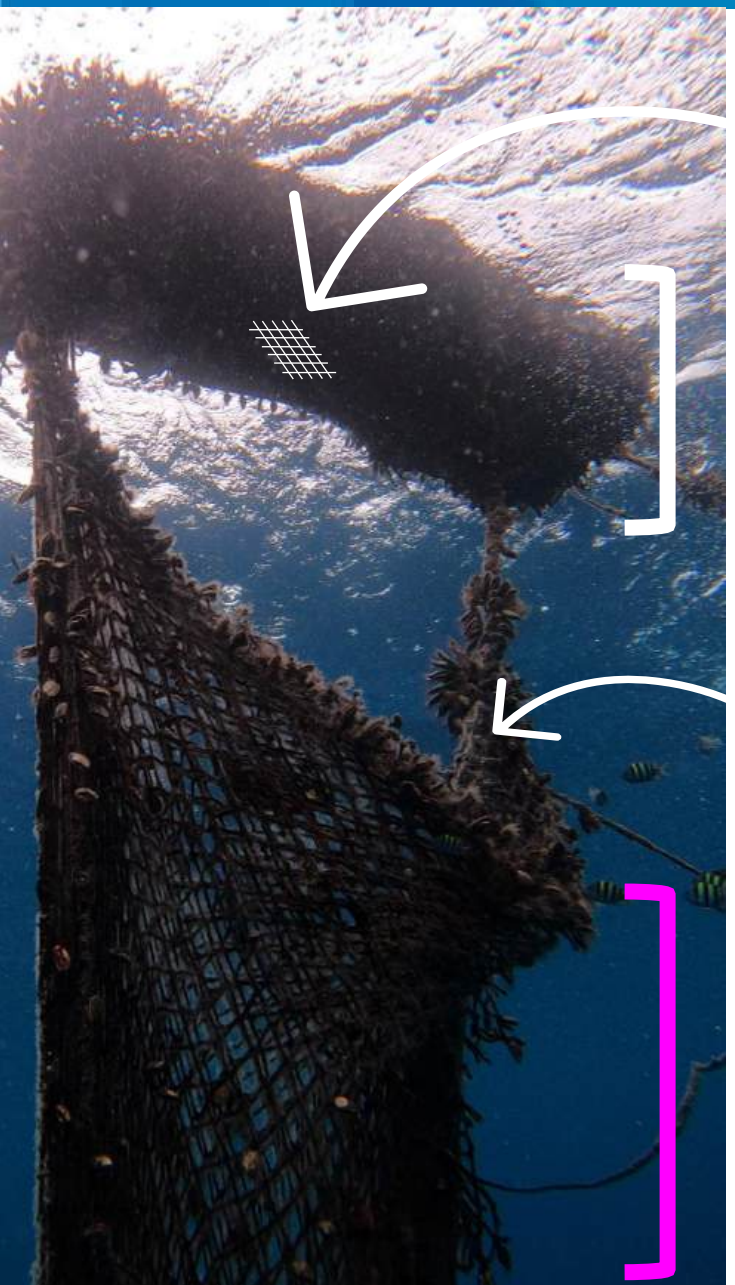




Tail presence

Submerged appendages		
	N	%
Present	621	35
Absent	725	41
Unknown	412	23

Table 5.



Tail materials

>75%

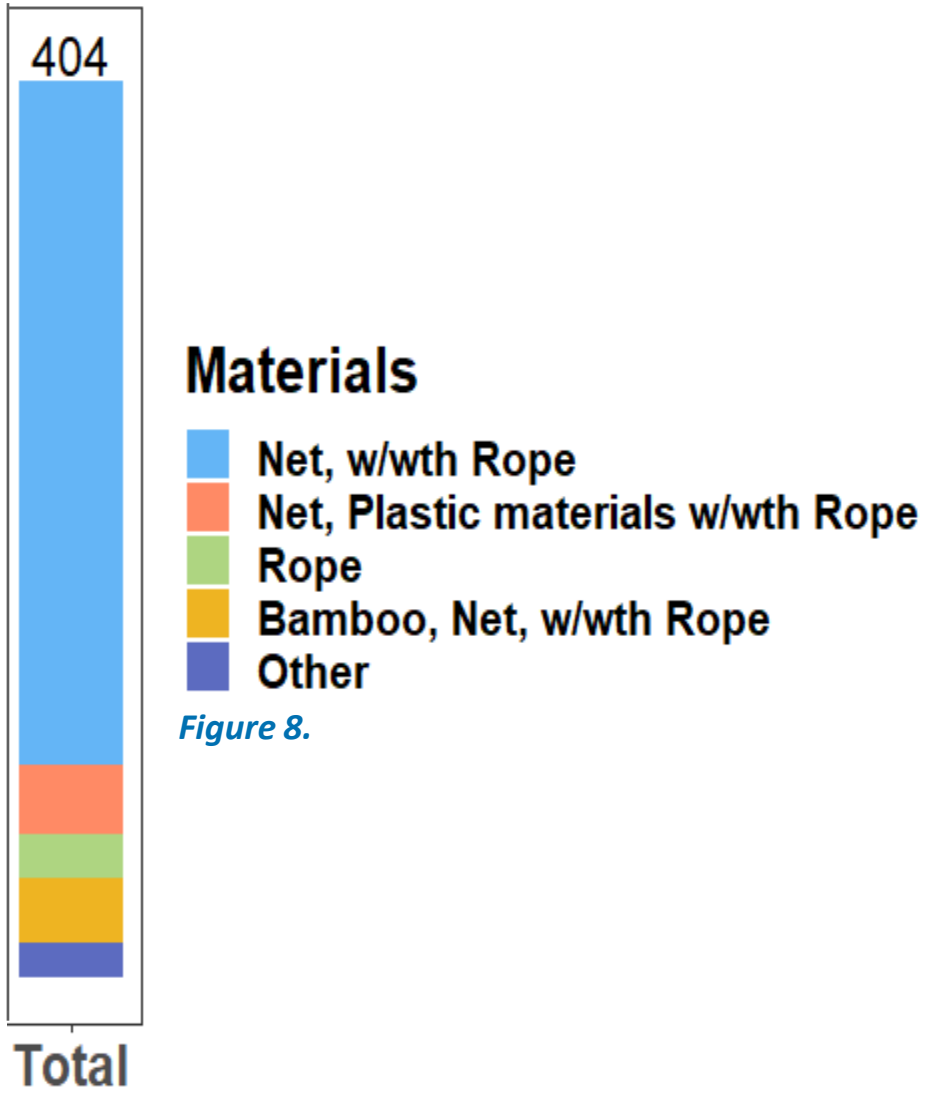
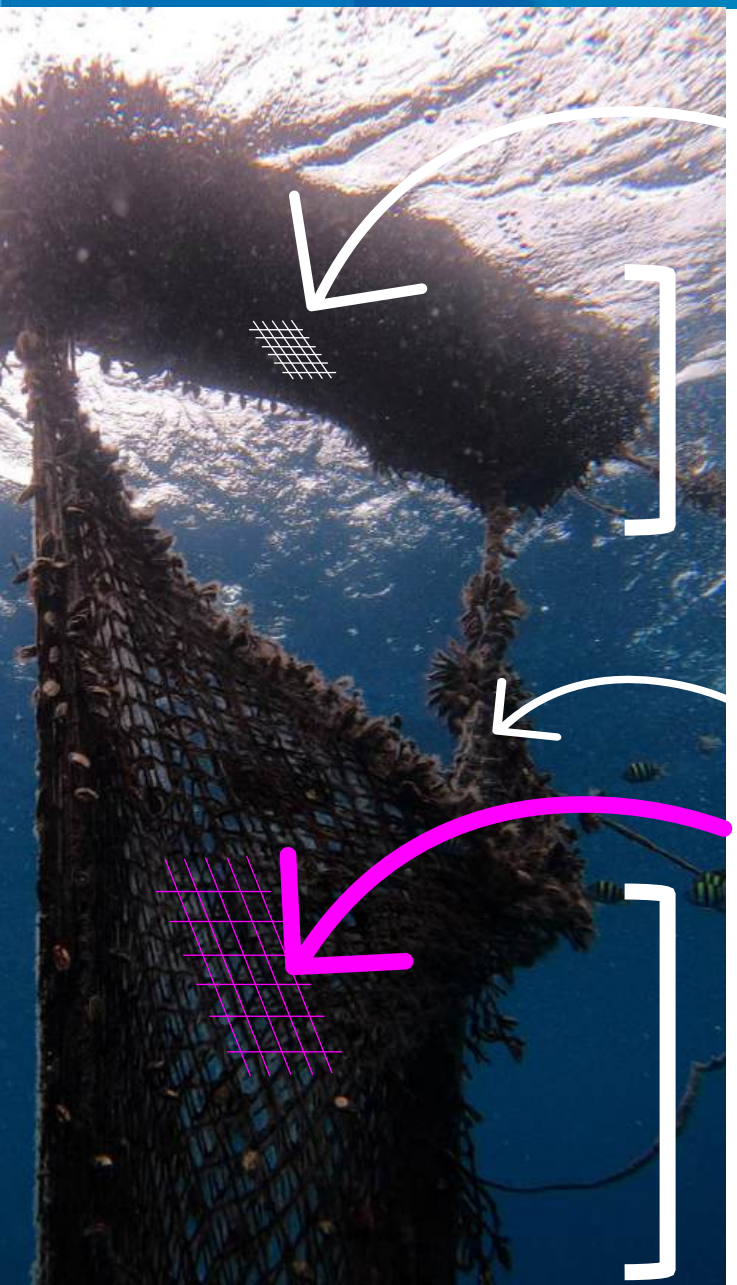


Figure 8.



>75%

Information about mesh size and design in Table 12.

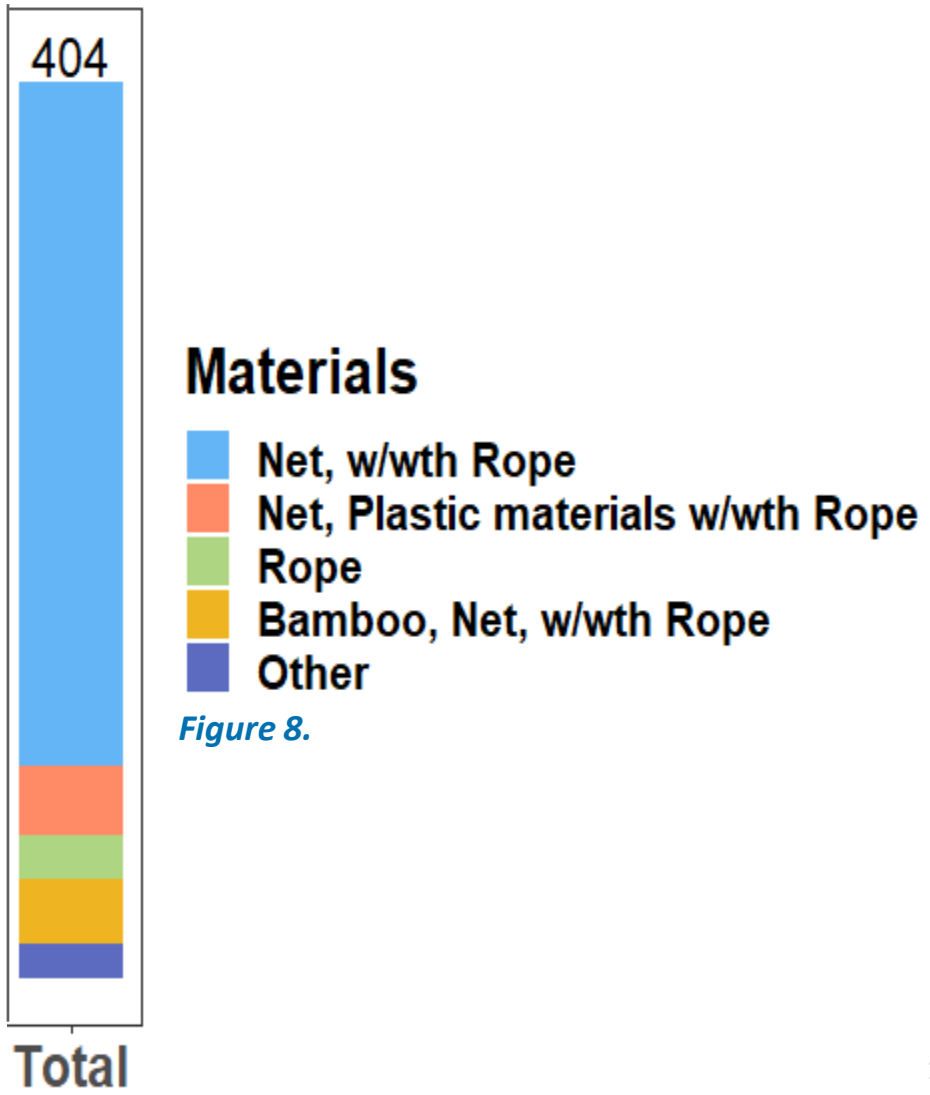


Figure 8.

Type of FAD found stranded (biodegradability)




?

Table 6.

Tail	Raft			
	Synthetic	Mix	Natural	Unknown
Synthetic	6%	10%	0.1%	5%
Mixed	0.5%	1%	0.1%	0.7%
Natural	0	0	0	0
No tail	11%	26%	1%	3%
Unknown	11%	8%	1%	16%

Type of FAD found stranded (biodegradability)




?

Table 6.

Tail	Raft: Synthetic	Raft: Mix	Raft: Natural	Raft: Unknown
Synthetic	6%	10%	0.1%	5%
Mixed	0.5%	1%	0.1%	0.7%
Natural	0	0	0	0
No tail	11%	26%	1%	3%
Unknown	11%	8%	1%	16%

Non-entangling resolution (C-23-04) ➔ No clear shift in FADs found stranded yet, but new design are appearing

Biodegradability resolution (C-23-04) ➔ 1% is cat.I (fully biodegradable)

17% is cat.V (fully non-biodegradable) ; 1st January 2026, cat.V will be forbidden

Buoy markings

- WCPFC online vessel registry (public)
- IATTC online vessel registry (public)

➔ vessel owner (Flag, Convention Area)

Unique Buoy Identification number*

- WCPFC observer database
- IATTC observer database
- PNA FAD tracking database

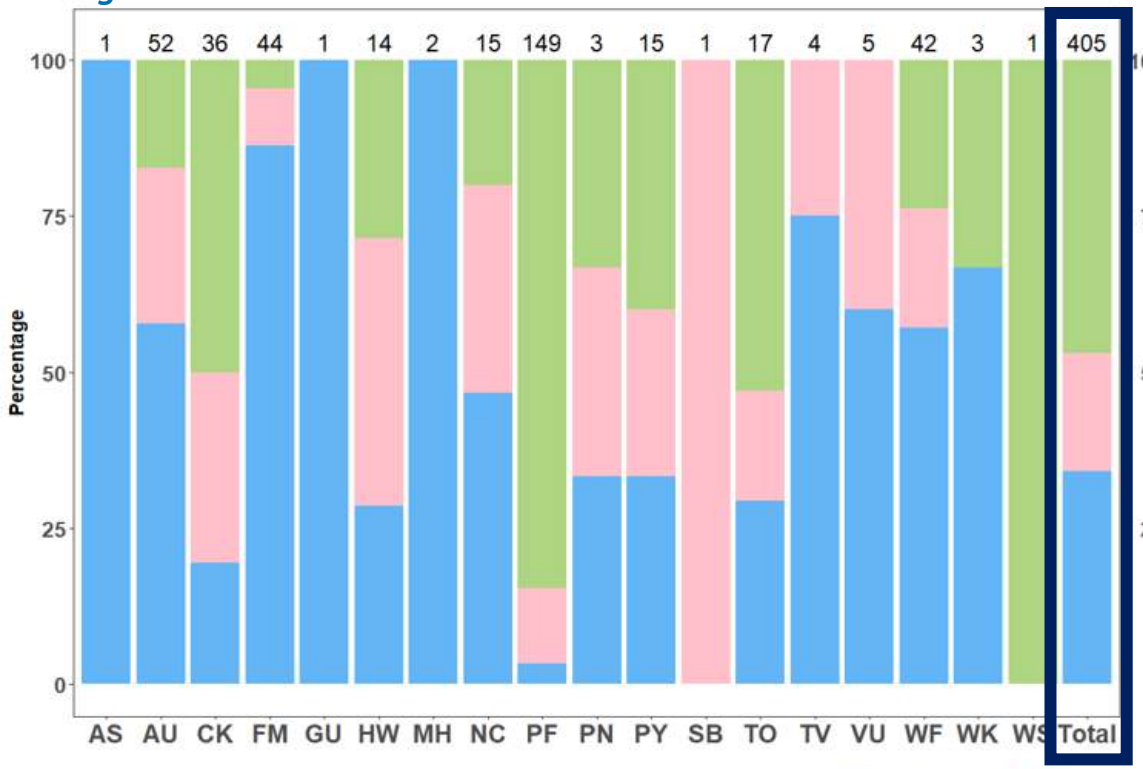
➔ Last recorded position of the buoy

**Through Mou IATTC / SPC, no confidential data was shared*

Buoy markings

➔ Convention area of owner vessel

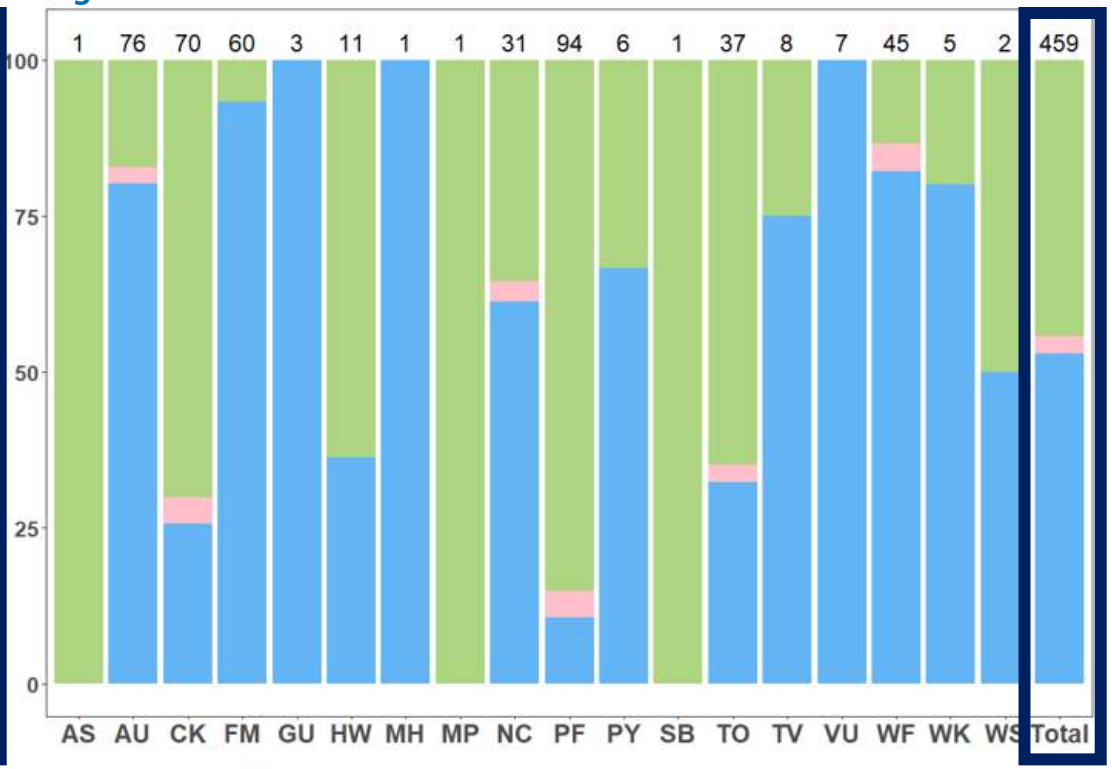
Figure 11A.



Unique Buoy Identification number

➔ convention area of the last known position

Figure 11B.



RFMO IATTC IATTC/WCPFC WCPFC

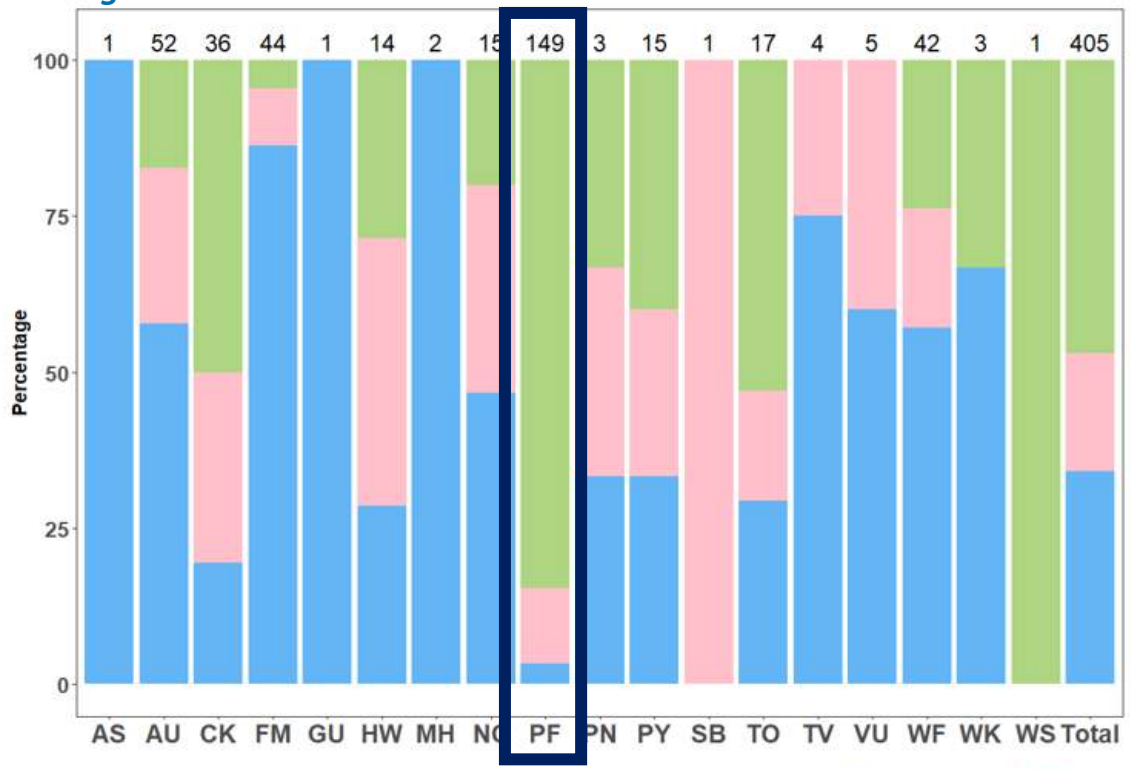
IATTC CA	=	47%
WCPFC CA	=	34%
Both CAs	=	19%

WCPFC CA	=	53%
IATTC CA	=	44%
Overlap area	=	3%

Buoy markings

➔ Convention area of owner vessel

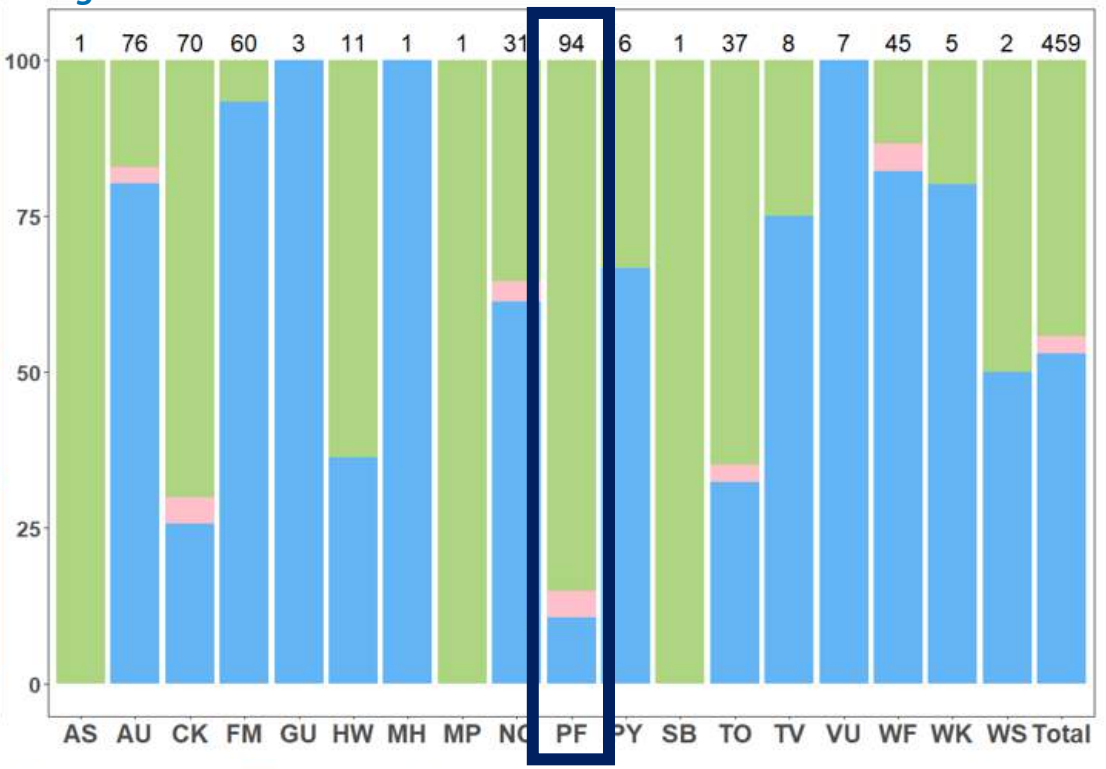
Figure 11A.



Unique Buoy Identification number

➔ convention area of the last known position

Figure 11B.



RFMO IATTC IATTC/WCPFC WCPFC

IATTC CA	=	85%
Both CAs	=	12%
WCPFC CA	=	3%

IATTC CA	=	85%
WCPFC CA	=	11%
Overlap area	=	4%

- 16 PICTs involved ; >3,500 stranding events reported

➔voluntary-based data collection program on stranded FADs in the EPO have been initiated by the IATTC

- Some limits
  - Data collection effort **spatially and temporally variable** throughout the region

  ➔**Continue the expansion of the data collection** and reporting programmes
  - Origins
    - Incomplete trajectory data of buoys (PNA FAD Tracking database)
    - Observers database (last recorded activity, but not the last it is used)

  ➔**Need for FAD-buoy trajectory data**, including historical data

- Mitigation of impacts
  - Buoys: projects of repurposing/recycling with buoy providers
  - FAD: initiatives for recovery programmes (offshore or close to shore) are considered

  ➔**Reduce FAD loss and abandonment and potential impacts before reaching coastal areas**

  ➔**Shift in design and materials will be occurring following new adopted resolutions (NE and bioFADs)**

jenniferm@spc.int
laurianee@spc.int

Many thanks to all partners and local communities involved in the data collection !

FAD Sighting form v3

Form details Date: _____ Form nb: _____
Completed by: _____

1/2

Type of data
☐ opportunistic ☐ community report
☐ survey* (☐ in-person, ☐ drone)
*Survey name: _____

Observer/person who found the FAD/buoy
Name: _____
Phone number: _____
or Email: _____

Entered in the database ☐
Entry number: _____

Sighting information

Date found (yyyy/mm/dd): _____ **Island:** _____

Location *(Describe where it was found, village/beach name)*: _____

Coordinates *(if possible, in decimal)*: **Latitude:** _____ **Longitude:** _____

Environment: ☐Beach ☐Coral reef ☐Drifting in the lagoon ☐Drifting in the ocean ☐Rocky shore ☐Mangrove ☐Private property (found previously*) ☐Wharf (found previously*) ☐Landfill (found previously*) ☐Unknown ☐Other: _____

*If found previously:
- Initial date (yyyy/mm/dd): _____
- Initial location: _____
- Initial environment: ☐Beach ☐Coral reef ☐Drifting in the lagoon ☐Drifting in the ocean ☐Rocky shore ☐Mangrove ☐Unknown ☐Other: _____

Buoy information

Buoy present: ☐ Yes ☐ No

Buoy type: ☐ Satellite (used on dFADs) ☐ Radio (used on longlines) ☐ Oceanographic ☐ GPS ☐ Unknown ☐ Other: _____

Buoy ID Number *(n.b.: on Marine Instruments buoys, "PR0043" is not an ID number)*: _____

Buoy condition: ☐ Modified/reused by communities

☐ Whole buoy
- ☐ Intact
- ☐ Damaged:
  - ☐ Minor cracks on top case
  - ☐ Cracked top case
  - ☐ Cracked bottom case
  - ☐ Cracked plastic circle
  - ☐ Cracked echosounder
  - ☐ Water inside
  - ☐ Other: _____
- ☐ Unknown Damages

or

☐ Buoy part only *(Tick one or several)*
- ☐ Electronics
- ☐ Plastic case (top)
- ☐ Plastic case (bottom)
- ☐ Other: _____
- ☐ Unknown

or ☐ Unknown

Marks on the buoy: ☐ Yes (*specify*): _____ ☐ No ☐ Unreadable ☐ Unknown

Fate of the buoy? ☐Left in the environment ☐Removed from the environment (tick if *"found in a private property"*) ☐Unknown

Only if removed from environment, purpose: ☐ Left with the finder ☐Storage (where?): _____ ☐Landfill ☐Research ☐Recycled ☐Re-used (*specify*): _____ ☐Unknown ☐Other: _____

FAD Information

FAD present: ☐ Yes ☐ No

FAD type: ☐ anchored FAD (aFAD) ☐ drifting FAD (dFAD) ☐ Part of dFAD ☐ Log ☐ Unknown ☐ Other: _____

FAD condition: ☐Intact ☐Beginning to break ☐Mostly fallen apart ☐Unknown

Marks on the FAD: ☐ Yes (*write it down*): _____ ☐ No ☐ Unreadable ☐ Unknown

Shape of the raft: ☐Square ☐Rectangular ☐ Buoys sausage ☐Cylindrical ☐Unknown ☐Other: _____

FAD Sighting form v3

Form details Date: _____ Form nb: _____
Completed by: _____

2/2

Raft materials *(Tick one or several)*

Raft materials structure and flotation: ☐Bamboo ☐Log ☐PVC ☐Floats ☐Plastic drum ☐ Fiberglass drum ☐Metal drum ☐Steel ☐Polystyrene ☐Unknown ☐Other: _____

Raft materials covering: ☐None ☐Ropes ☐Nets ☐Plastic sheeting ☐Canvas ☐Unknown ☐Other: _____

If net present in the raft, mesh size : ☐ Small (<7cm) ☐ Large(>7cm) ☐ Small & Large ☐Unknown

Estimated size of the raft (m) *(Length x Width)*: _____ x _____ or ☐Unknown

Underwater component/tail *(Tick one or several)*

Submerged tail presence *(i.e., part of the FAD normally under water)*: ☐Yes ☐No ☐Unknown

Submerged tail materials: ☐Unknown ☐Net ☐Rope ☐Canvas ☐Plastic sheeting ☐ Bamboo ☐ Fishing lines ☐Other: _____

Design of the tail: ☐ Open net, mesh size: ☐Small (<7cm) ☐Large(>7cm) ☐Other: _____
☐ Net rolled up in bundle, mesh size: ☐Small (<7cm) ☐Large(>7cm) ☐Other: _____
☐ Other: _____
☐Unknown

Estimated depth of submerged tail (m): _____ or ☐Unknown

Fate of the FAD

Fate of the FAD? ☐Left in the environment ☐Sunk ☐Raft removed, tail section left ☐Unknown ☐Removed from the environment (*tick if "found in a private property"*) ☐Other: _____

Only if removed from environment, purpose: ☐Burned ☐ Left with the finder ☐Landfill ☐ Research ☐ Recycled ☐Re-used (*specify*): _____ ☐Other: _____ ☐Unknown

Impact on / interaction with marine life *(Tick one or several)*

Environmental damages caused by the FAD :

Entangled animals: ☐ Yes ☐ No ☐Unknown | Entangled on corals: ☐ Yes ☐ No ☐Unknown

Entangled animals? ☐ Turtle ☐Shark ☐Fish ☐Marine mammal ☐Unknown ☐Other: _____
Status: ☐Dead ☐Alive ☐ Unknown
Species (*if known*): _____
Number of individuals: _____

If FAD is entangled on coral reef, please state the approximate size of the area impacted (m²): _____

Fish caught during a set on the FAD: ☐No ☐Yes ☐Unknown
If yes, **Species** (*if known*): _____
If yes, **Weight of the catch (in kg)** (*if known*): _____
Number of individuals: _____

Fish or other animals aggregated around the FAD :
☐No ☐Yes ☐Unknown
If yes, **Species** (*if known*): _____
Number of individuals: _____

Comments: _____

Number of pictures: _____