

# Comisión Interamericana del Atún Tropical Inter-American Tropical Tuna Commission



## FAD indicators

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# Background

- 1<sup>st</sup> joint t-RFMO FAD meeting in Madrid, 2017.
- Technical WG-FADs created in late 2018
- Different tasks, among others:
  - Develop a series of FAD indicators to assess the FAD fishery



# Background

- IATTC leading this task: Workplan developed.
- **Compile** the different FAD fishery indicators considered by t-RFMOs and other entities of interest.
- Review, summarize and propose a **first draft** of FAD fishery indicators
- Develop a **second draft** of FAD fishery indicators
- Conduct a first trial on **estimating** the selected FAD fishery indicators by ocean
- The Joint t-RFMO FAD Working Group **adopt and recommend** a set of FAD fishery indicators
- **Discuss** the set of indicators with the IATTC WG FAD





# Set of indicators considered

Indicator Type	Priority level (1 Major, 2 Moderate, 3 Minor)
Catch and effort	1
Activity	1
Buoy/FAD-use	1
Bio-Eco-Behavior	3
Capacity	1
Technology	2
Socio-Economiv	3
Eco-Impact	2



# 1. Catch and effort

## Catch and effort indicators

Ideally, catch indicators should be estimated separately for both the owned and not-owned objects components of the fishery.

**Data:** estimated from a variety of data sources, including, but not limited to FAD logbooks, official reports, fishing logbooks.

**Spatial scale:** when possible, the indicators in this section should also be estimated at a spatial scale of  $1^{\circ} \times 1^{\circ}$ .

P:1

<i>Catch</i> 1.a	Number of sets	1	<i>Effort</i> 1.g	Days at sea	1
1.b	Number of sets per days at sea	1	1.h	Fishing time	3
1.c	Proportion of set types	1	1.i	Searching time	1
1.d	Catch per set	1	1.j	Number of explored grid cells	2
1.e	Catch per positive set	1	1.k	Number of fished grid cells	1
1.f	Proportion of null/skunk sets	3	1.l	Number of supply vessels	1



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# 2. Activity

<b>Activity indicators</b>		<b>P:1</b>
<b>Data:</b> mainly estimated through observer fine-scale data or FAD logbooks.		
<b>Spatial scale:</b> when possible, the indicators in this section should also be estimated at a spatial scale of i) 1°x1° and ii) fishing zone (i.e. statistical areas)		
2.a	Number of deployments	1
2.b	Number of visits	1
2.c	Number of retrievals	2
2.d	Log densities	3



# 3. Buoy/FAD use indicators

<b>Buoy/FAD use indicators</b>		<b>P:1</b>
<b>Data:</b> mainly estimated through buoy fine-scale data and FAD logbooks		
<b>Spatial scale:</b> when possible, the indicators in this section should also be estimated at a spatial scale of i) 1°x1° and ii) fishing zone (i.e. statistical areas)		
3.a	Number of active buoys	1
3.b	Proportion of buoys with echo-sounder	2
3.c	Number of shared buoys	2
3.d	Buoy densities	1
3.e	Number of abandoned / lost buoys	1



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# 4. Biological, ecological and behavioral indicators

<b>Biological, ecological and behavioral indicators</b>		<b>P:3</b>
<b>Data:</b> ideally estimated from port sampling, logbooks, tagging and observer information		
<b>Spatial scale:</b> N/A except for ecological indicators, that could be estimated for each fishing zone (i.e. statistical area)		
<i>Biological</i> 4.a	Average/median weight	3
4.b	Average/median size	3
4.c	Maturity	3
<i>Ecological</i> 4.d	Species composition of the catch	1
4.e	Size frequency composition of the catch	1
4.f	Biodiversity indices	2
<i>Behavioral</i> 4.g	Residence times	2





# 5. Capacity indicators

<b>Capacity indicators</b>		<b>P:1</b>
<b>Data:</b> ideally computed from official national administrations and RFMO fishing licenses <b>Spatial scale:</b> N/A		
5.a	Number of vessels	1
5.b	Active capacity at sea	1



# 6. Technology

<b>Technology indicators</b>		<b>P:2</b>
<b>Data:</b> estimated from companies', national administrations' or RFMOs' official records		
<b>Spatial scale:</b> N/A		
6.a	Equipment onboard	1
6.b	Net size	2
6.c	FAD depth	2



# 7. Socio-economic indicators

<b>Socio-economic indicators</b>		<b>P:3</b>
<b>Data:</b> Mainly estimated from official market prices and national administrations' or international organizations' statistics		
<b>Spatial scale:</b> N/A		
7.a	Market price of species	2
7.b	Price of fuel	3
7.c	Number of jobs	3



# 8. Ecological impacts indicators

<b>Ecological impacts indicators</b>		<b>P:2</b>
<p><b>Data:</b> Estimated from companies', national administrations' or RFMOs' official records, FAD logbooks and/or observers' data</p> <p><b>Spatial scale:</b> N/A, except for 8.d which should ideally be estimated by fishing zone (i.e. statistical area)</p>		
8.a	Non-entangling FADs	2
8.b	Biodegradable FADs	2
8.c	Stranding events	2
8.d	Bycatch ratios	1



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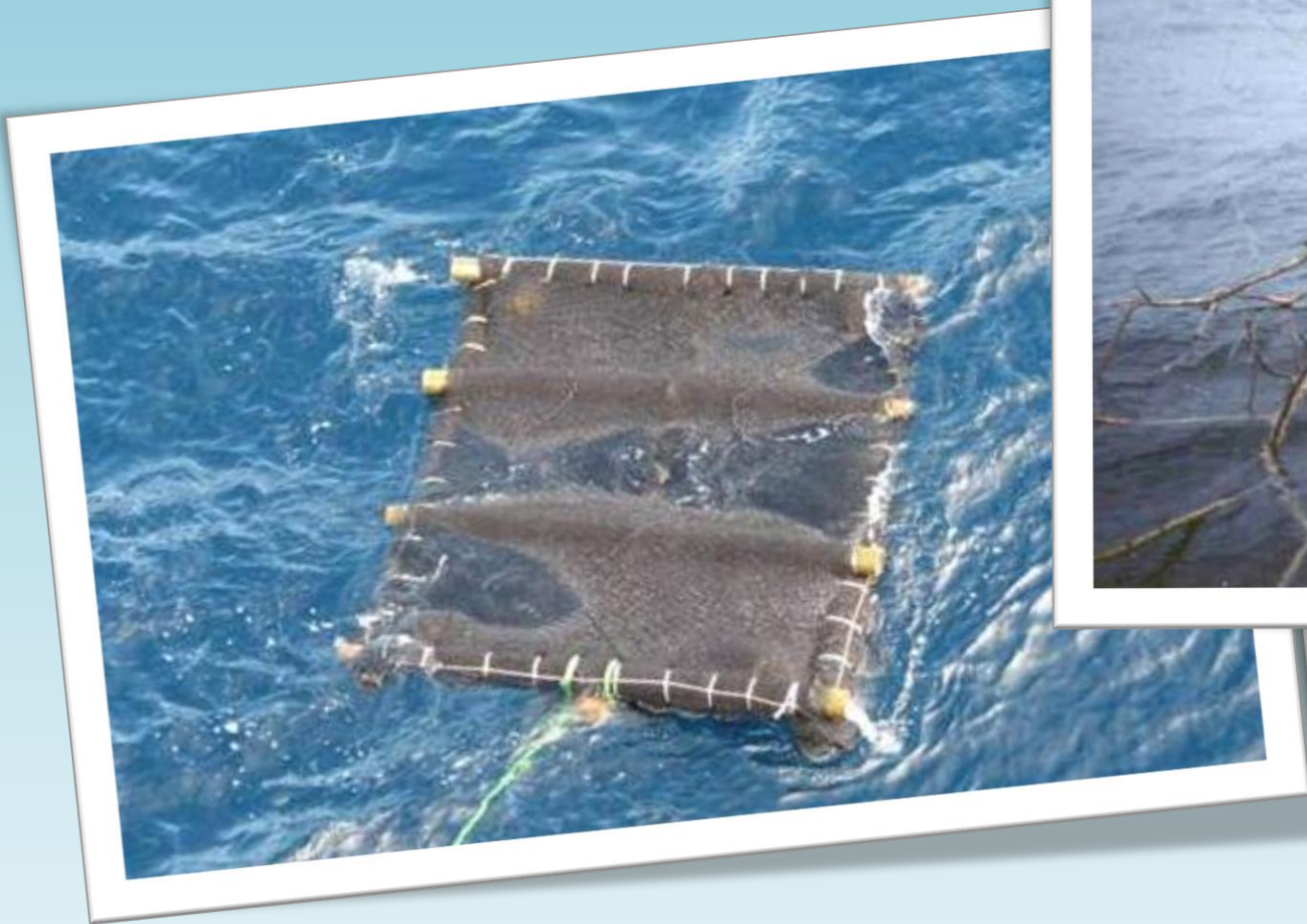


		In place				Data available to develop the indices			
	Indicator	IATTC	ICCAT	IOTC	WCPFC	IATTC	ICCAT	IOTC	WCPFC
Catch and effort	1.a	X	X	X	X				X
	1.b	X	X	Partly	Partly				x
	1.c	X	X	X	Partly				X
	1.d	X	X	X	Partly				X
	1.e	X	X		Partly			X	X
	1.f		X		Partly	X		X	X
	1.g	X	X	X*	Partly		X	X	X
	1.h		X	X*	X	X	X	X	X
	1.i			X <sup>∞</sup>		X		X	
	1.j		X	X <sup>∞</sup>		X		X	x
	1.k		X	X <sup>∞</sup>		X	X	X	x
1.l	N/A	X	X		N/A	X			
Activity	2.a	X	X	X <sup>∞</sup>	Partly		X	X	Partly
	2.b		X	X <sup>∞</sup>	Partly	X		X	Partly
	2.c	X	X	X <sup>∞</sup>	Partly			X	Partly
	2.d		X	X <sup>∞</sup>		X	X	X	
Buoys	3.a	X	X		Partly <sup>Δ</sup>	Partly <sup>χ</sup>	*	X <sup>∞</sup>	Partly
	3.b		X			Partly <sup>χ</sup>	*	X <sup>∞</sup>	
	3.c				Partly			X <sup>∞</sup>	Partly
	3.d	X	X	X <sup>∞</sup>	Partly	Partly <sup>χ</sup>	X		Partly
	3.e					Partly <sup>χ</sup>		X <sup>∞</sup>	Partly
Bio-Eco-Behav.	4.A	X	X	X	X		X		
	4.b	X	X	X	X		X		
	4.c								X
	4.d	X	X	X	X		X		
	4.e	X	X	X	X		X		
	4.f					X	X		X
	4.g					Partly <sup>ε</sup>			X <sup>®</sup>
Capacity	5.A	X	X	X	X		X		
	5.B	X	X	X	X		X		
Techno	6.a			X <sup>∞</sup>		X			X
	6.b			X <sup>∞</sup>	X	X			X
	6.c			X <sup>0</sup>	Partly	X			Partly
Socio-Eco	7.a				X <sup>μ</sup>				
	7.b				X <sup>μ</sup>				
	7.c								
Eco Impact	8.a		X	X <sup>∞</sup>	Partly	Partly <sup>ε</sup>		X	Partly
	8.b		X	X <sup>∞</sup>	Partly	Partly <sup>ε</sup>		X	Partly
	8.c			X <sup>∞</sup>	Partly	Partly <sup>χ</sup>		X	Partly
	8.d			X <sup>∞</sup>	X	X		X	

# Conclusions

- A set of 40 indicators have been developed, and a priority level has been assigned.
- This document/presentation serves as a basis for discussion, and will facilitate future work of the technical group and RFMOs for minimum standards.
- Data collection and reporting needs exist at different levels in each RFMO to estimate some of the indicators proposed.
- To be more consistent, this tasks should coordinate with data collection and definition task.
- Document online in EN, ES, FR.





Questions