Western and Central Pacific Fisheries Commission

Pacific Community
Communauté du Pacifique

Stakeholders view and economic and feasibility analysis on options to mitigate dFAD loss and abandonments and their impacts: preliminary results

WCPFC-SC21-EB-WP-04

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

WCPFC-SC21-EB-WP-05

Lauriane Escalle and Jennyfer Mourot

SCIENTIFIC COMMITTEE
TWENTY-FIRST REGULAR SESSION
Nuku'alofa, Tonga
13–21 August 2025

Introduction

- 46,000–65,000 deployments / year estimated in the Pacific Ocean
- High rate of FAD loss and abandonment, with limited knowledge of dFADs fates of outside fishing grounds
- Stranding events, 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

Introduction

- **SPC project:**

Assessment of the Impacts of dFADs on Marine Environment in Pacific Island Countries: Recommendations for Mitigation Strategies

THE WORLD BANK

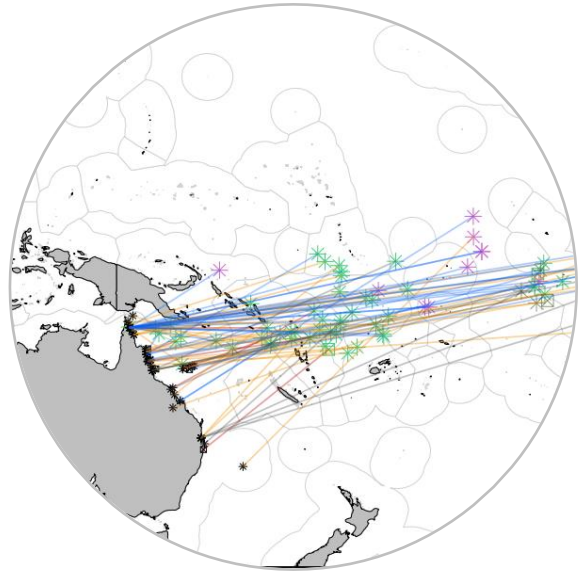
2024–2026

1. Stranded FAD data collection and analyses of the regional stranded FAD database
   → Mourot et al., 2025 WCPFC-SC21-EB-WP05
2. Monitoring dFADs outside fishing grounds and analyses of trajectories of buoys attached to lost and abandoned dFADs to better determine FAD fates
3. Legal study on the international and regional framework of dFAD loss and abandonment
4. Feasibility and economic analyses of options to mitigate dFAD loss and abandonment, including retrieval
5. Stakeholders consultations
   - On-line surveys and interviews
   - Regional workshop
   - Reports submitted to regional meetings

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;

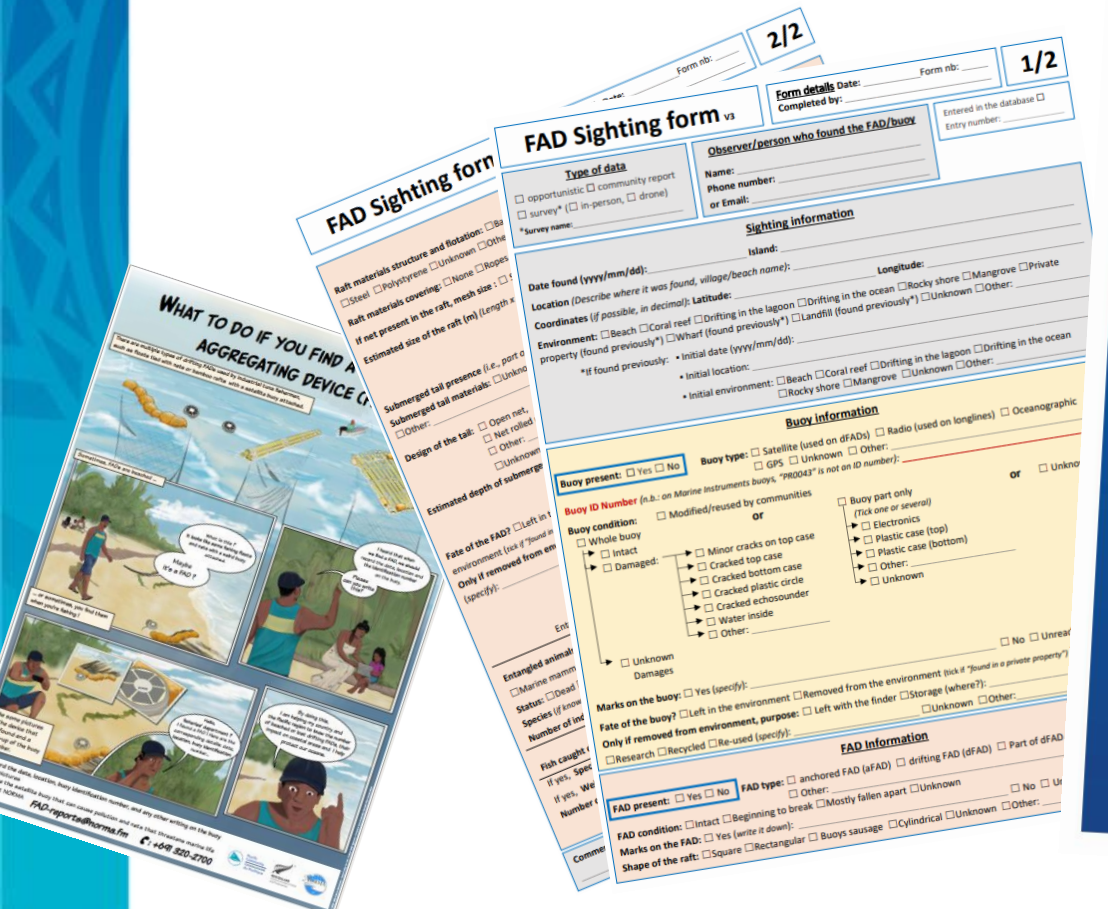


(iii)
highlight any origin areas of dFAD found stranded and **owner fleets**.

Data collected in-situ

Awareness and communication materials

➔ voluntary-based program initiated by the IATTC since last year (same format)



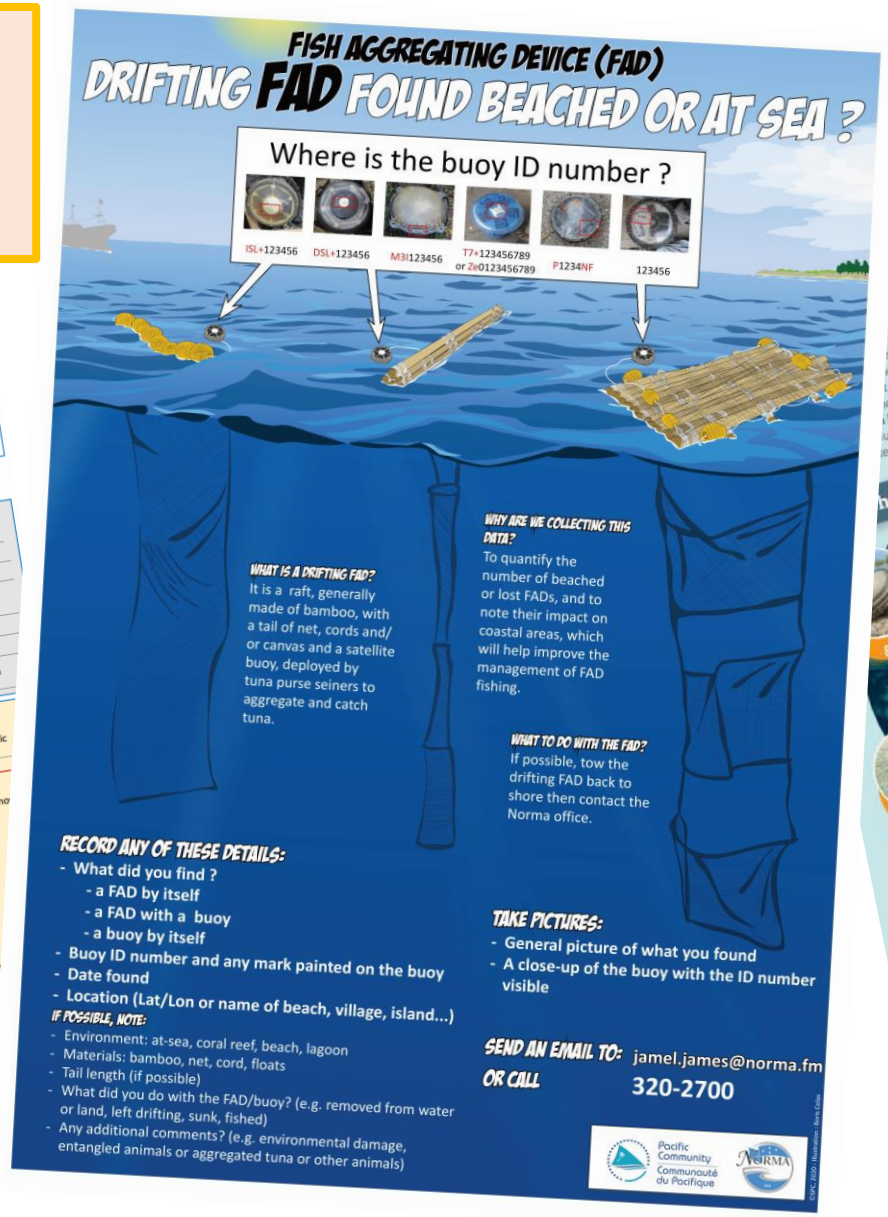
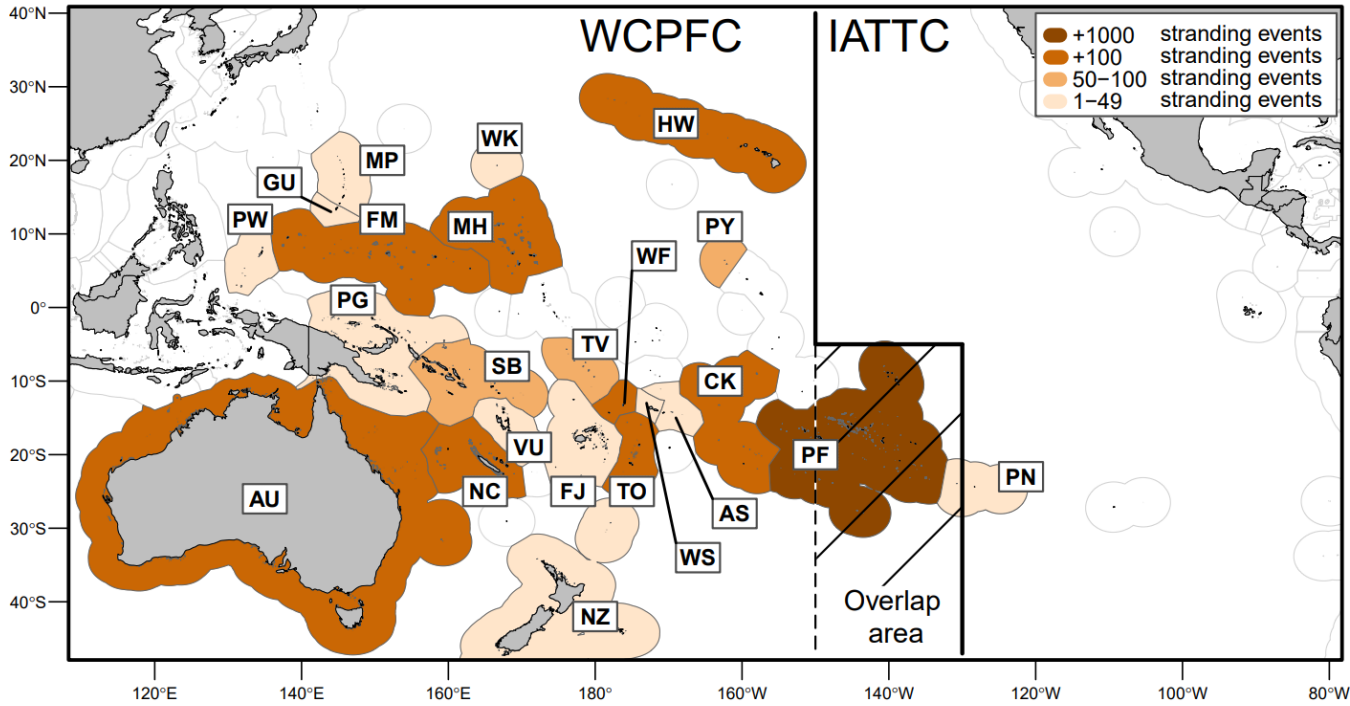


Table 1.

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	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.

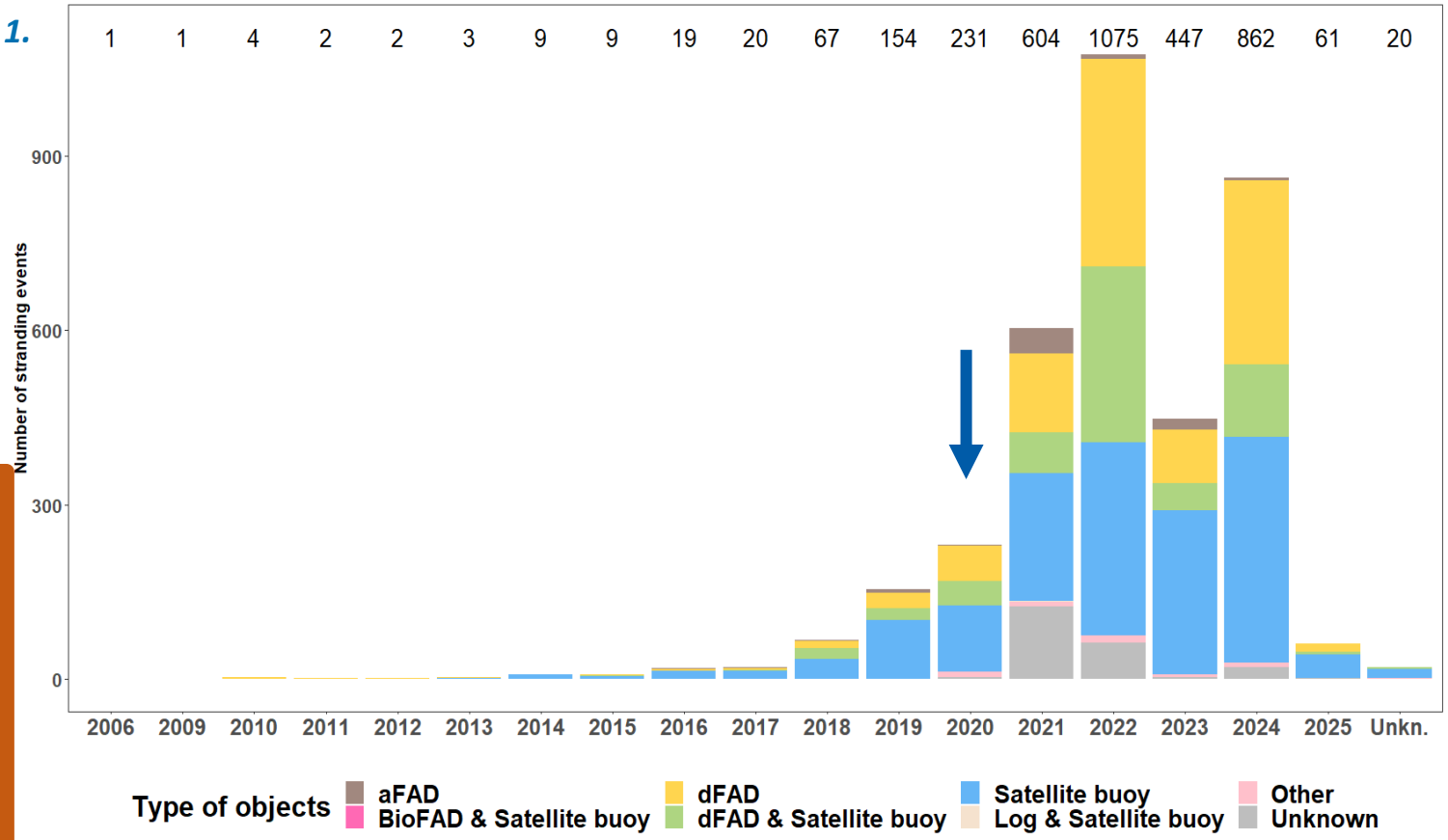


Table 2.

		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.

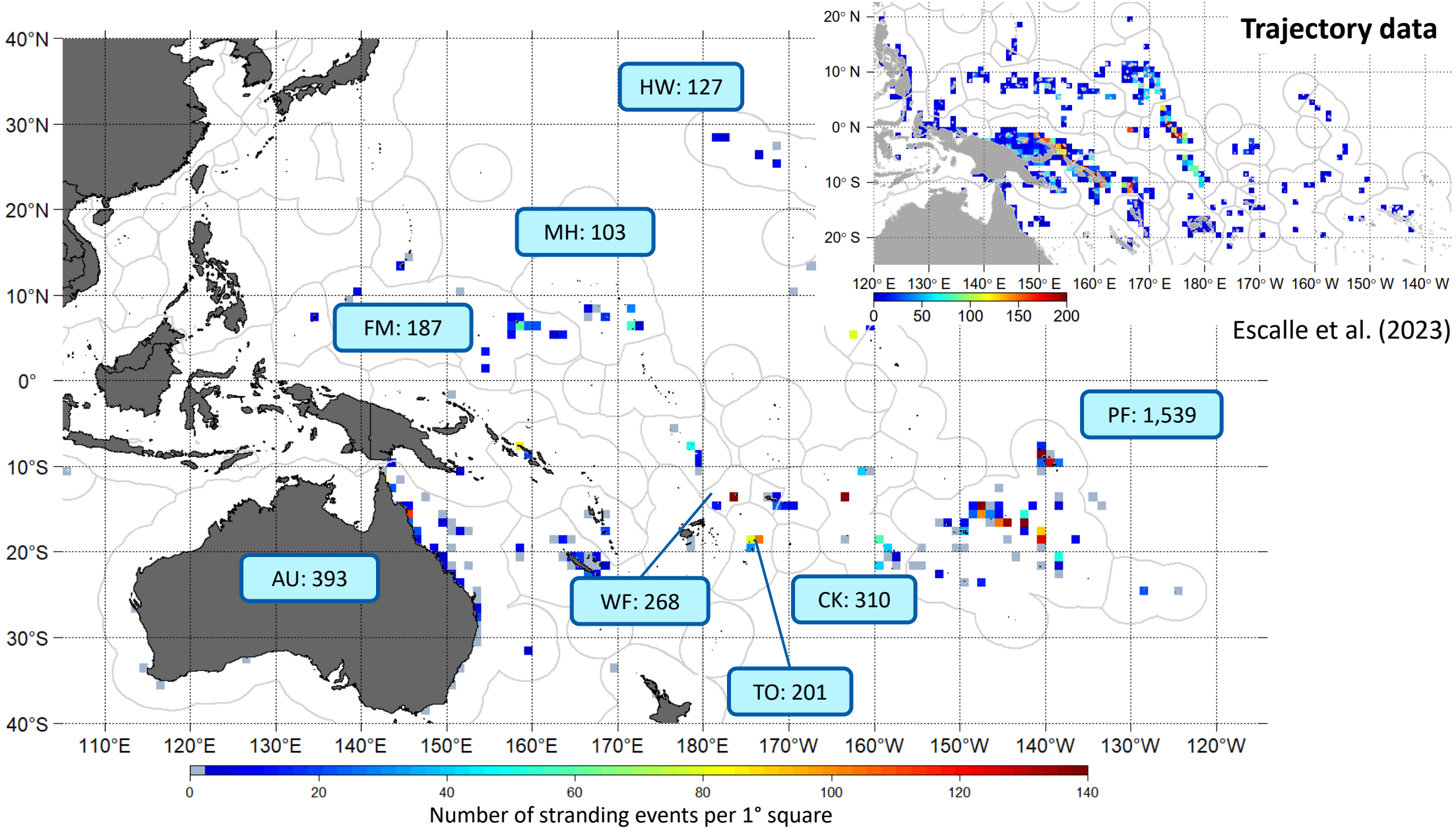

Trajectory data
Escalle et al. (2023)
HW: 127
MH: 103
FM: 187
PF: 1,539
AU: 393
WF: 268
CK: 310
TO: 201
40°N
30°N
20°N
10°N
0°
10°S
20°S
30°S
40°S
110°E 120°E 130°E 140°E 150°E 160°E 170°E 180°E 170°W 160°W 150°W 140°W 130°W 120°W
0 20 40 60 80 100 120 140
Number of stranding events per 1° square
20° 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

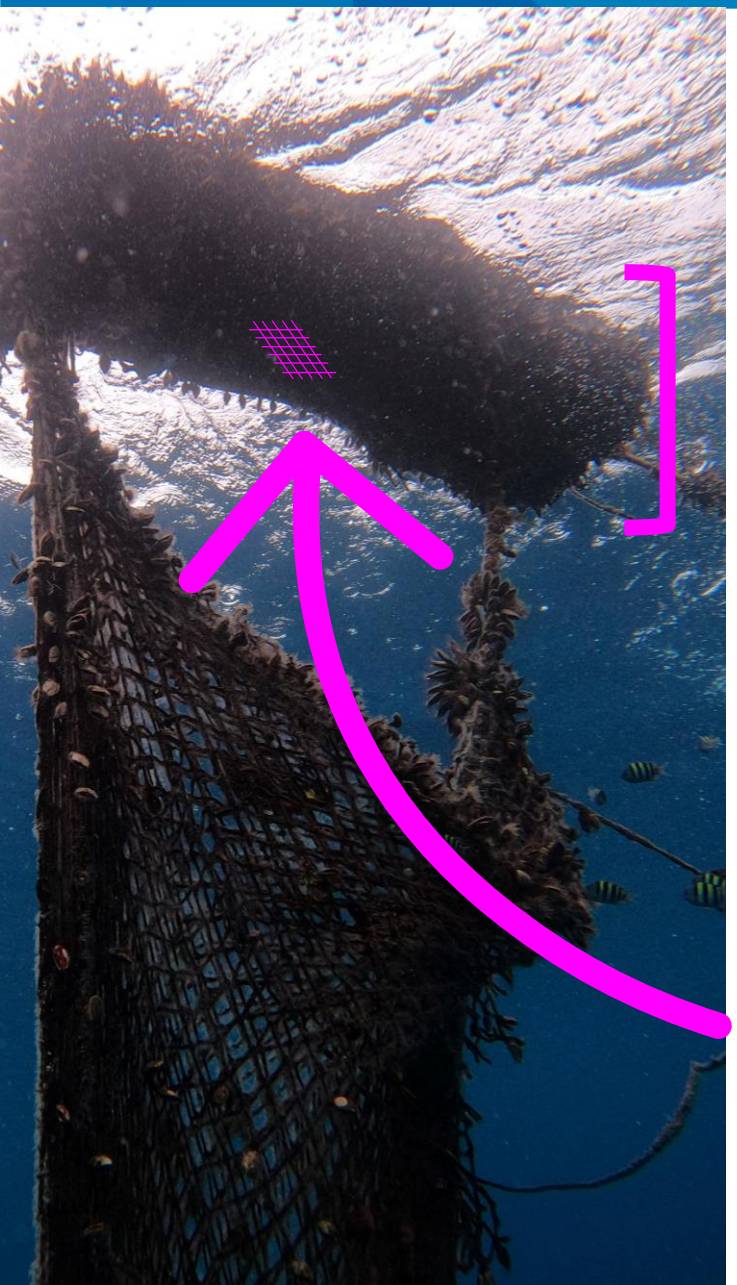
Table 4.

Environment	Total	DFAD with tail**	DFAD without tail**	AFAD
Anchored	0.03%	*NA*	*NA*	1%
Beach	37%	27%	57%	47%
Coral reef	4%	10%	5%	8%
Drifting in the lagoon	1%	3%	1%	5%
Drifting in the ocean	7%	19%	3%	5%
Mangrove	0.3%	*NA*	0.3%	7%
Previously collected* Private property, landfill, wharf	32%	36%	12%	18%
Shore	7%	3%	20%	10%
Unknown	11%	2%	2%	*NA*

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



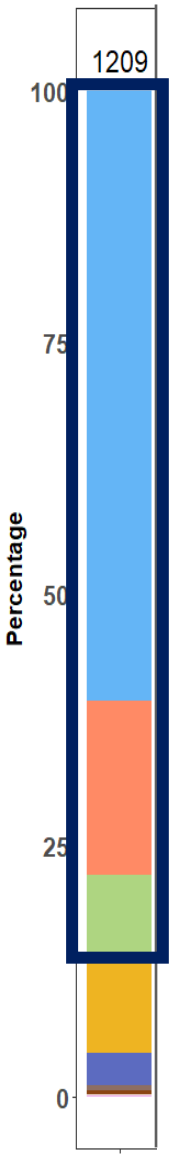




Raft covering & Structure and flotation materials

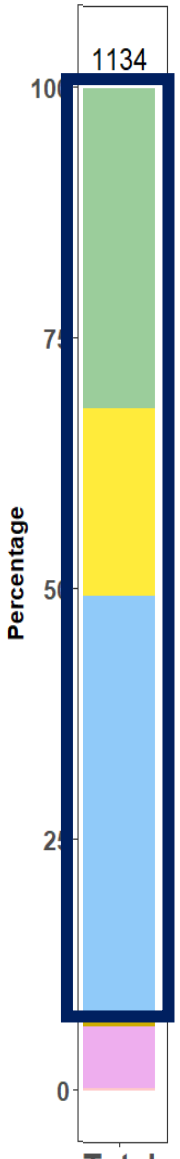
86%

>40%
small mesh



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

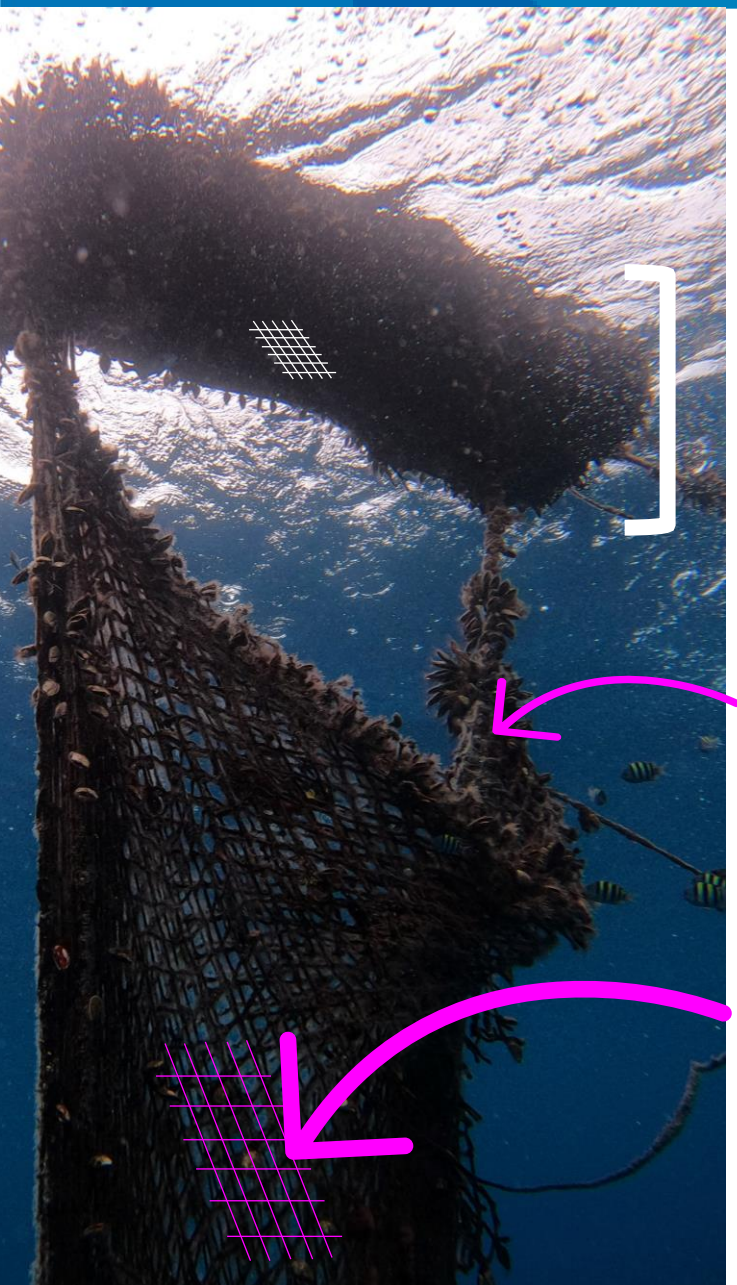
Figure 6B.



93%

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.



Tail presence

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

Table 5.

Information about mesh size and design in Table 12.

>75%

Net with/without rope

Type of FAD found stranded




Non-entangling resolution (CMM 2023-01) ➔ No clear shift in stranded FADs yet, but new design are appearing

Biodegradability resolution (CMM 2023-01) ➔ « *to reduce the amount of synthetic marine debris, CCMs shall encourage vessels flying their flag to use, or transition towards using, non-plastic and biodegradable materials in the construction of FADs* »

1% is fully biodegradable & 17% is fully non-biodegradable

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

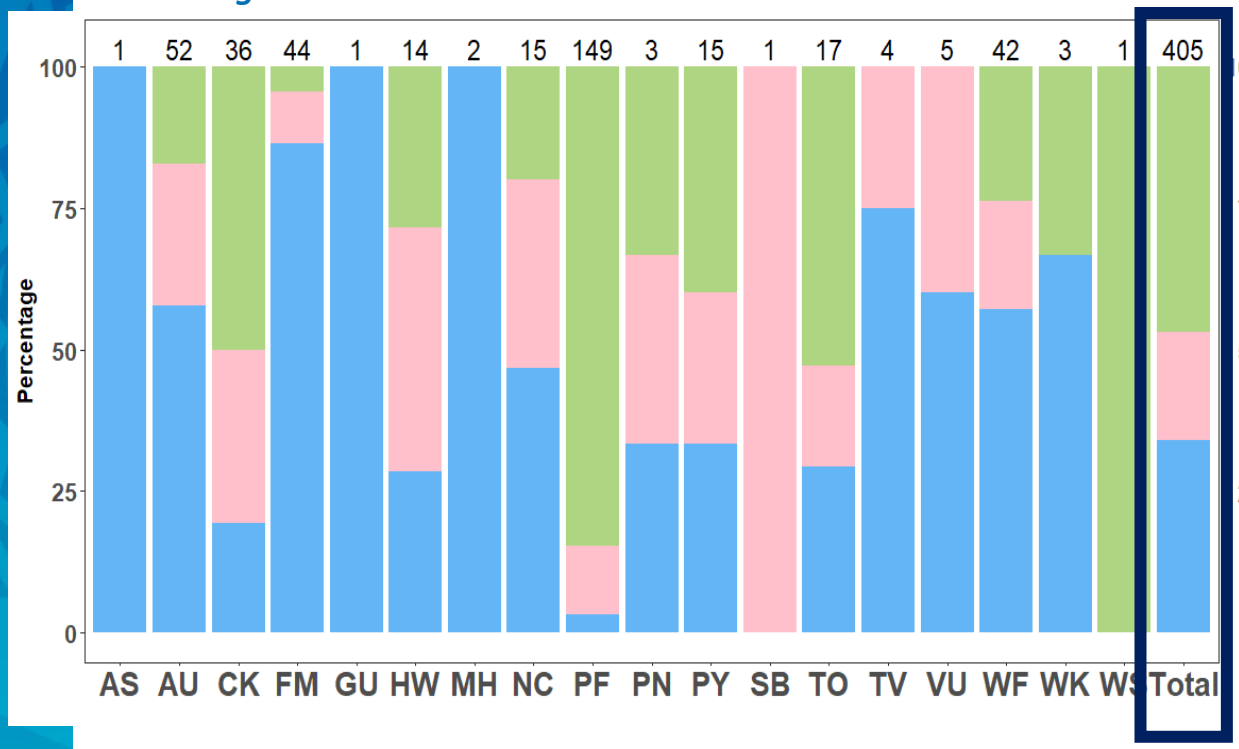
➔ Last recorded position of the buoy

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

Buoy markings

➔ Convention area of owner vessel

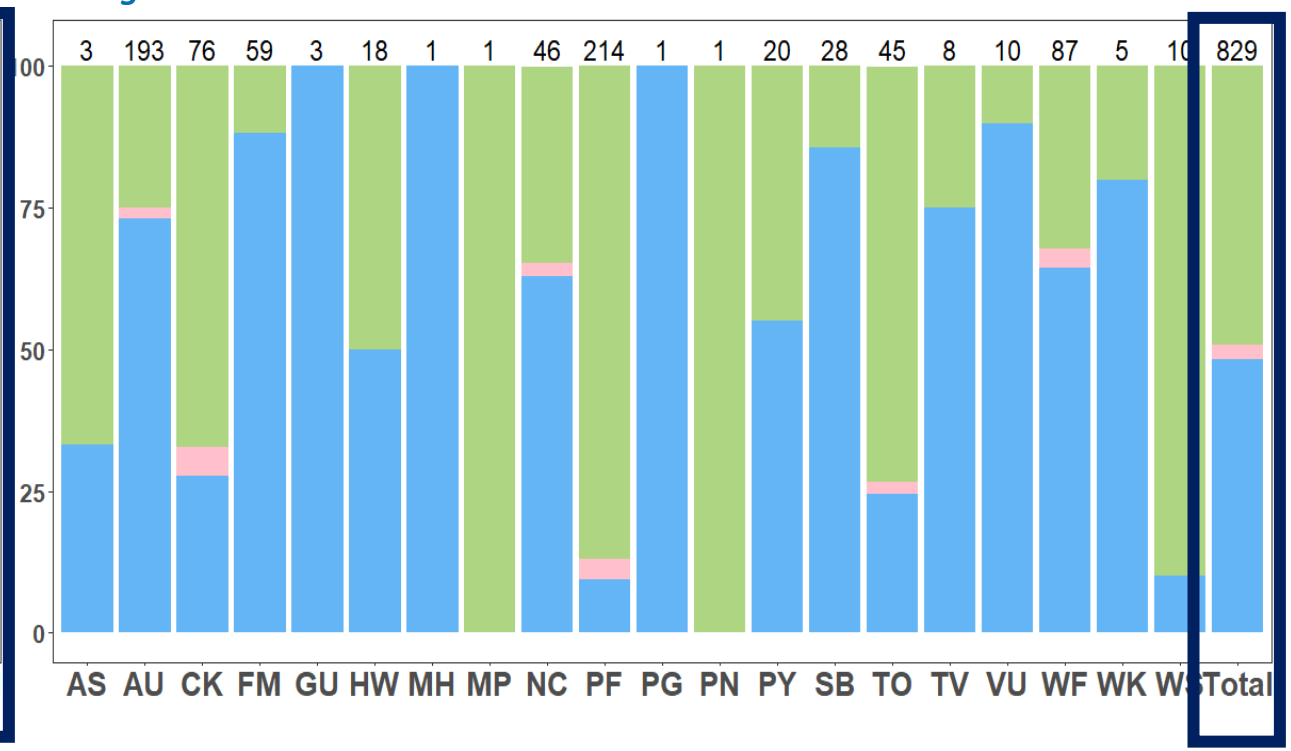
Figure 11A.



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%

IATTC CA	=	49%
WCPFC CA	=	48%
Overlap area	=	3%

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

- 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 time it was 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

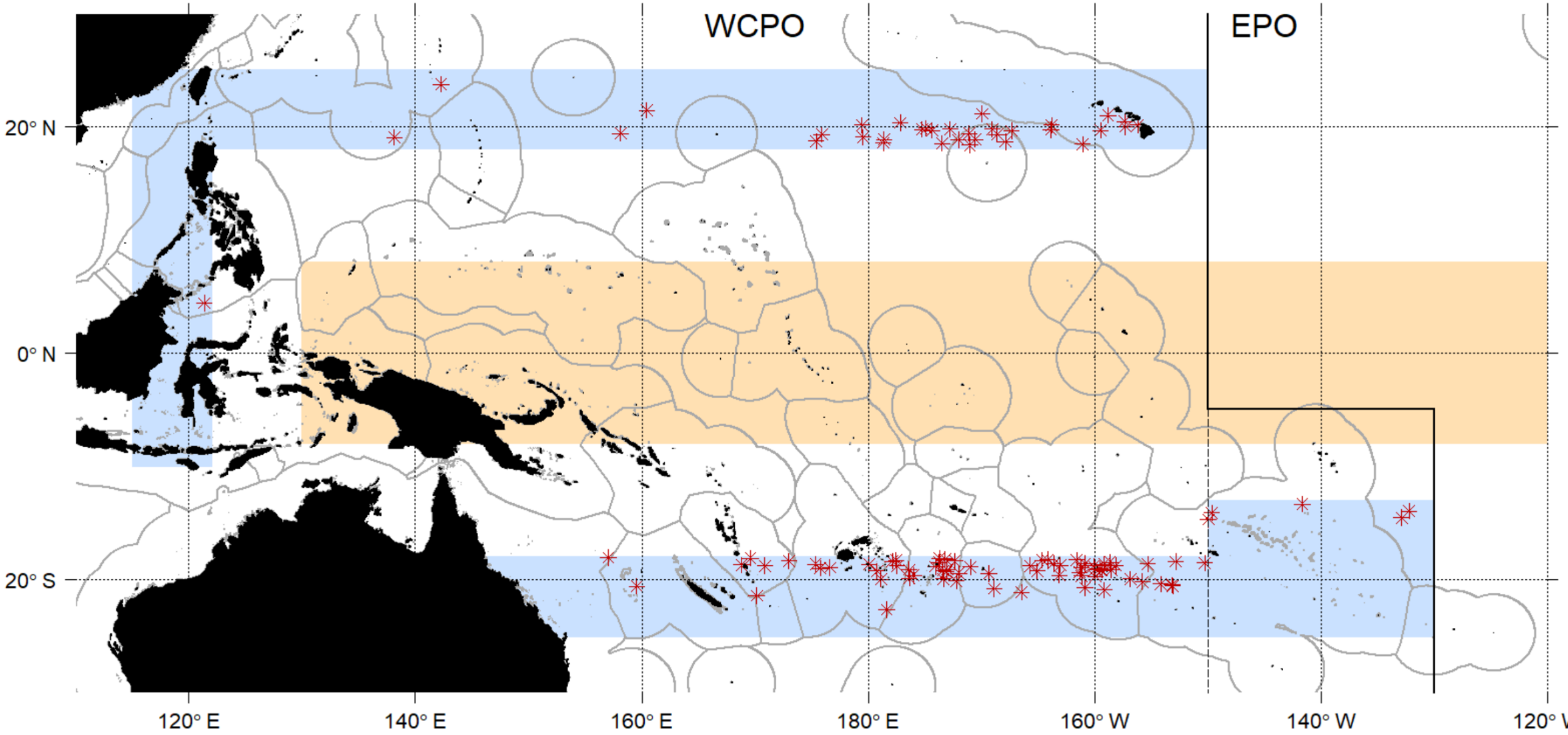
Many thanks to all partners and local communities involved in the data collection !

Preliminary results

2. Monitoring dFADs outside fishing grounds and analyses of trajectories of buoys attached to lost and abandoned dFADs to better determine FAD fates
3. Legal study on the international and regional framework of dFAD loss and abandonment
4. Feasibility and economic analyses of options to mitigate dFAD loss and abandonment, including retrieval
5. Stakeholders' consultations
   - On-line surveys and interviews
   - Regional workshop
   - Reports submitted to regional meetings

2- Monitoring dFADs outside fishing grounds

- Collaboration with partner fishing companies and Satlink
- Buoy reaching areas of current buoy deactivation (blue zone)
- Transfer of monitoring from fishing companies to SPC



Looking for other participating companies

BOLTON Food & Tri Marine

CAROLINE FISHERIES CORPORATION INC.

American Tunaboat Association

✳ *first SPC monitoring positions*

2- Monitoring dFADs outside fishing grounds

Pacific Community
Communauté du Pacifique

Objectives:

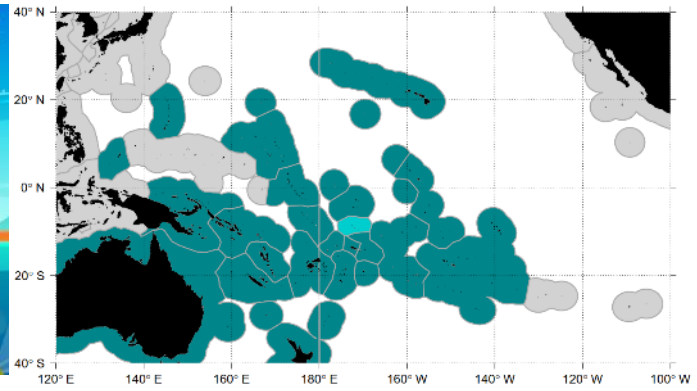
- Monitor dFADs throughout their whole lifetime and gain knowledge about fate outside fishing grounds
- Pilot dFAD recovery projects
- Echosounder data: information related to fish presence and absence outside main fishing grounds

	May	June	July	August	Total	% of total
Number of buoys TOTAL	57	32	20	10	119	
Number of buoys CFC	0	0	2	2	4	
Number deactivated	3	14	5		22	17.6
Number stranded	10	6	7		23	17.6
Stranded AU			1		1	
Stranded CK	2		1		3	
Stranded FJ	3	3	3		9	
Stranded FP	2		1		3	
Stranded HW		1			1	
Stranded TO	3	1			4	
Stranded VU		1	1		2	
Stranded AU			1		1	
Stranding then drifted again	0	3	1		4	
Number recovered at-sea		1	2		3	2.5
Number stranded then recovered		1		1	2	
Signal loss at sea		2	1		3	2.5

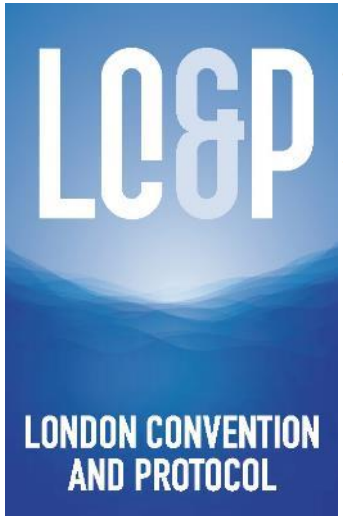
3- Legal study on the international and regional framework of dFAD loss and abandonment

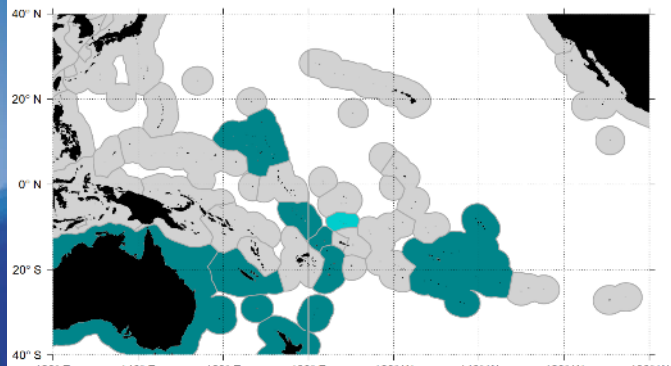
- Study to analyse the regulatory framework of dFADs in Pacific tuna fisheries to improve fisheries sustainability.
- Preliminary legal findings presented here; final report and policy brief to be finalised in a few months

1. International framework



International Convention for the Prevention of Pollution from Ships (MARPOL)





Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter

Legal scholars argue that, except in case of *force majeure*, the intentional abandonment of dFADs may trigger application of these specific treaties on marine pollution.

2. Regional framework: RFMOs or other

To strengthen legal accountability and environmental protection for sustainable dFAD use, suggestion form the draft report include:

- clarifying legal ownership of dFADs and all their parts;
- regulating/tracing dFAD ownership transfer;
- removing regulatory disincentives for retrieval;
- establishing responsibilities for retrieval and damage compensation;
- establishing time-bound targets to increase retrieval rates;
- introducing fees or funds to cover cleanup and recovery costs;
- controlling satellite buoy deactivation;
- enhancing FAD registry systems;
- establishing robust compliance mechanisms,

3. National legislation: Pacific Island Countries and Territories

Economic and feasibility analysis to decrease dFAD loss and abandonment in the Pacific (focus on the WCPO), including retrieval programs

→ Desktop study and stakeholder consultations

Options to decrease dFAD loss and abandonment :

- Modification of the deployment areas to limit dFAD losses.
- A greater emphasis on owner collection before dFAD loss and abandonment (including collaboration between fishing companies).
- Dedicated local vessel(s) for at-sea collection of lost or abandoned dFADs at the edge of fishing grounds.
- At-sea collection of vessels (e.g., longliners) already present at-sea.
- FAD recovery programme from shore ('FAD watch' system) that enables community collection of dFADs prior to stranding events in sensitive areas.
- Others ?

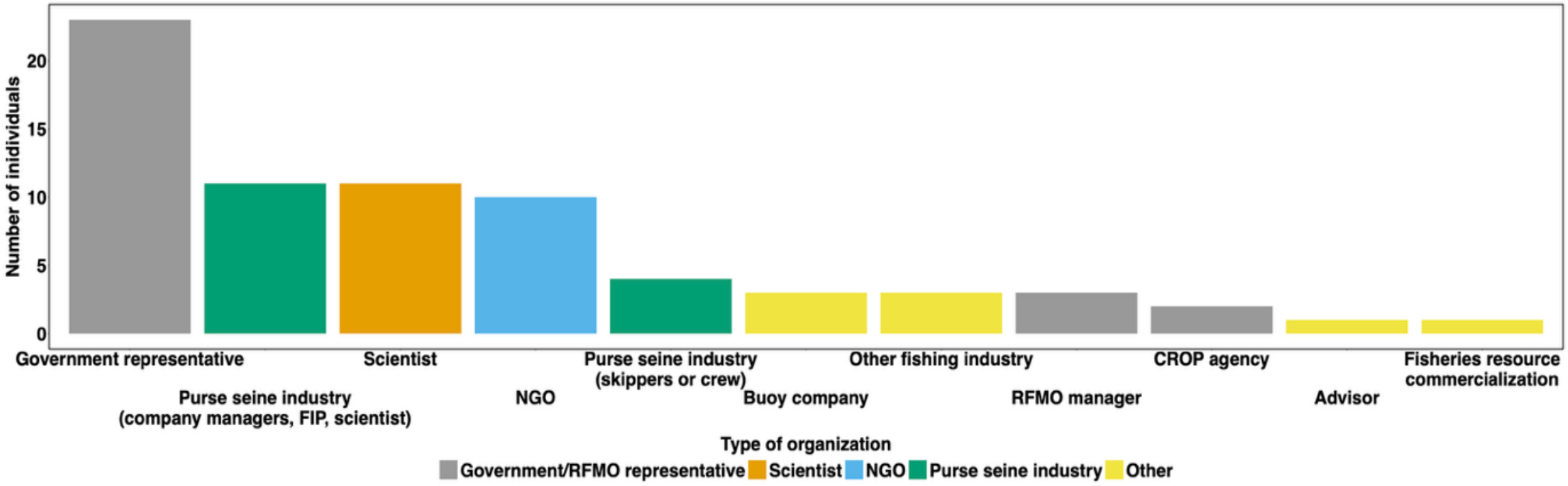
→ The nature and distribution of costs and benefits

→ Administrative, logistical, financial and other considerations (technical, operational, schedule, legal, etc.)

→ Overall outcomes and rationale for participation by industry, NGOs and communities.

4- Economic and feasibility analysis to decrease dFAD loss and abandonment

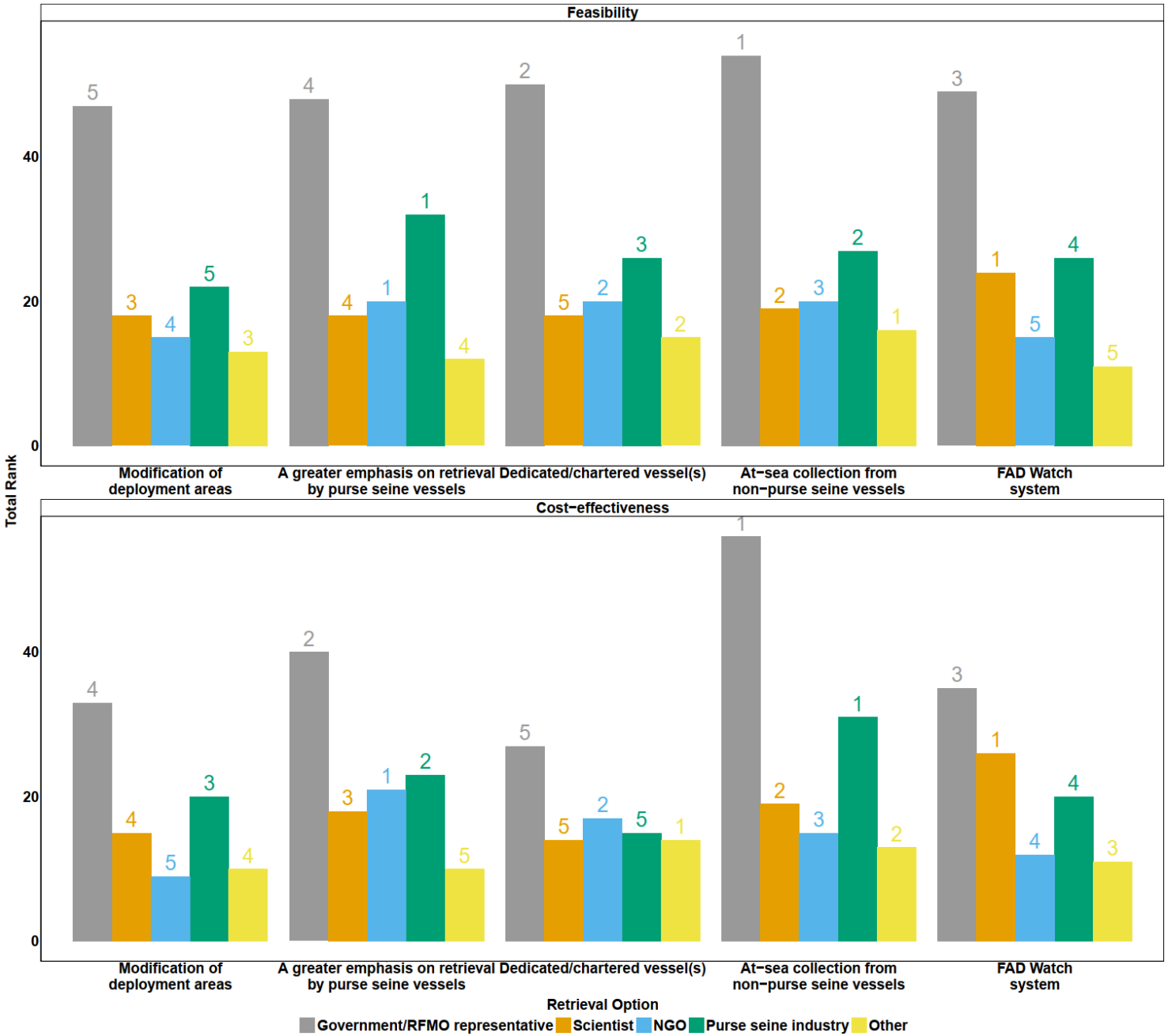
Stakeholder consultations: 72 responses



Still open here:

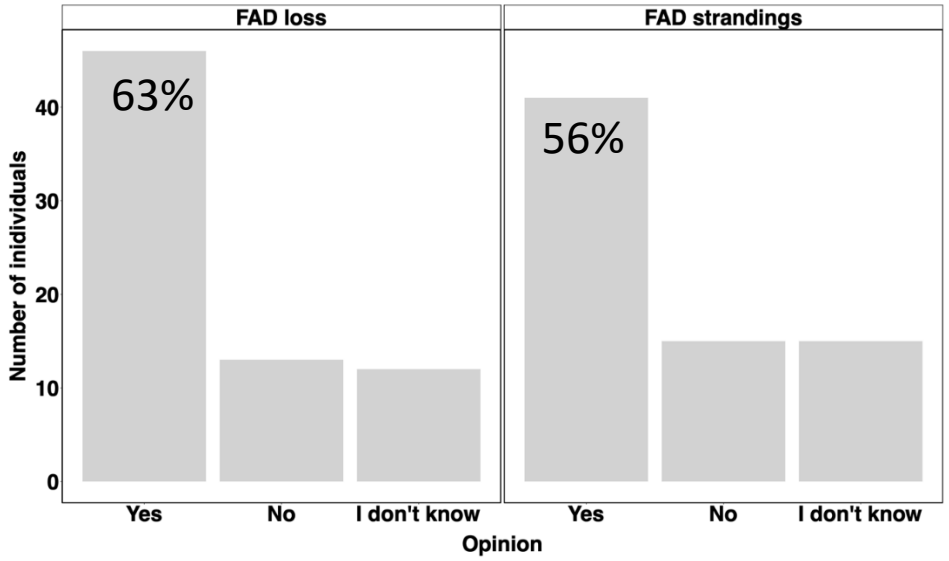
https://docs.google.com/forms/d/e/1FAIpQLScMhpj158DkuUmAly3CsZtvSgogOiO8nBrwwrZXZKEZbH0Og/viewform

4- Economic and feasibility analysis to decrease dFAD loss and abandonment

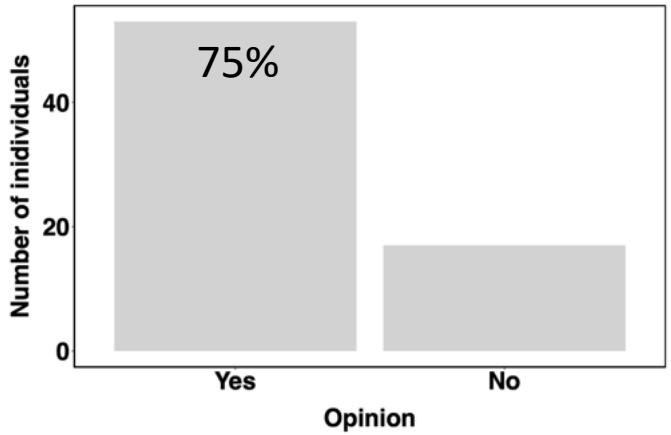


4- Economic and feasibility analysis to decrease dFAD loss and abandonment

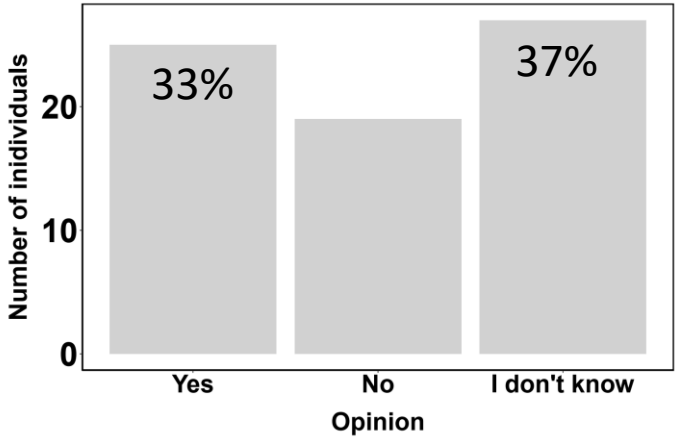
Limiting dFAD deployment in certain areas or periods could reduce dFAD and buoy loss and stranding ?



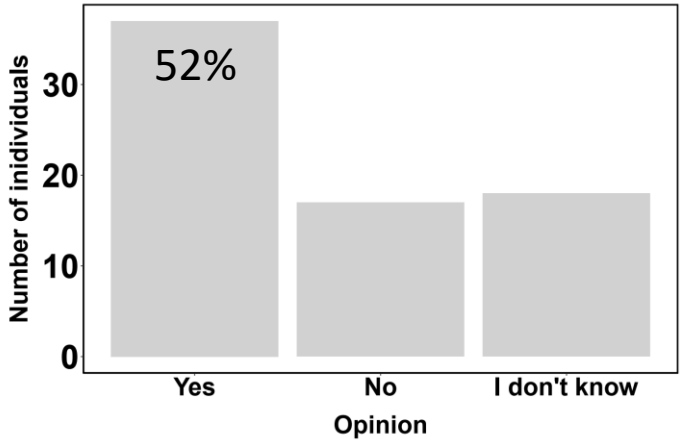
Should some form of requirements for dFAD recovery by purse seiners be considered by RFMOs?



Are there were current regulations that limited recoveries of dFADs by purse seiners?

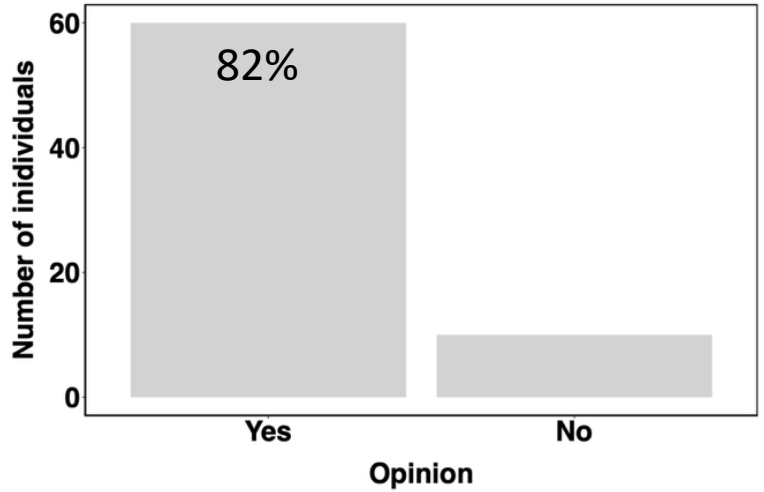


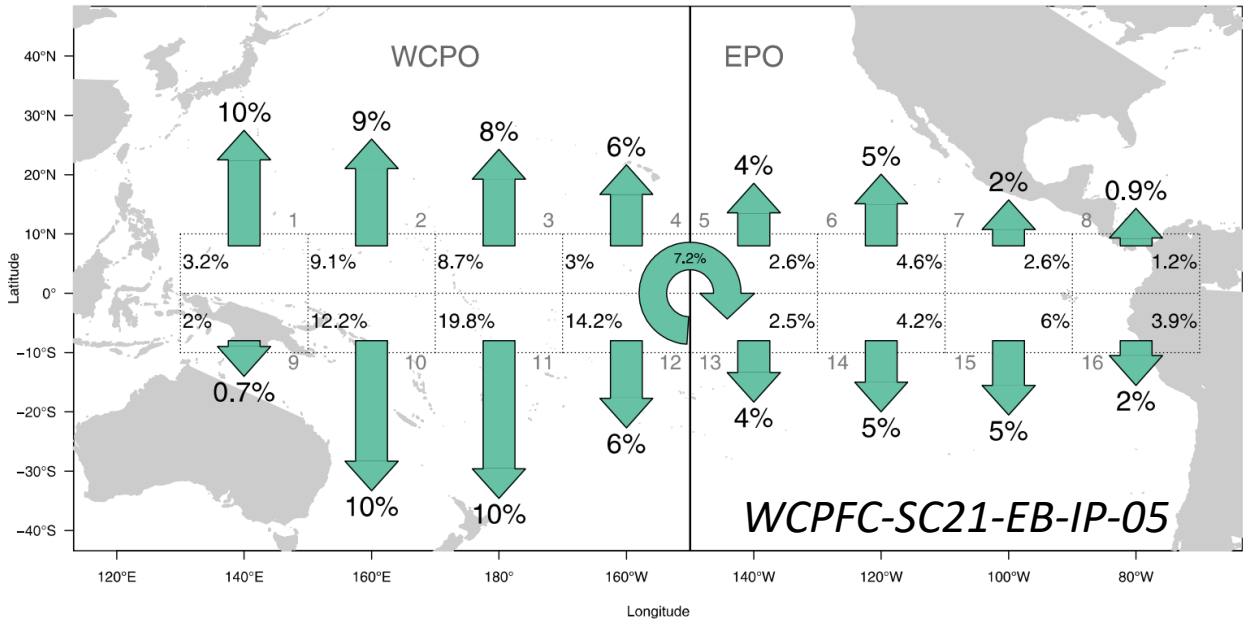
Could prohibiting buoy deactivation increase dFAD recoveries?



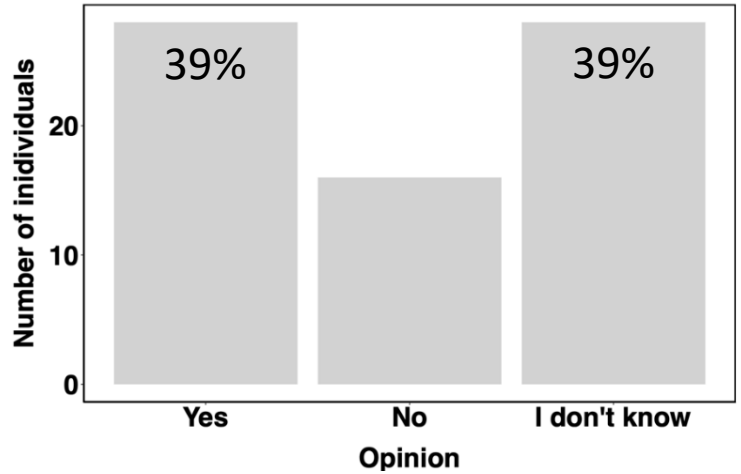
4- Economic and feasibility analysis to decrease dFAD loss and abandonment

Could dedicated/chartered dFAD retrieval vessel(s) be considered to reduce dFAD loss and stranding ?

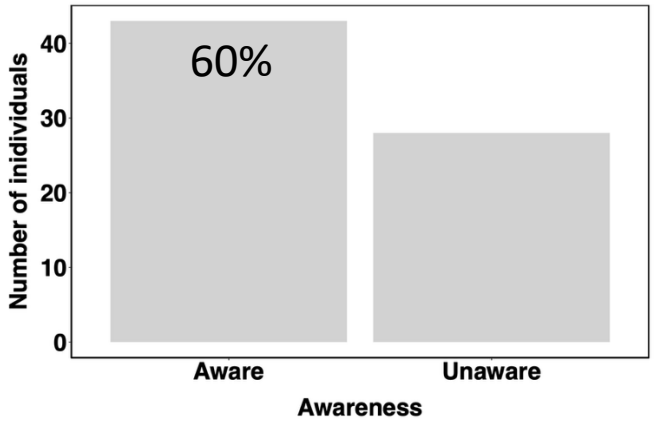




Could longliners retrieve lost dFADs if they knew their position?



Knowledge regarding dFAD recovery programmes currently implemented



5- Reporting and stakeholder engagement

→ Stakeholder consultations:

- General survey

https://docs.google.com/forms/d/e/1FAIpQLScMhpj158DkuUmAly3CsZtvSgogOiO8nBrwwrZXZKEZbH0Og/viewform

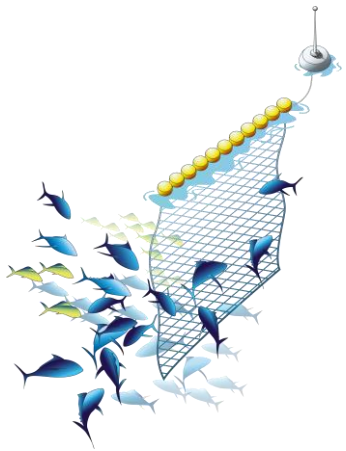
- Targeted consultations:
  - Purse seine company managers and skippers
  - Longline company managers and skippers
  - Recovery programs in place
  - Potential local partners / communities

→ **Want to have these in your country / territory? Contact lauriane@spc.int**

- Regional workshop: February 9th to 12th 2026 in French Polynesia

to attend send an email to lauriane@spc.int

- Reports submitted to regional meetings: WCPFC SC21 and SC22; FAD MO IWG; 2025 & 2026 IATTC FAD WG



PROBLUE
HEALTHY OCEAN · HEALTHY ECONOMIES · HEALTHY COMMUNITIES

THE WORLD BANK

Pacific Community
Communauté du Pacifique

Fill the survey !

bitly

Any questions ?

Project funded by The World Bank, under the project Pacific Ocean Advisory Program (POAP), supported by the PROBLUE Multi-Donor Trust Fund
With the support from ISSF, MarFishEco, Justin Rose consulting

laurianee@spc.int