Western and Central Pacific Fisheries Commission

Pacific Community
Communauté du Pacifique

Progress Report of Project 110: Non-entangling and Biodegradable FAD Trial in the Western and Central Pacific Ocean

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Introduction

WCPFC project 110 and 110a: Non-entangling and biodegradable FADs in the WCPO

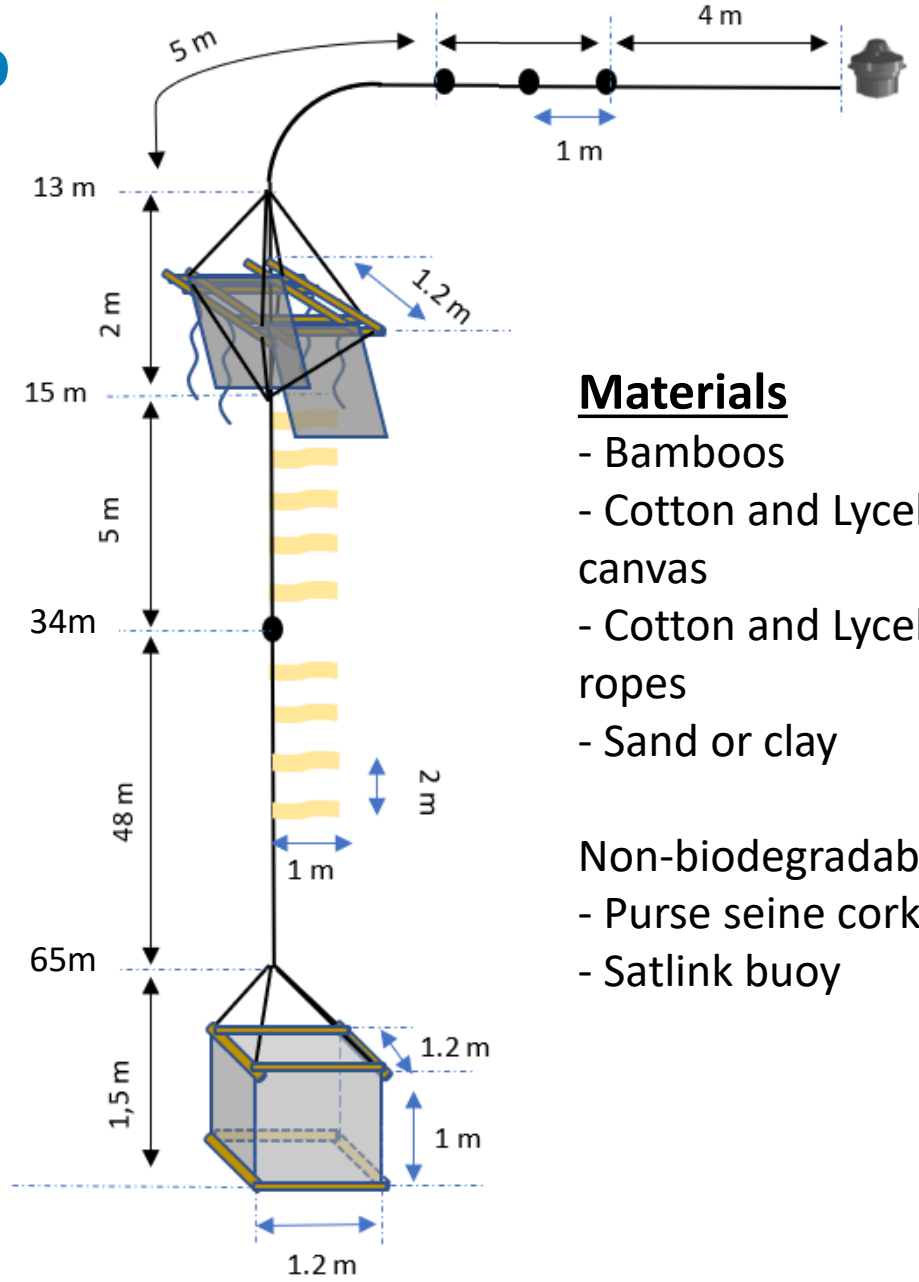
NOAA BREP project: Towards the Use of Biodegradable FADs in the Pacific Ocean

Objectives:

1. Explore design and cost-feasibility of non-entangling and bio-FADs.
2. Train dFAD manufacturers on the construction of bio-FADs.
3. Undertake at-sea experiments to compare the performance/functionality of non-entangling and biodegradable dFADs to conventional dFADs. Deploying them together in pairs.
4. Provide robust scientific advice to industry and national fisheries managers on the performance of non-entangling and biodegradable dFAD designs.
5. Dissemination of the bio-FADs, construction and use through workshops with fishers

Method

The Jelly-FAD

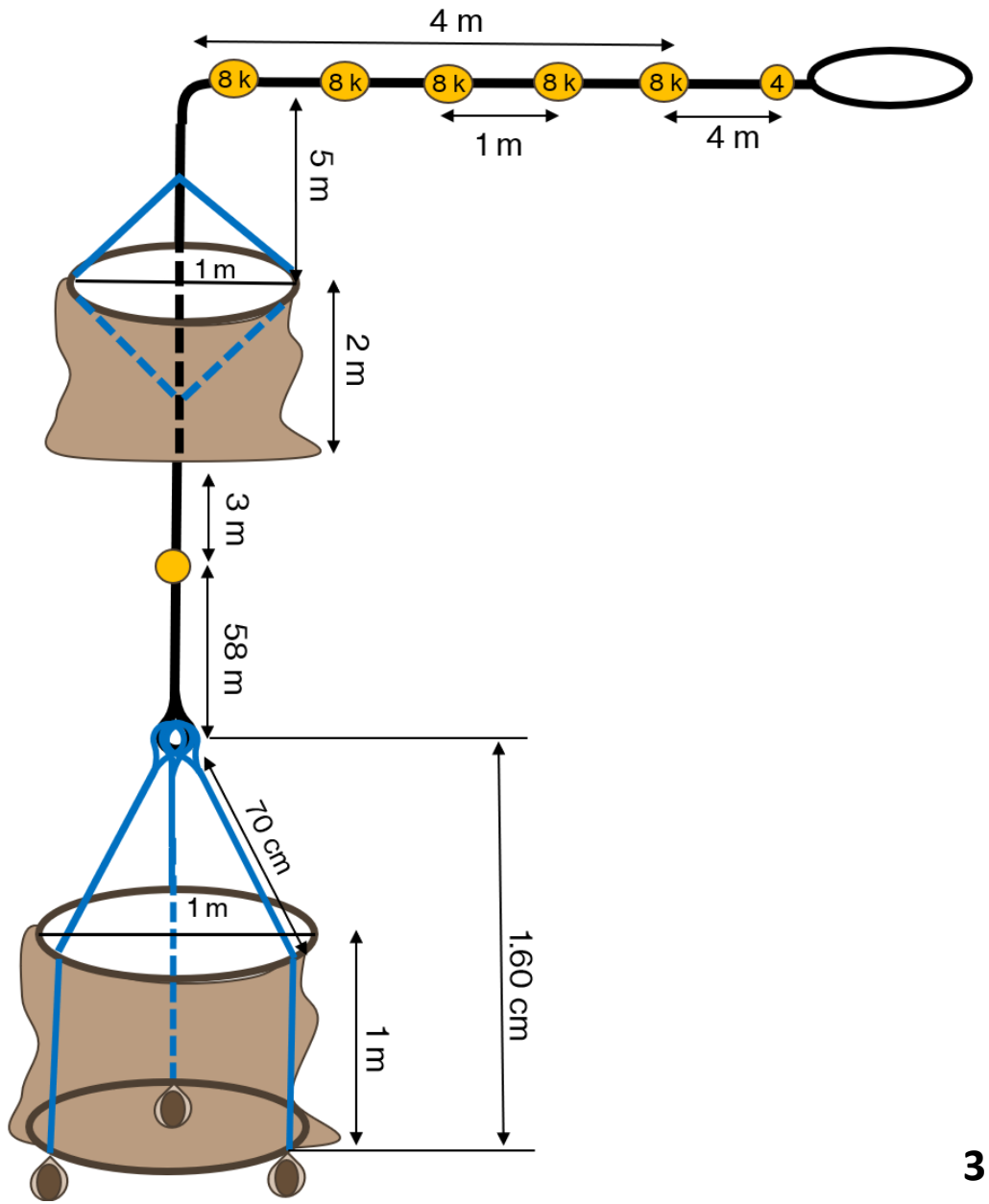


Materials

- Bamboos
- Cotton and Lycell canvas
- Cotton and Lycell ropes
- Sand or clay

Non-biodegradable:

- Purse seine corks
- Satlink buoy



Method

665 jelly-FADs to be tested

Partners	Vessels	Flag	Construction	No. of BioFADs	
				WCPFC 110	BREP
Caroline Fisheries Corporation	6	FSM	Pohnpei	**50**	
FCF Co. ltd	8	Chinese Taipei	Pohnpei	**50**	
American Tunaboat Association		US			
- Cape Fisheries	6		Manta	**30**	**108**
- Others	10		Manta and Pago Pago	**50**	**108**
Silla	2	Korea	Pohnpei	**34**	
Fishing Industry Association (FIA)	12	PNG	Lae	60	
Koo's	2	Marshall Islands	Majuro	10	
Chinese fleet	8	China	Weihai	145	
KAIMAKI	2	Japan	Pohnpei	20	
TOTAL	32			**449**	**216**

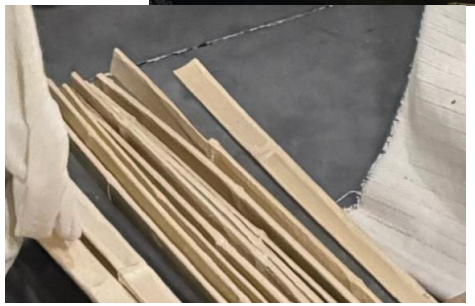
Method

Materials & tools

Ropes:
Cotton, Lycell

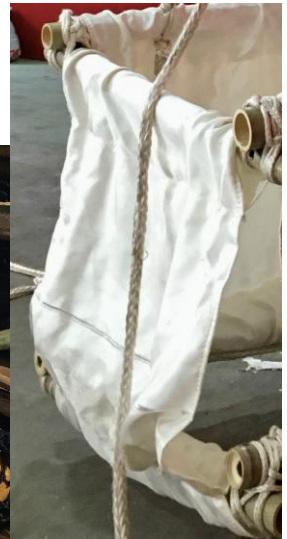
Bamboos

Poles and stripes



Clay

Purse seine corks



Canvas
Cotton, Lycell

Satellite echosounder buoy

Method

Construction

Method

Construction

Construction update

At-sea trials – preliminary results

	FM		KR		TW		US	
	Jelly	Conv.	Jelly	Conv.	Jelly	Conv.	Jelly	Conv.
Convention Area	WCPFC		WCPFC		WCPFC		WCPFC & IATTC	
Nb FADs planned	50	50	34	34	50	50	296	296
Deployments	50	27	14	14	47	30	196	171
Deployment period	03/04/23 – 12/04/24		12/04/24		02/03/23 – 11/07/23		04/09/22 – ongoing	
Sets	1	0	0	0	4	0	15	58
Visit (without set)	3	0	0	0	0	0	1	0
Buoy deactivation	0	0	13	5	23	11	33	26
Stranding events	0	0	1	0	3	0	1	0

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At-sea trials – preliminary results

	PNG		MH		CN		JP	
	Jelly	Conv.	Jelly	Conv.	Jelly	Conv.	Jelly	Conv.
Convention Area	WCPFC		WCPFC		WCPFC		WCPFC	
Nb FADs planned	60	60	10	10	145	145	20	20
Deployments	14	1						
Deployment period	28/08/24 – ongoing							
Sets	0	0						
Visit (without set)	1	0						
Buoy deactivation	8	0						
Stranding events	2	0						

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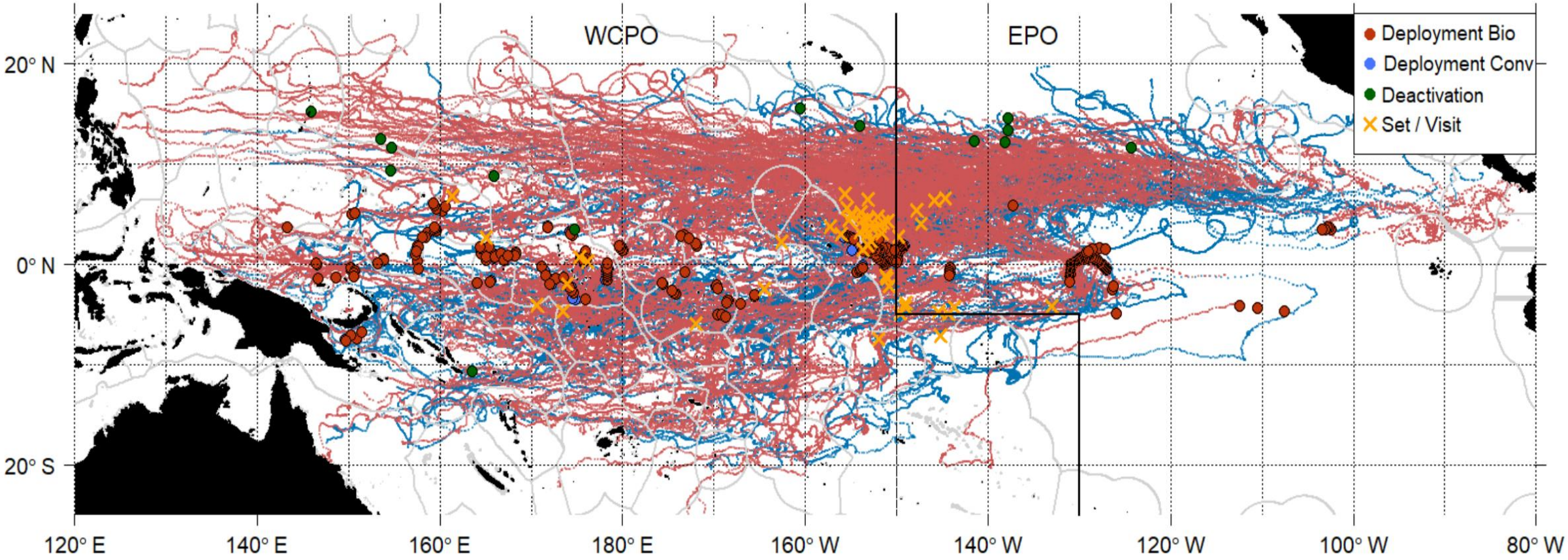
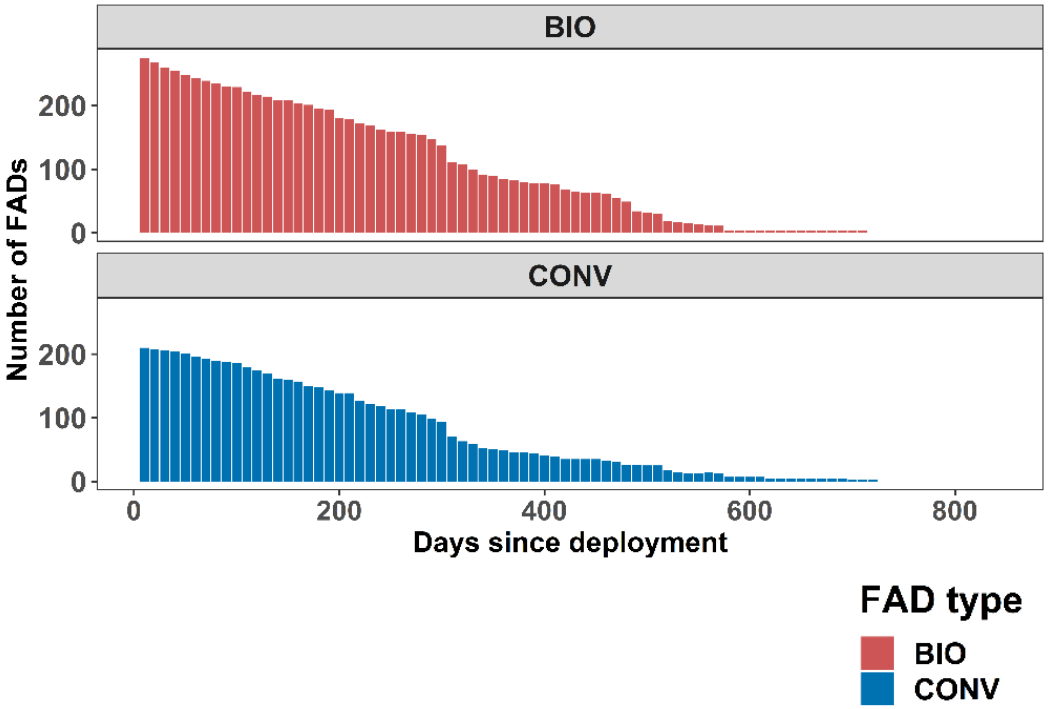
At-sea trials – preliminary results

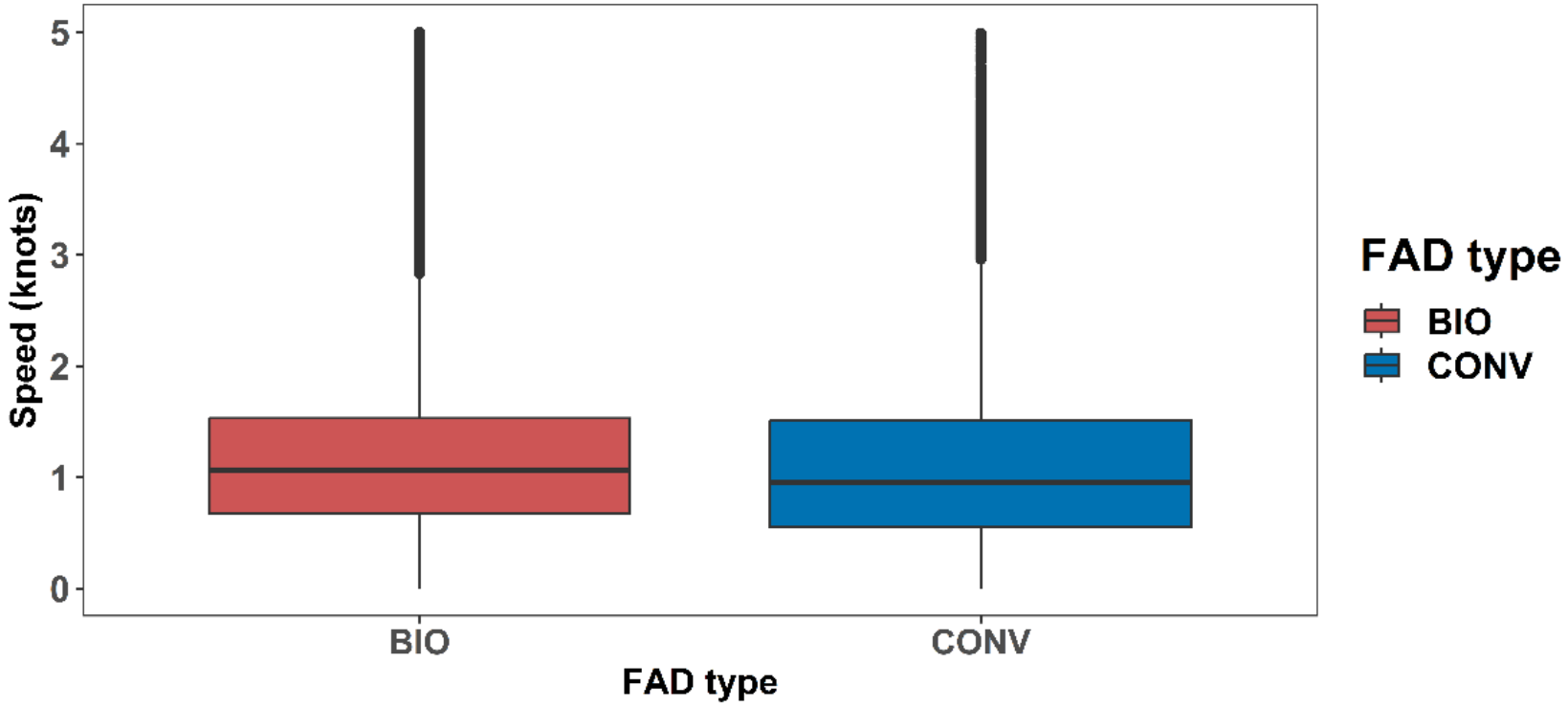


At-sea trials – preliminary results: duration at-sea

	Other fleets	
	Jelly-FADs	Conventional
Deployments	321	243
Data available	285	218
Transmissions (positions or biomass)		
Min	3	5
Mean	618	647
Max	4,958	6,000
Duration (days)		
Min	0	0
Mean	269	260
Max	837	718



At-sea trials – preliminary results: speed



SPEED	Other fleets	
	Jelly-FADs	Conventional
Min	0.0	0.0
Mean	1.2	1.1
Max	4.9	4.9

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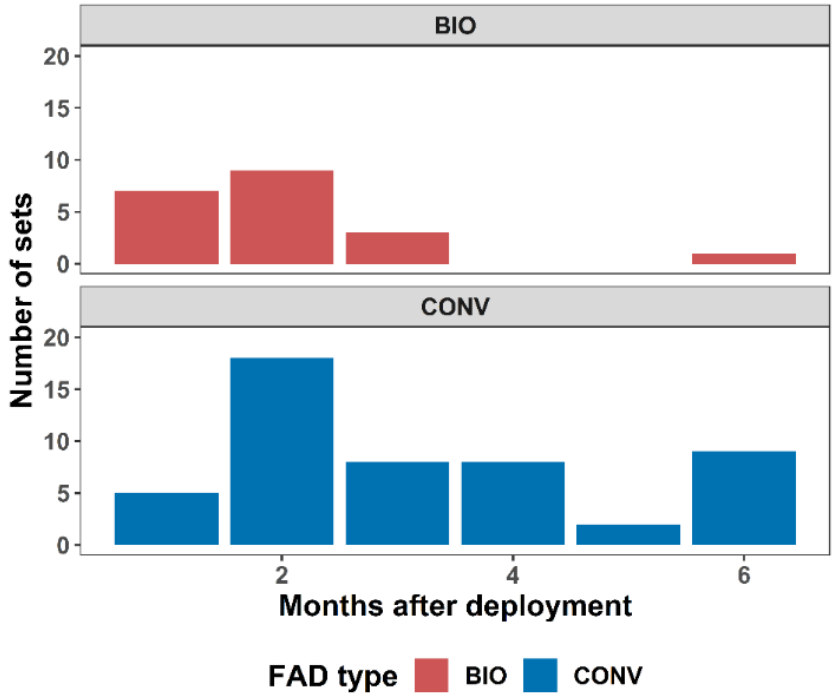
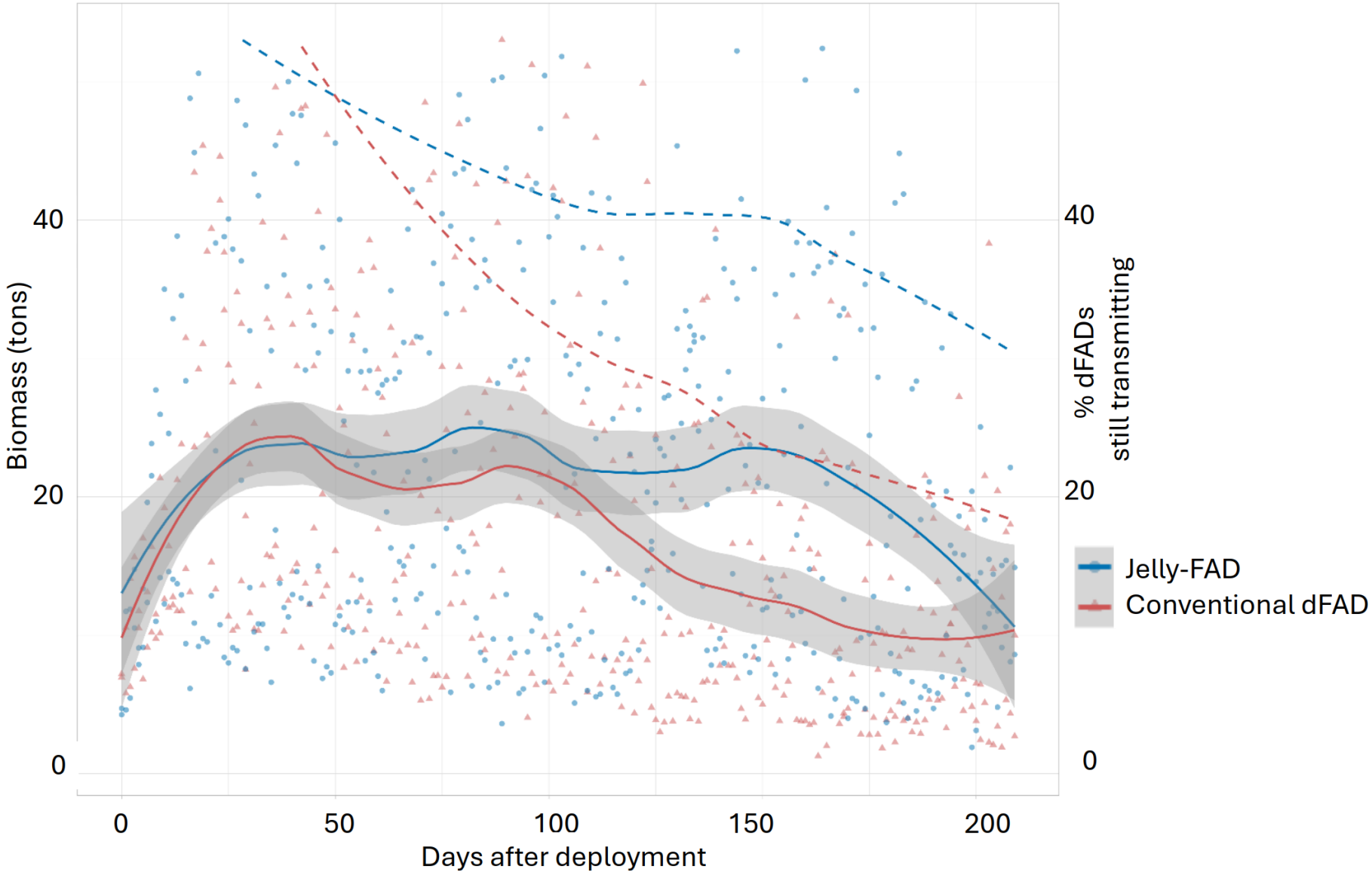
At-sea trials – preliminary results: catch

FAD type	Number of sets	Total tuna catches (mt)			
		Min	Mean	Median	Max
Jelly-FAD	20	0	53.6	35.0	185
Conventional	58	5	72.7	42.5	260
2023 WCPO FADs	13,322	0	49.0	30.0	481
2024 WCPO FADs	9058	0	54.5	35.0	581



At-sea trials – tuna aggregation



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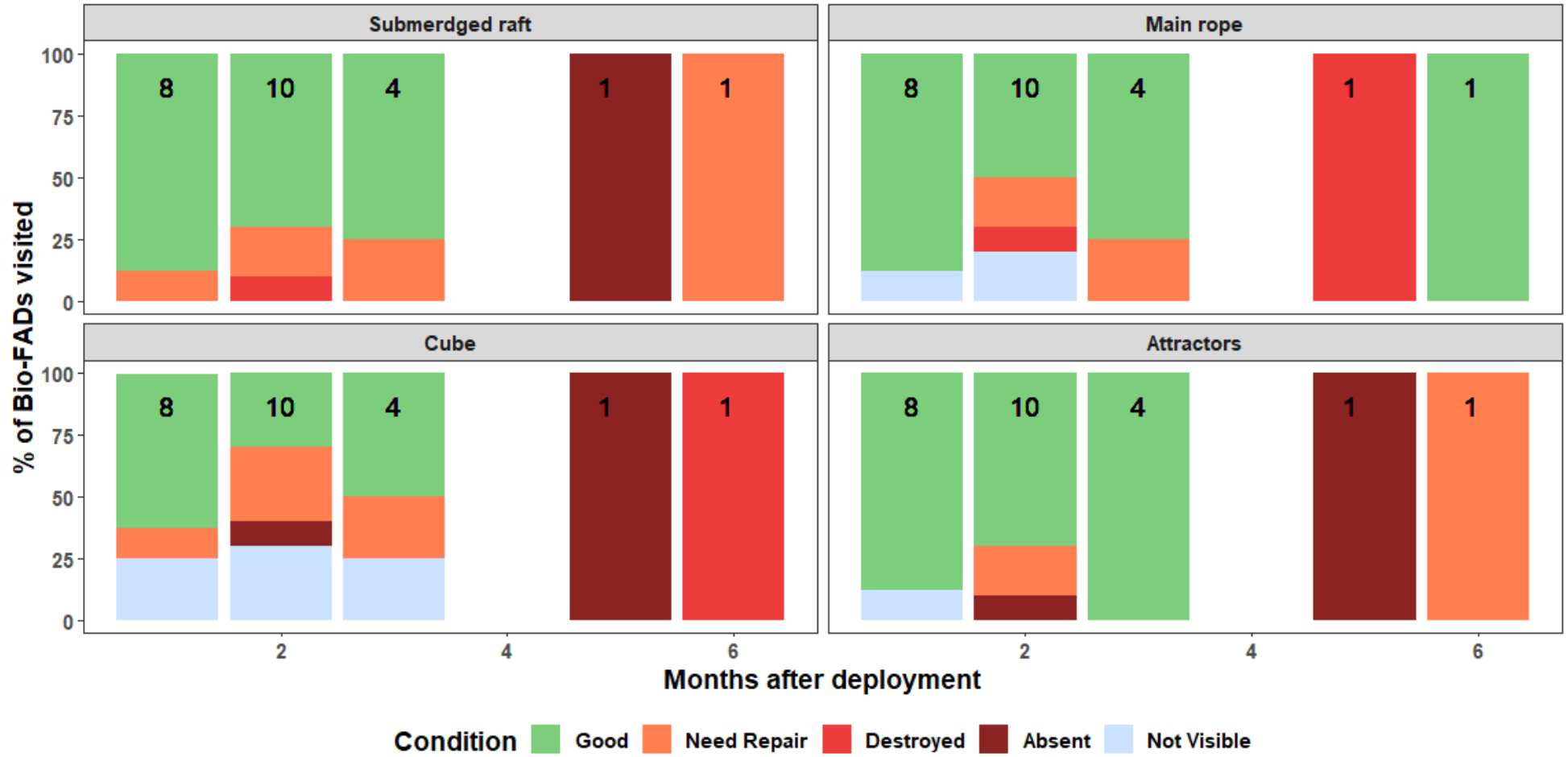
At-sea trials – preliminary results: condition



Conclusion

- Need to deploy a large number of bio-FADs to get meaningful results, 665 jelly-FADs planned for the current projects and 345 deployed.
- Five fleets, representing more than 56 vessels, are engaged as project partners.
- Seven planning and training workshops have been held, including six in construction locations and more than 125 people attending.
- Cube jelly-FAD and newly developed cylinder jelly-FAD
- Cost: 500–550 USD / jelly-FAD, but 350–362 USD / jelly-FAD if only materials and their shipment are considered

Conclusion

- Similar drift speed between conventional and jelly-FAD

- Conventional FADs showed a higher catch per set compared to jelly-FADs

Average catch per set on the jelly-FADs for this trial higher than the whole fleet in 2023

- Similar tuna aggregation patterns, with a peak after 1 month

- Bio-FAD condition for the monitored period and limited data shows that the FAD is alive and useful at least, until month 6, there were no observations after that time, both, for conventional and jelly-FADs.

WCPFC Project 110 Non-entangling & Biodegradable FAD trial in the WCPO

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Japan Far Seas Purse Seine Fishing Association
KAIMAKI

KOO'S FISHING CO LTD

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ISSF INTERNATIONAL SEAFOOD SUSTAINABILITY FOUNDATION

NOAA FISHERIES

FCF Co., Ltd. 豐群水產股份有限公司

SILLA

satlink

American Tunaboat Association

CAPE FISHERIES