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Catch, Effort, and eCOsystem impacts of FAD-fishing (CECOFAD)

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Lot 1: Standardization of tropical tuna catch and effort time series for EU purse seine fleets using FADs in the Atlantic, Indian and Pacific Ocean and estimation of by catch and ecosystem impacts.

CECOFAD Participants

Catch, Effort, and eCOsystem impacts of FAD-fishing (CECOFAD)

Coordinating organisation: Institut de Recherche pour le développement (IRD)

Name of the coordinating person: Daniel Gaertner (IRD)

Steering committee: Javier Ariz (IEO), Nicolas Bez (IRD), Daniel Gaertner (IRD), Gala Moreno (AZTI), Hilario Murua (AZTI), Maria Soto (IEO)

Scientific partners: Institut de Recherche pour le Développement (IRD, France), Instituto Español de Oceanografía (IEO, Spain), AZTI Tecnalia (AZTI, Spain),

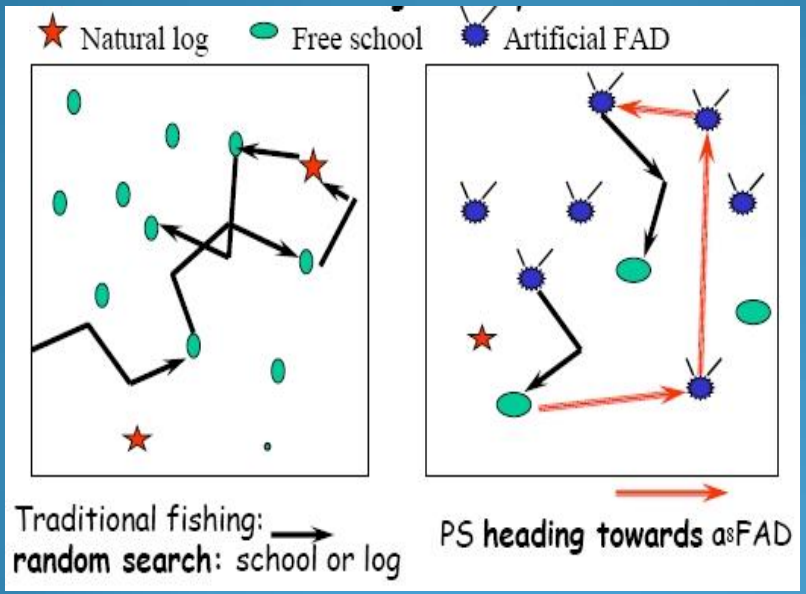
Professional partners: Organisation des producteurs de thon tropical congelé et surgelé (ORTHONGEL (France), Asociación Nacional de Buques Atuneros Congeladores (ANABAC, Spain), Organización de Productores Asociados de Grandes Atuneros Congeladores (OPAGAC, Spain)

Observers: International Tuna Commission for the Conservation of Atlantic Tunas (ICCAT), Indian Ocean Tuna Commission (IOTC), Inter-American Tropical Tuna Commission (IATTC) and International Seafood Sustainability Foundation (ISSF).

Effect on fishing effort (calculation of PS fishing effort and changes in fishing grounds)

Purse seine fishery is based on the visual detection of tuna schools atthe surface of the sea. Traditionally, the searching time (eg, daily hours searching for tuna schools) was used to calculate the fishing effort. The introduction of FADs equipped with transmitters changed this concept.

Before FADs fishing, Free school and natural logs were randomly detected



After, FADs fishing the purse seiner detects electronically its own FADs and may run directly in the good direction. Free school, logs and foreign FADs continue to be randomly searched during daily hours.

Challenges

❖ Free school CPUEs standardization remains problematic:
- Non random distribution of fishing effort
- Time and spatial autocorrelation
- Increasing fishing power
- Cooperation between fishers (i.e., code groups)

❖ In addition to the impact of FAD-fishing on the tuna resource, other non-target species (e.g., sharks, rays, turtles) are also affected by this fishing mode

❖ Regular requests expressed by tuna RFMOs to European tuna scientists to provide reliable estimates of abundance indices and accurate indicators on the impact of FAD-fishing on juveniles of tunas and on bycatch species

Structure and objectives of the project

The project will be organized into 4 Work Packages (WPs), as follows:

WP 1- Definition of a unit of fishing effort for purse-seiners using FADs that accounts for different factors influencing catchability (**Objective 1 of the project**),

WP 2- Standardization of catch-per-unit-effort series of the EU purse seine fleet, for juveniles and adults of the three tropical tuna species and exploration of some FAD-regulations in management strategies (**Objective 2**),

WP 3- Alternatives to catch rates (WP 2 and 3 in conjunction will address (**Objective 2**),

WP 4.- Provision of information on catch composition around FADs and estimation of potential impacts on other marine organisms (e.g. by-catch of sharks and cryptic mortality; **Objective 2**).

Timing of work packages CECOFAD

Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
WP1	WP1a Update of introduction and use of new technology																	
WP1	WP1b Recovery of historic data for performing FADs indicators																	
WP2	WP2b Local vs global CPUEs																	
WP4	WP4a Impact of FADs on the spatio temporal dynamic of tunas and bycatch																	
WP3			WP3a Recovery of echosounder information															
WP4			WP4a Quantification of biomass removed by FAD fishing															
WP3				WP3a Alternative indices collected from different sources														
WP3				WP3a Modeling the agregation of biomass under FAD networks														
WP1					WP1a Fishing activities of a supply vessel													
WP1					WP1b FAD-trajectories based indicators													
WP1					WP1a Fisher behaviour-at-sea (alone vs group)													
WP1					WP1c Reallocation of fishing effort by fishing modes													
WP4					WP4b Soaking time and FAD origin effects on catch and by catch													
WP1						WP1b FADs indicators based on historic data												
WP2						WP2a Incorporation of technology in CPUE standardization												
WP2						WP2b Movements of fish and fleets on the CPUEs standardization												
WP1									WP1a Prior elicitation of change in catchability (production model)									
WP2										WP2a Impact of a supply vessel on the PS CPUEs								
WP2										WP2c FAD catch rate indicators								
WP2											WP2b FAD drift modeling and spatialized regulations							
WP4												WP4b Ratio estimate of classical and ecological FAD used						
WP1	WP1c Proportion of time at sea by activity																	
WP3	WP3a Index of FAD density and aggregated abundance																	

Sharks and turtles cryptic mortality

Classic FAD

No entangling FAD

Classical Fad

No entangling FAD

Questions?