Science-based improvements to strengthen FAD management in relation to Principle 2

Understanding the MSC Fisheries Standard 3.0

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ISSF INTERNATIONAL SEAFOOD SUSTAINABILITY FOUNDATION

Photo: David Itano

Outline

1. **About ISSF**

2. **FAD research releated to Principle 2**

   2.1 FAD structure impact & solutions

   A. Non-entangling FADs
   B. Biodegradable FADs
   C. FAD marking
   D. Best Practice to avoid FAD loss and abandonment

   2.2 Bycatch: ETP species

   2.3 Evidence Requirements Framework (New tool)
   Electronic monitoring

1. About ISSF

Photo: David Itano

Strategic Pillars

Science

Continuously improve the sustainability of global tuna fisheries and the health of the ecosystems that support them – measurably demonstrated.

Verification

Maintain and enhance credibility through transparency and compliance.

Influence

Exercise influence among stakeholders to promote and expedite actions necessary to continuously improve the sustainability of global fisheries and the health of the ecosystems that support them.

ISSF Supports & Enables FIPs That Seek MSC Certification

- Tuna Fisheries & Stocks
- Ecosystem Impacts
- Monitoring, Control, & Surveillance
- Fishing Capacity
- Participating Company Compliance & Communication
- Progress Tracking
- ProActive Vessel Register (PVR)
- Vessels in Other Sustainability Initiatives (VOSI)
- RFMOs & Member Nations
- NGOs
- Markets
- Vessels

Partnerships with Organizations/Experts to Facilitate Improvement/Implementation

Labor & Social Issues in Tuna Fisheries

Photo: Fabien Forget

PVR and VOSI list

Number of vessels (all gears) participating in FIP/MSC initiatives listed on the VOSI

	PS-large	PS-small	PS-v small	Longline	Pole and line	Handline	Supply& Tender	
On PVR and VOSI	323	2	-	144	18	1	1	**489**
On VOSI not on PVR	14	-	-	5	1	-	-	**20**
	337	**2**	**-**	**149**	**19**	**1**	**1**	**509**

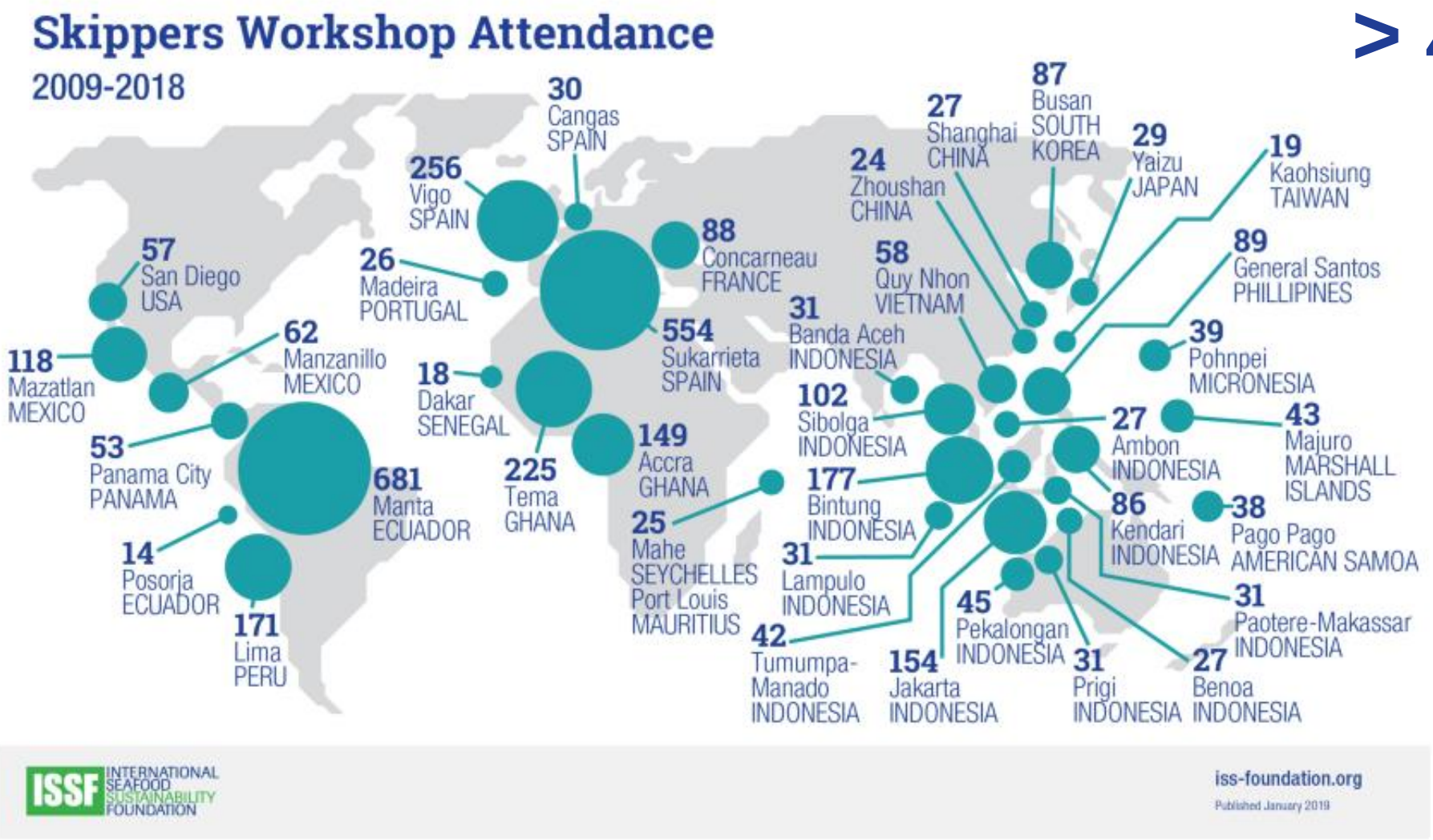
Number of vessels (PS-large) registered in tuna RFMOs (from ISSF 2023-04)

652 PS-large vessels, of which 91 are registered to more than one tRFMO

	CCSBT	IATTC	ICCAT	IOTC	WCPFC
CCSBT	**0**				
IATTC		**222**	19	1	28
ICCAT			**108**	14	18
IOTC				**96**	29
WCPFC					**326**

Distribution of large-scale tropical tuna purse seine (≥ 335 m^3 FHV) tRFMO authorizations. Numbers in yellow represent the total number of vessels authorized in that tRFMO (including both vessels authorized by that tRFMO only and vessels authorized also in other tRFMOs).

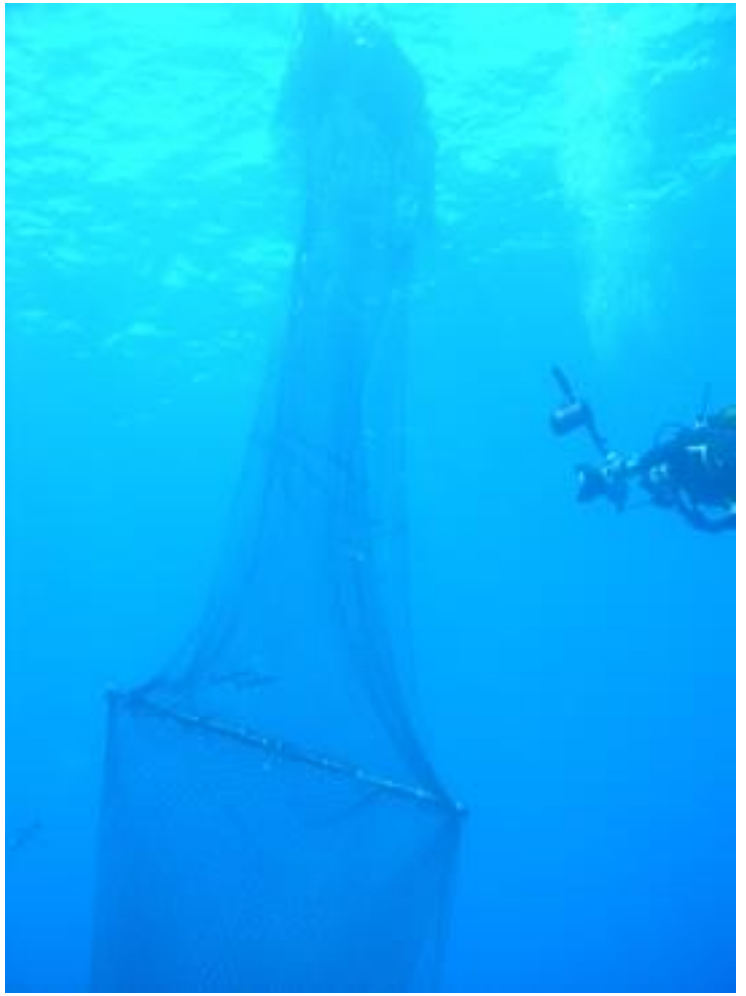
Skippers workshops map



> 4000 FISHERS

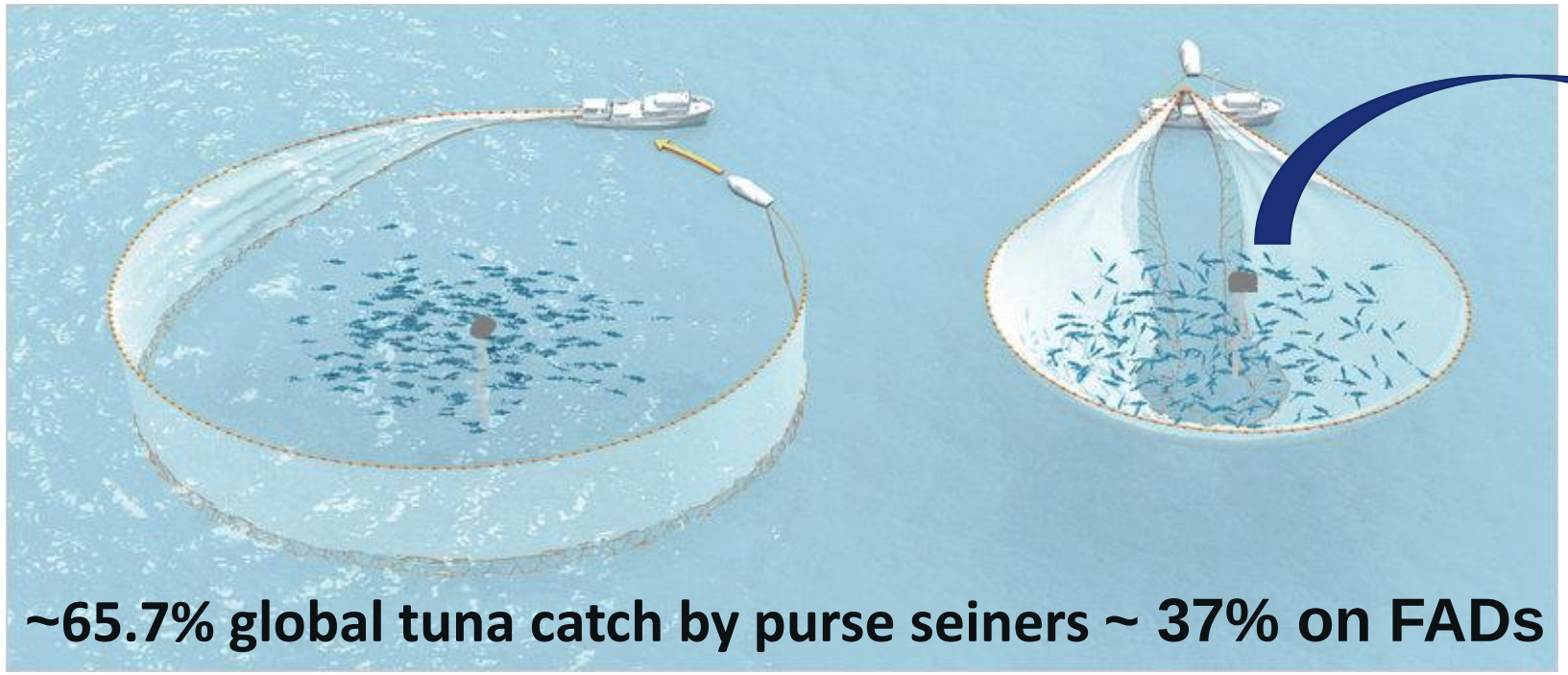
2. FAD Research related to Principle 2

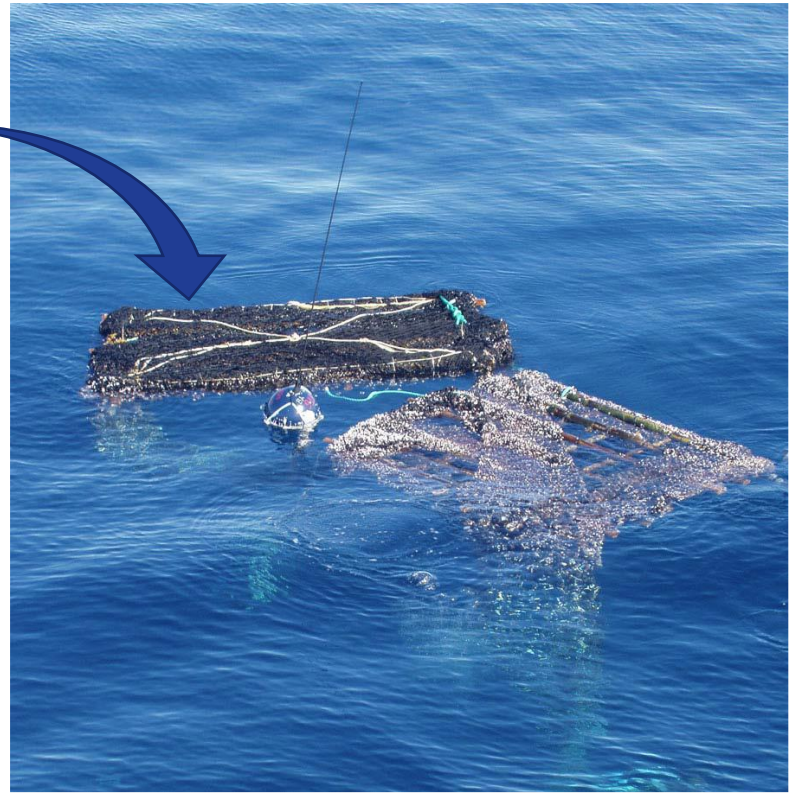
What are Fish Aggregating Devices?



Importance of FADs

In 2021, **4.8 million tonnes** catch of major comercial tunas





56% Skipjack 31% Yellowfin tuna 8% Bigeye tuna

Impacts of FADs on the ecosystem

Ghost Fishing

Bycatch

Habitat damage & Marine Pollution

CHANGES TO MSC STANDARD

Principle 2, addressed in this presentation

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Ghost gear/ Ghost fishing & FADs

- **P2 management PIs (2.2.2, 2.3.2 or 2.1.2)** - New Ghost gear management strategy SIs
- Of special relevance to **FADs** : **Prevent** gear loss, **Monitoring** lost gear and entanglements, **Marking and retrieval** programs, **Minimize** impact of lost gear

Habitat : **2.3.2** - Demonstrate they have an appropriate and precautionary **management system or measures in place that set out how they will manage and mitigate impacts on sensitive habitats** if encountered.

ETP

- **Species designation in P2** – Some shark and other species will now be categorized as ETP/OOS and will be given greater protection through the standard.
- **PIs 2.2.X** – The impacts of fisheries on ETP populations must be assessed more explicitly and through a more precautionary approach. Fisheries must now provide **quantifiable evidence that they have effective management measures in place to reduce impacts on ETP and OOS** species, in alignment with best practice.

Shark finning: Any fishery that retains sharks, without exception, has a **Fins Naturally Attached (FNA**) policy in place and the policy is enforced.

Evidence Requirements Framework (New tool) **Independent observation**

Challenges to be addressed by PS fleet

Ghost gear / Ghost fishing → Fully Non-entangling FADs

Habitat / Marine pollution → Biodegradable FADs; FAD marking; Best practices to avoid FAD loss & abandonment

ETP/OOS → ETP species release devices

A single solution to reduce all:
FAD limits

Evidence Requirements Framework (New tool)

Human observers & Electronic monitoring

2.1 FAD Structure Impact

Research to reduce the impact of FAD structure

A. Non-entangling FADs

B. Biodegradable FADs

C. FAD marking

D. Best Practice to avoid FAD los and abandonment

Impacts of FAD Structure on the ecosystem

Ghost Fishing:
Entanglement Issues

FAD stranding & Marine Pollution

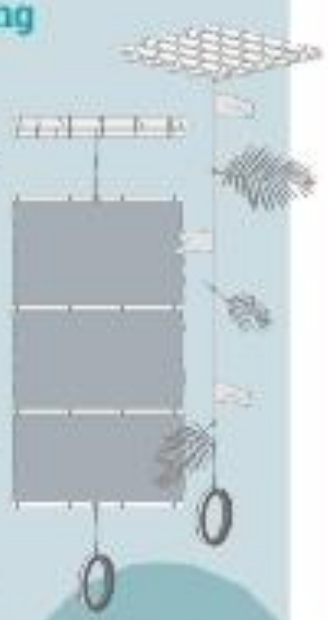
A. Non-entangling FADs

Three Categories of FADs — low to high entanglement risk

Considering the variety of designs and materials used worldwide to construct FADs, the ISSF Bycatch Steering Committee ranks FADs according to the risk of entanglement related to how the nets are used.

From lowest to highest to risk, three categories are described. These designs are examples; the important elements are the net type and its configuration.

NON-Entangling FADs



RAFT

- Not constructed or covered with canvas, tarpaulin or shade clothes.

TAIL

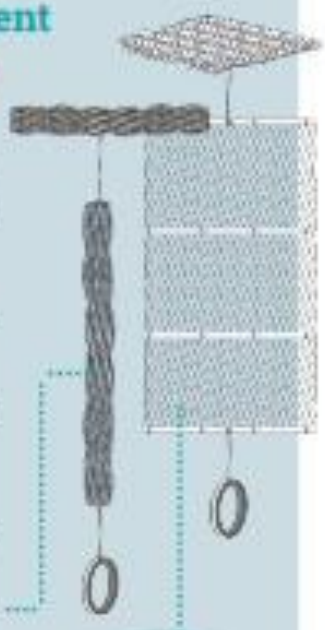
- Subsurface structure is made with ropes, canvas or nylon sheets, or other non-entangling materials.

More detail on the previous page.

No netting is used in any components (raft and tail)

These FADs are expected to have no risk of causing entanglement.

LOWER Entanglement Risk FADs



RAFT

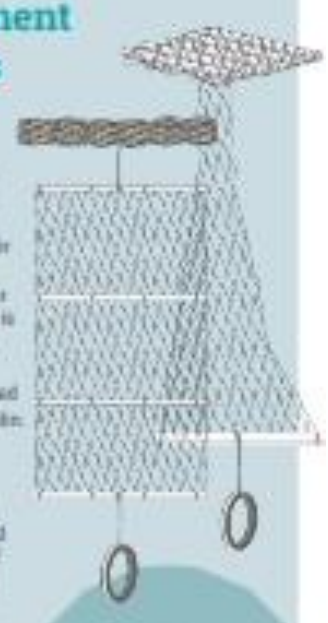
- Use only small mesh netting (< 2.5 inch / 7 cm stretched mesh) if covering with net (both upper and submerged parts).
- If small mesh netting is used as cover, it is tightly wrapped, with no loose netting hanging from the raft.

TAIL

- If net is used as submerged tail, could be of any mesh size if tightly tied into sausage-like bundles.
- If open panel netting is used, only small mesh size (< 2.5 inch [7 cm] stretched mesh) can be used. Bar weight the panel to keep it taut.

Despite using netting, these design elements reduce the risk of entanglement events.

HIGH Entanglement Risk FADs



RAFT

- Covered with large mesh netting (e.g. > 2.5-inch mesh).*
- If mesh size is larger than 2.5 inches (both in the upper or submerged part), it is high entanglement, whether the net is tightly tied or covered by canvas or tarpaulin.

TAIL

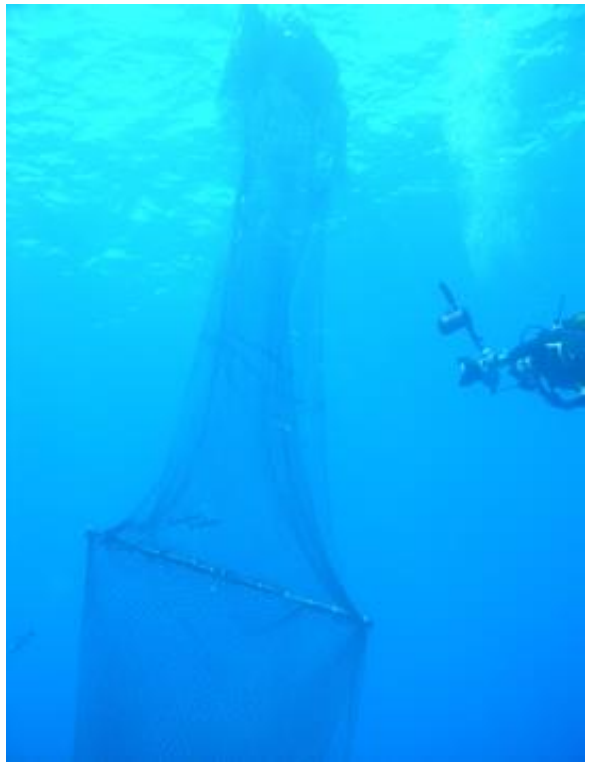
- Submerged part of the FAD constructed with open panels of large mesh netting (> 2.5-inch mesh).

*Accounting for mesh sizes available in the market, 2.5 inch (7 cm) mesh size offers the lowest likelihood of entanglements across species and body parts.

These FADs are known to cause entanglements with turtles and sharks.

B. Biodegradable FADs

Conventional FAD

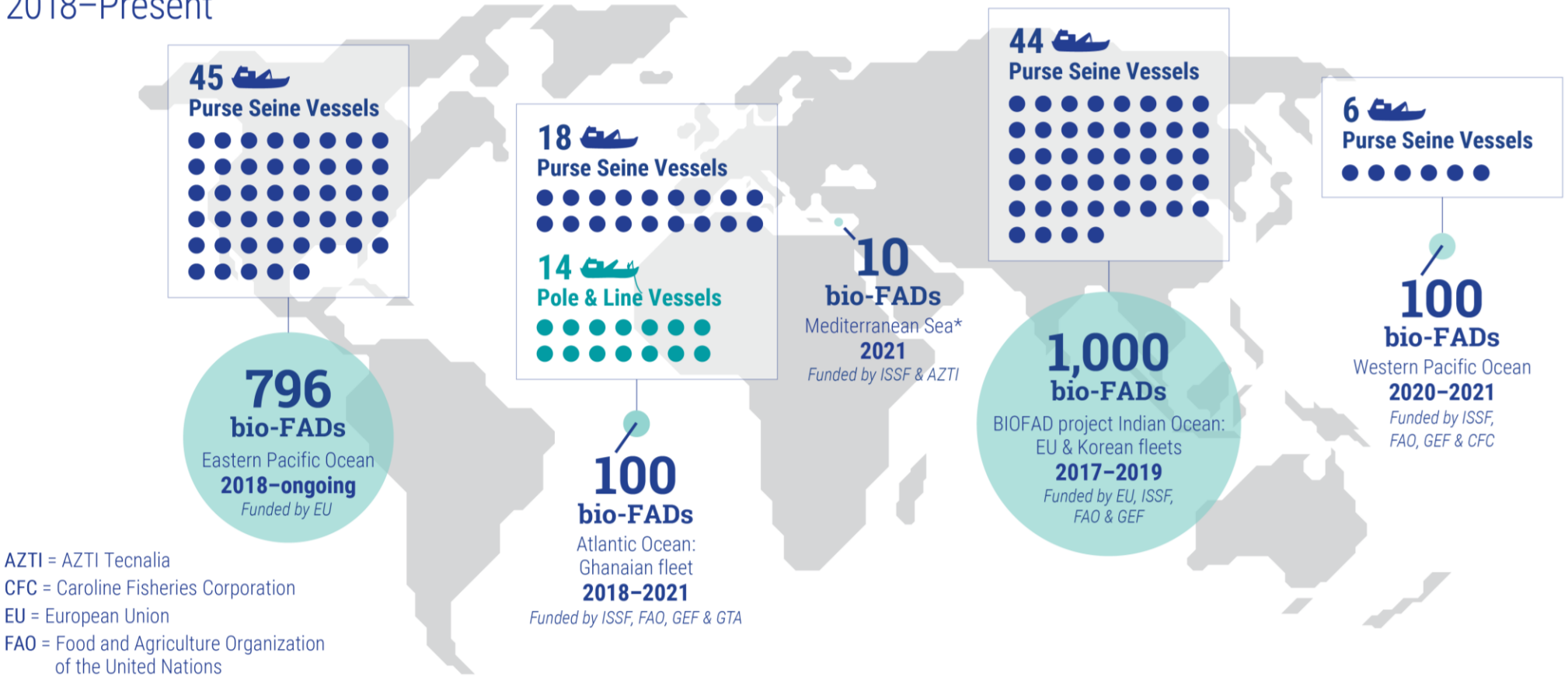


Netting	No netting
30–150 Kg plastic flotation	30 kg max plastic flotation
Plastic main component	Cotton main component

Biodegradable FAD trials

BioFADs: New Trials and Large-Scale Deployment

2018–Present

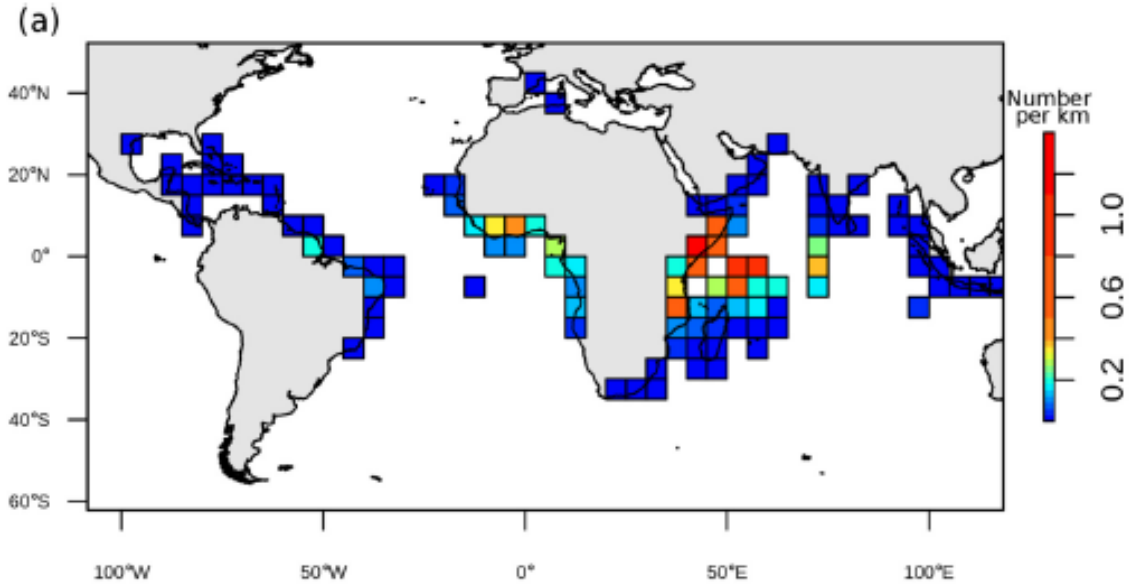


AZTI = AZTI Tecnalia
CFC = Caroline Fisheries Corporation
EU = European Union
FAO = Food and Agriculture Organization of the United Nations
GEF = Global Environment Facility
GTA = Ghanaian Tuna Association

*With ICM-CSIC and FAO-GEF Common Oceans Project

C. FAD Marking

FAD loss and abandonment

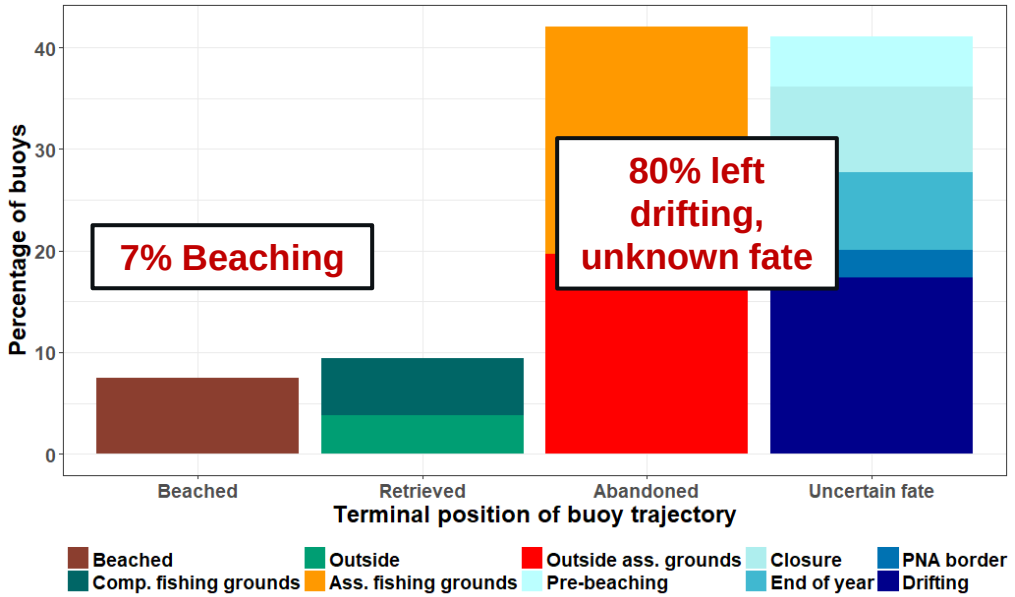


Western Pacific (Escalle et al. 2019)

Fate of deactivated FADs?

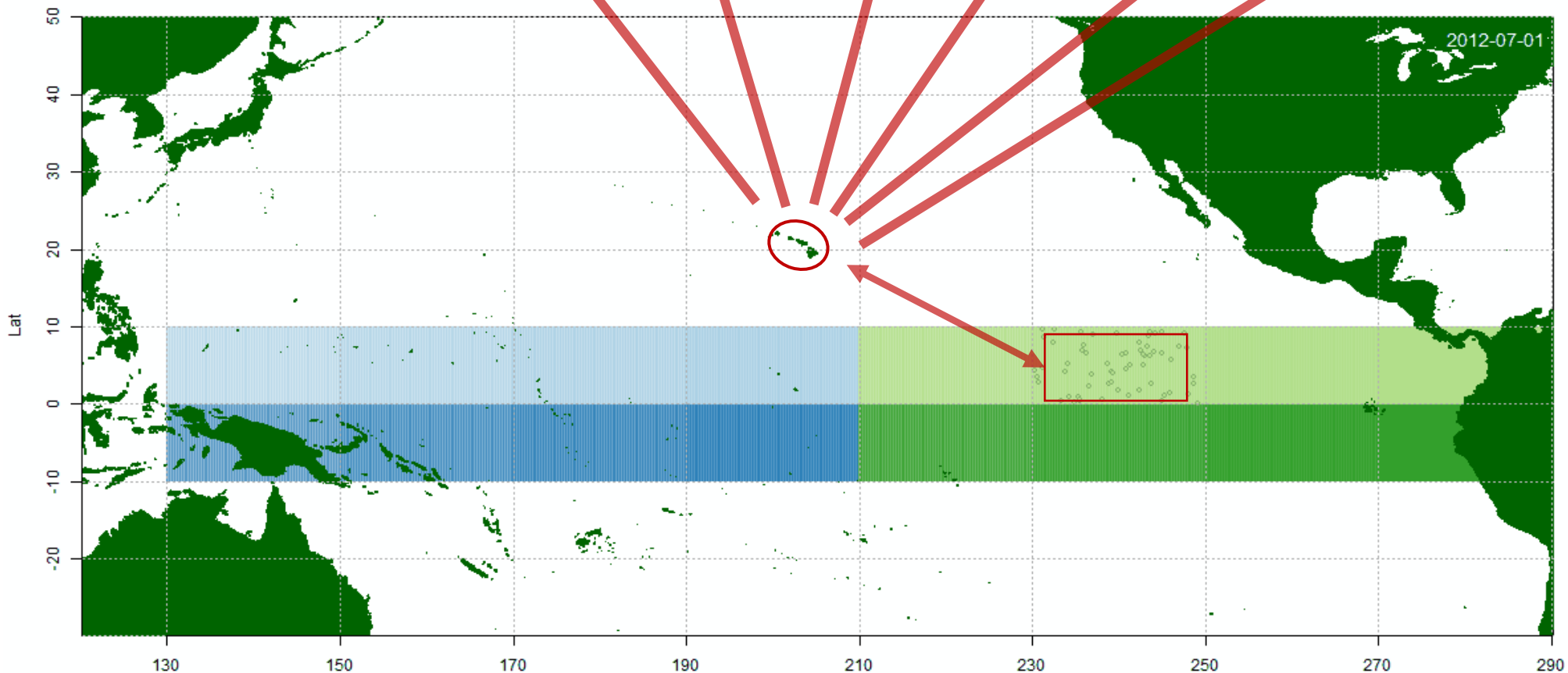
Atlantic Ocean 19-22% (Imzilen et al. 2021)

Indian Ocean 15-20% (Imzilen et al. 2021)



Quantifying Connectivity

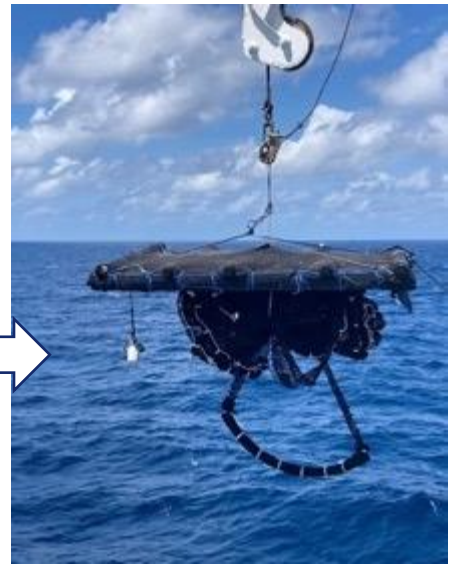
	Main Hawai'ian Islands					
	0-3 months	3-6 months	6-9 months	9-12 months	12-18 months	18-24 months
EPO EZ 6	0%	0%	0%	0.1%	1.3%	2.8%



Tests of a FAD Marking Device

Trials during fishing operations in Central Pacific Ocean tested:

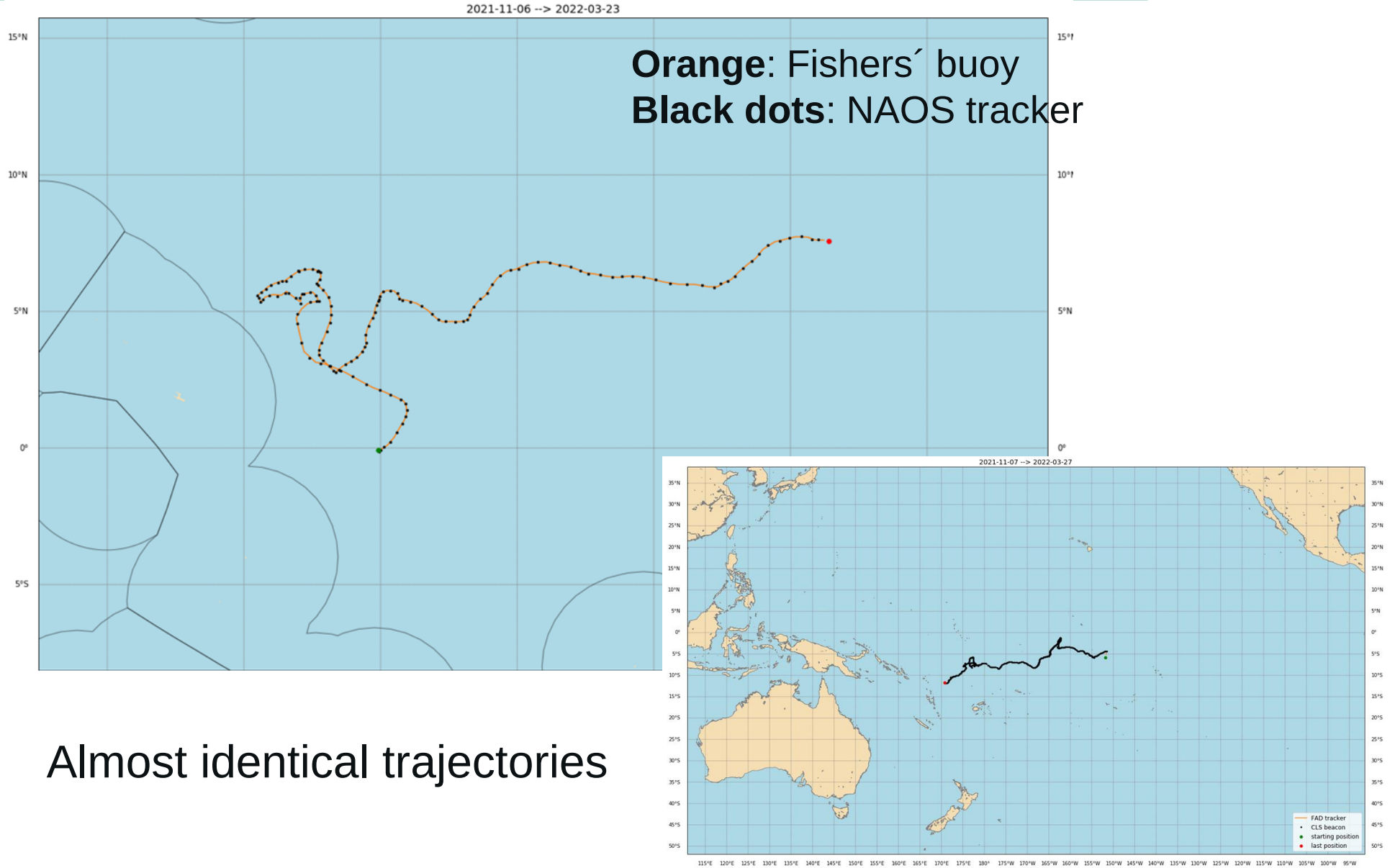
- Battery life / positions per day
- Attachment to FAD structure
- Data reliability
- Lifetime



The device must be:

- ✓ Autonomous
- ✓ Durable
- ✓ Cost effective

Results on track accuracy



Almost identical trajectories

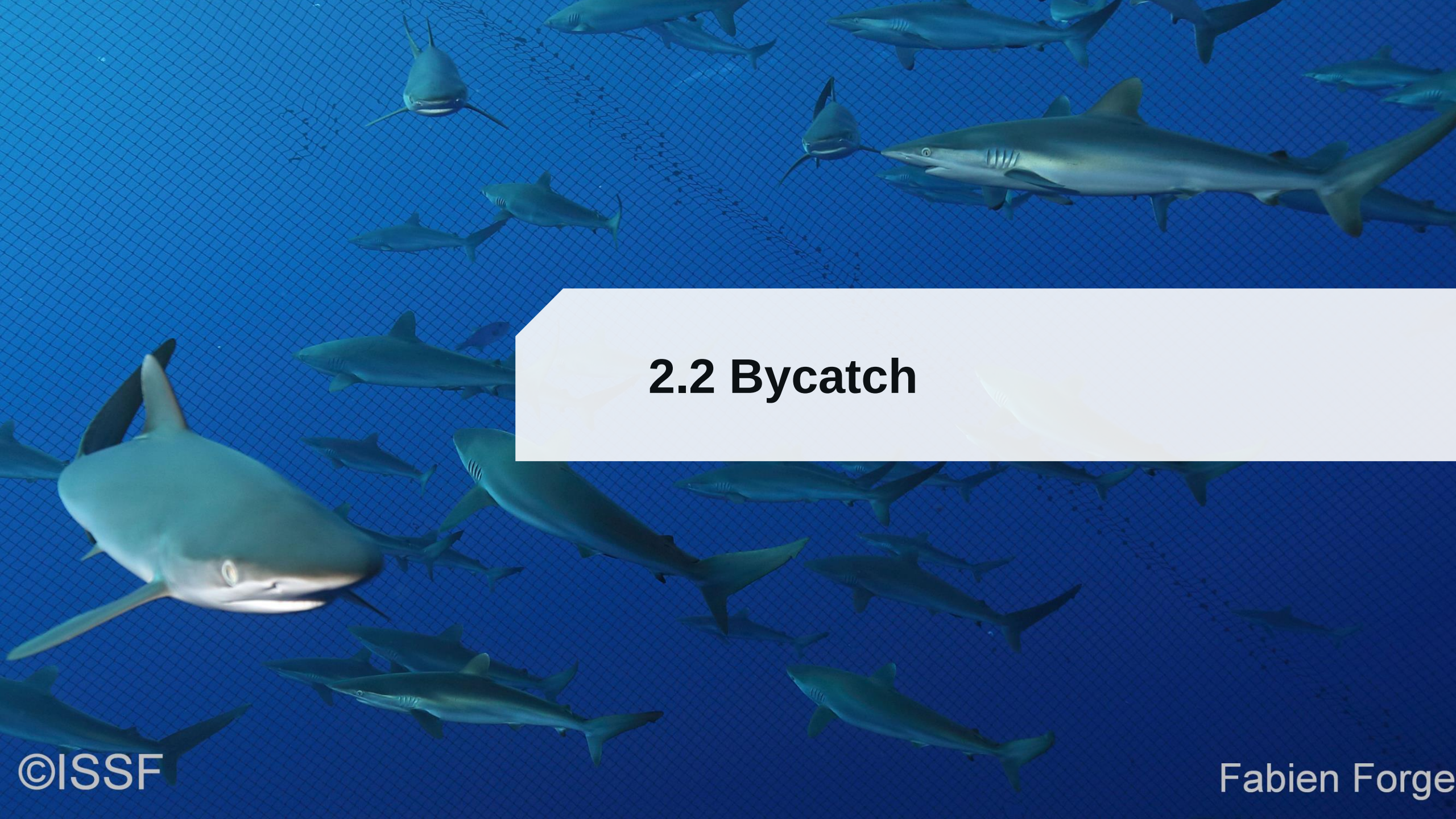
D. Best practices to reduce FAD loss & abandonment

Ongoing work to define best practices for fishers through the lifetime of a dFAD:

- ✓ Prevention
- ✓ Mitigation
- ✓ Remediation

FAD activity	Entanglement	Stranding
Construction	**Fully non-entangling FADs (NEFAD): FADs without netting in any of their components** Built FADs on land with the required specifications to be NE	**Construct biodegradable FADs** that last 6 months **Construct biodegradable FADs** that last one year and NEFAD to avoid entanglements in coastal habitats
Deployment		Avoid areas of deployment with high loss and abandonment risk Limit more the active buoys per vessel
Visit/Set	Rutinely lift the FAD to observe any entanglement **Release the species entangled if any**	**During visits/sets retrieve as much FADs as possible especially :** **(i) In areas close to the limit of the fishing ground, even if the dFAD is in good condition** (ii) Retrieve FADs without fish as much as possible **Check FADs that are close* and repair or retrieve if damaged** Rutinely lift the dFAD to see if the structure is damaged with the risk of sinking or ending up lost If the structure is damaged repair it or retrieve it
Deactivation	Alternative FAD marking buoys, cheaper to follow the dFAD trajectory until the end of its lifetime No deactivation of the FAD Sell and share FADs before they are lost and when they drift to the western Pacific Before FAD is deactivated see if there is any vessel close to retrieve it	
Retrieval	When someone elses FAD is encountered, retrieve everything buoy and FAD structure More communications among vessels to retrieve FADs at sea Use one purse seine vessel to retrive FADs for a given time and shift among the entire fleet Use FAD cleaning vessels paid by various companies to retrieve FADs and regulate their activity Cleaning vessel paid by fishing associations Cleaning vessel paid by the regional body	

*no more than 10 miles, take into account fuel is very expensive and carbon foot print

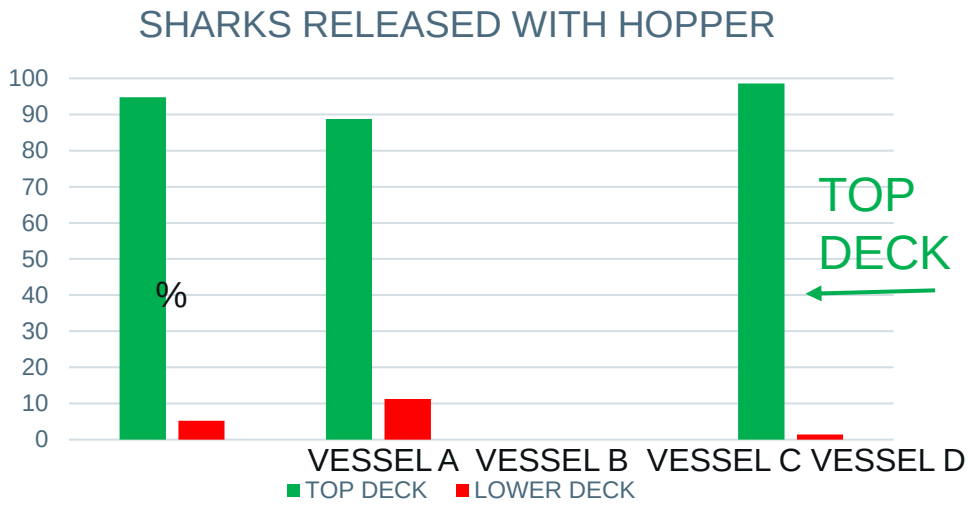


2.2 Bycatch

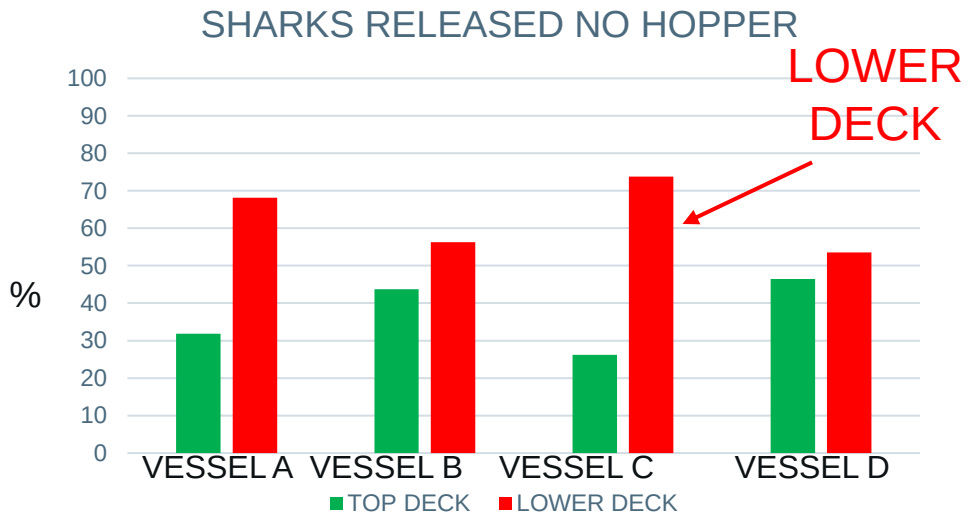
Fabien Forge

Video poor practices

Shark release when using hoppers



UNLOADING BRAIL INTO HOPPER,
SHARK QUICKLY RELEASED AT TOP DECK



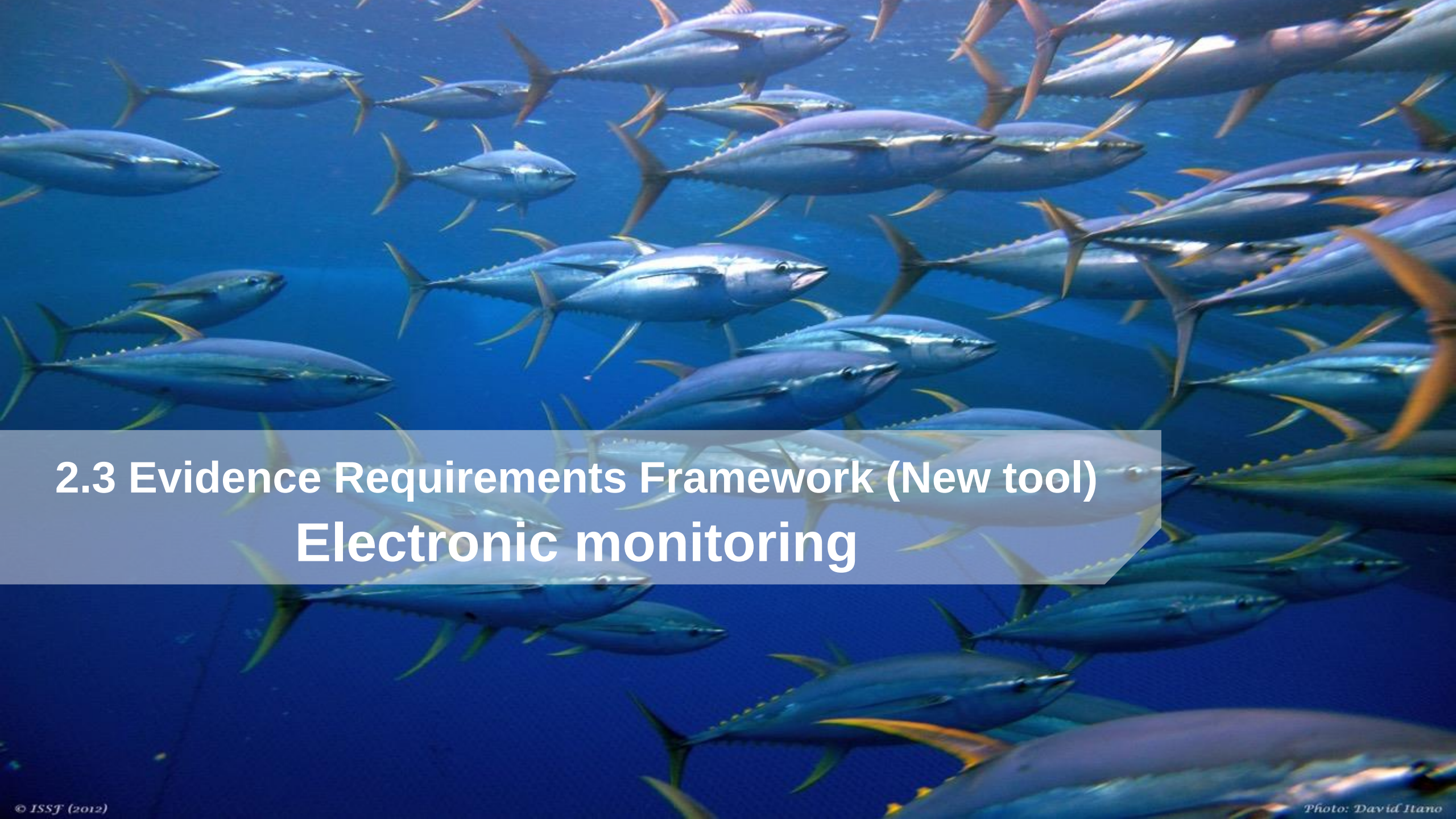
SHARK ARRIVING TO THE LOWER DECK

85-100% of sharks released from the top deck with hoppers vs. 20-45% when not using them

Bycatch release and tagging trainings

During cruises with a scientist on board

Fishers sampling for the Project



2.3 Evidence Requirements Framework (New tool)

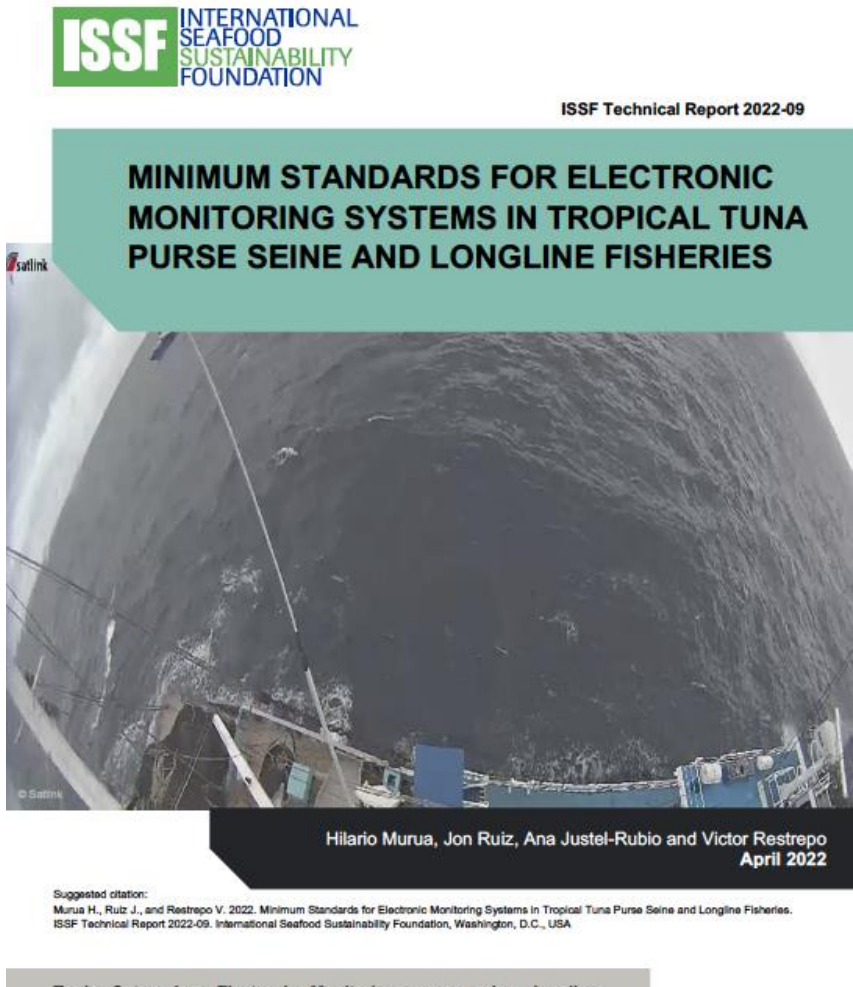
Electronic monitoring

Photo: David Itano

Electronic monitoring

All RFMOs are developing minimum standards for EM programs

- EM minimum standards for the implementation of EM systems in PS and LL.
- IOTC has adopted EM mínimum standards (Res 23-08), May 2023
- A new column on the ISSF Vessels in Other Sustainability Initiatives (VOSI) public vessel list to show vessel participation in the implementation of EMS.



Conclusions

Looking back 10 years shows that there has been great progress

Still **challenges** to address to make the use of FADs more sustainable in relation to MSC Principle 2:

- Fully non-entangling and biodegradable FADs
- Fewer FADs, but better FADs
- Better knowledge on tunas, sharks and other species
- New techniques and devices and ways of fishing

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Thanks!