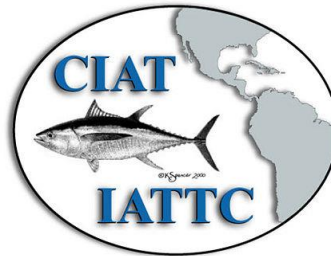# Towards acoustic discrimination of tuna associated with FADs

Gala Moreno, Guillermo Boyra, Beatriz Sobradillo, Igor Sancristobal, Isabel Pérez Arjona, Blanca Orue, David Itano, Victor Restrepo

ISSF
INTERNATIONAL SEAFOOD SUSTAINABILITY FOUNDATION

2nd Meeting of the Joint Tuna RFMOs Working Group on FADs
San Diego, California USA, 08-10 May 2019

Research Partners, Funders and Service providers

ISSF INTERNATIONAL SEAFOOD SUSTAINABILITY FOUNDATION

Research partners

Service providers

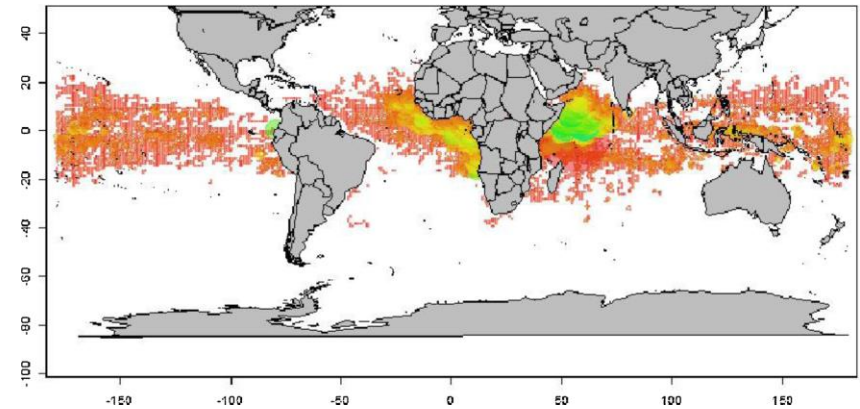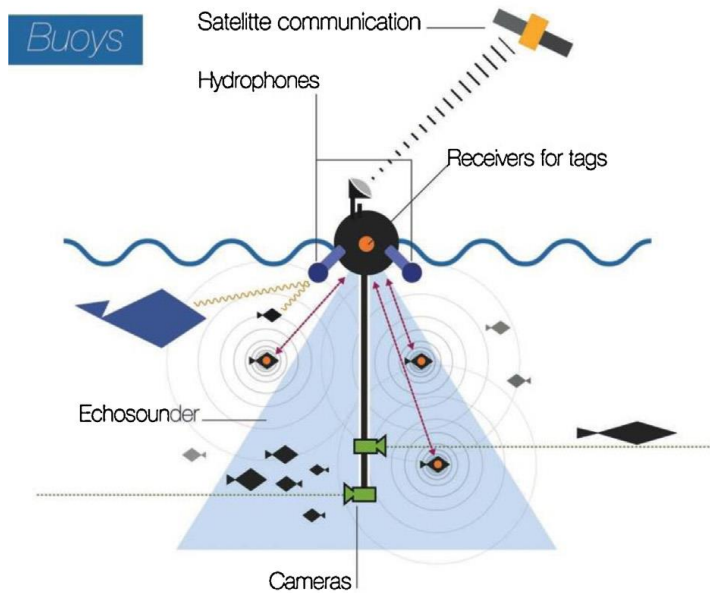## Funders

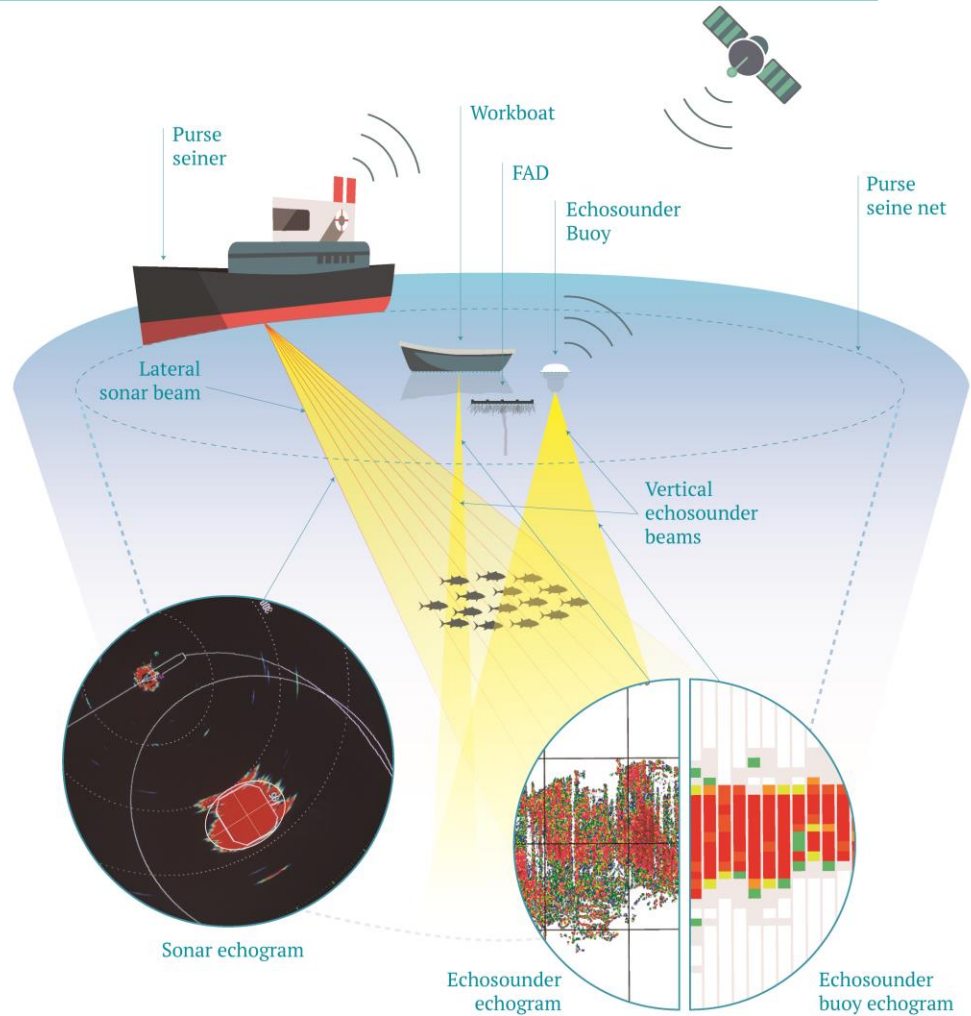Dagorn et al. 2003-2006 EU Project FADIO:

Scientific FADs as observatories of the pelagic ecosystem

Fishers´ FADs as scientific platforms

(Moreno et al. 2016)

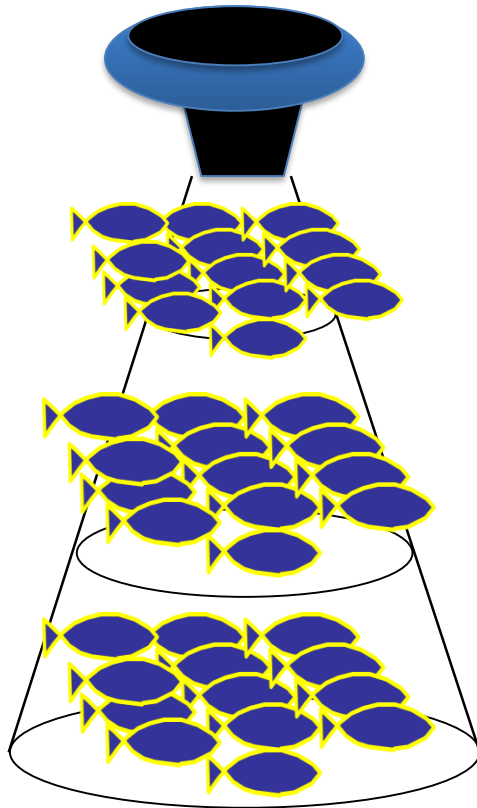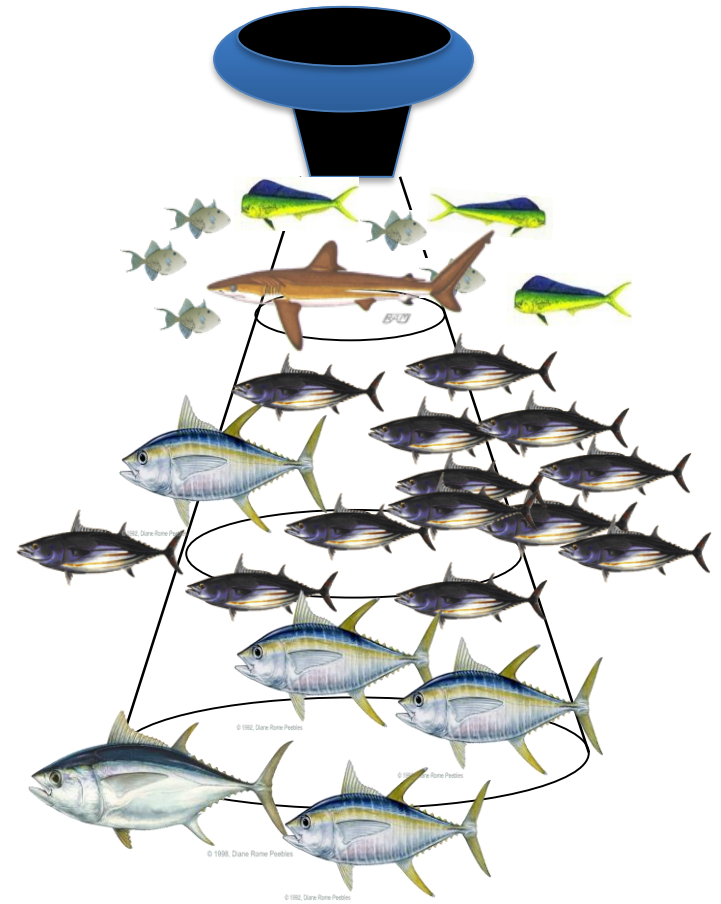# Acoustics in FAD fishing

From Moreno et al. 2019 (in press)

Species discrimination would reduce the mortality of undesired sizes and species of tunas

Rough biomass estimates

Biologically relevant measures, species proportions

1. Study the acoustic frequency response of the target species

2. Explore the potential of acoustics for discrimination of tuna species and size around FADs by searching relationship between acoustic measurements and tuna catches by species
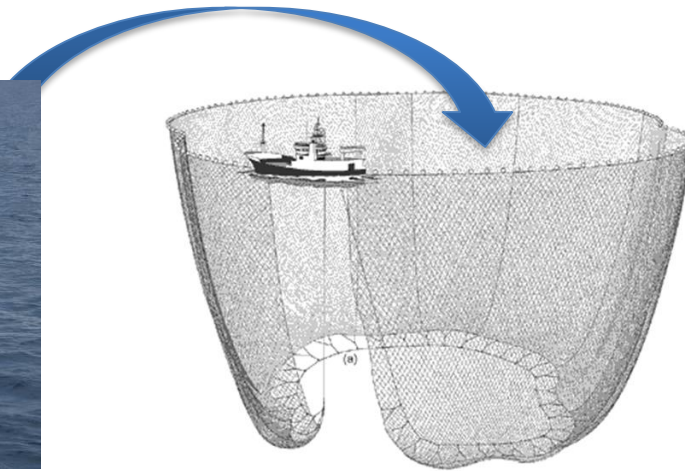
Methods: Field Research

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Research cruises on-board purse seiners

2014_Central Pacific Ocean, Albacora fleet

2016_ Atlantic Ocean, Albacora fleet

2019_ Atlantic Ocean

Acoustic recordings of tuna aggregations at FADs
with scientific echo-sounders

Intensive sampling of size
and species 1-2 tons per set
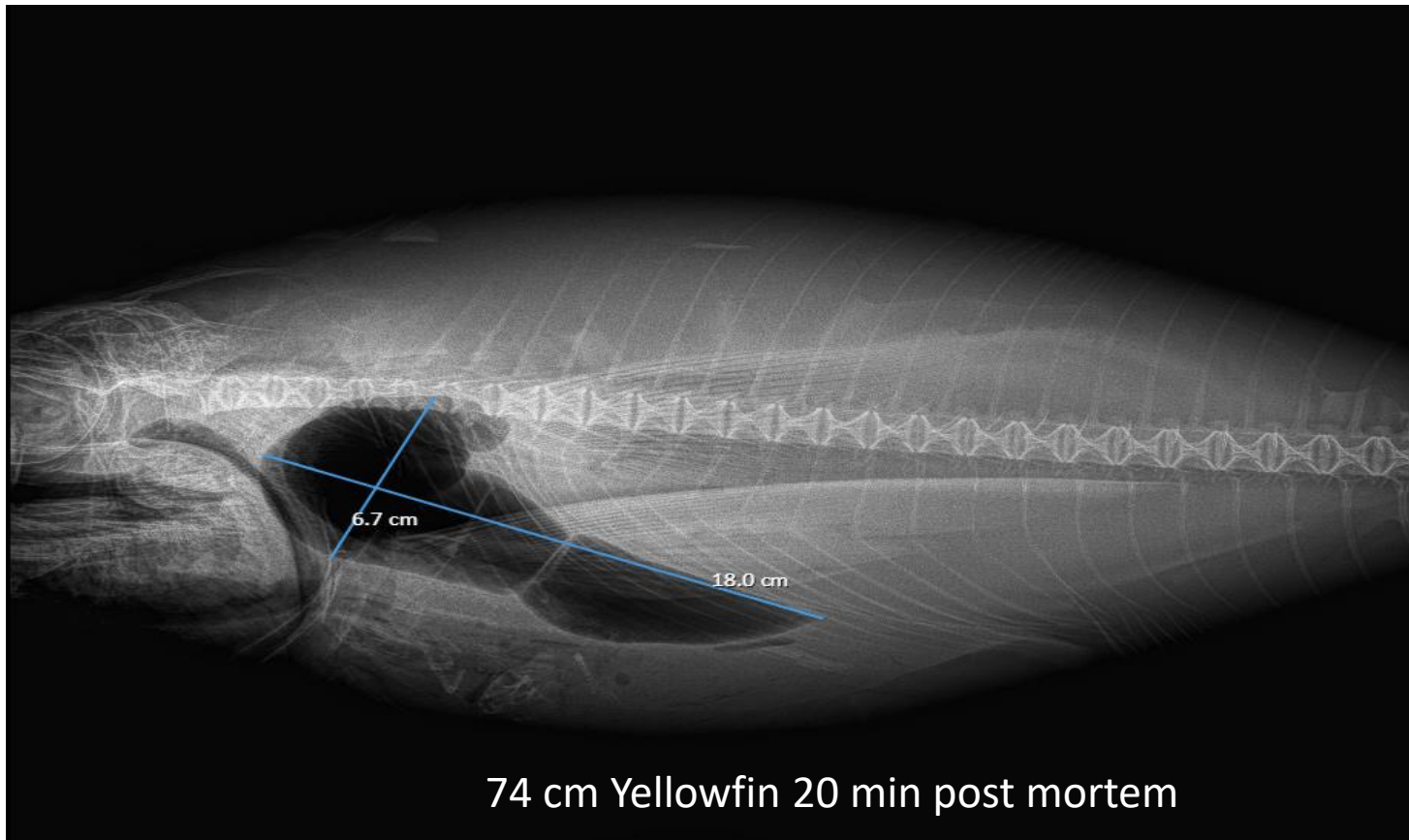
Boyra et al. 2018

2016 and probably 2019

IATTC laboratory in Achotines

74 cm Yellowfin 20 min post mortem

Explore the absence/presence of swimmbladder in YFT of FL<50 cm and the expected acoustic properties (Target strength)

- The simultaneous use of 2 contrasting frequencies (low and high) allows discrimination between at least SKJ from YFT and BET.

- Acoustic variables can predict tuna abundance.

- High frequencies predict better SKJ biomass and low frequencies BET biomass.

- Buoy manufacturers are including 2 contrasting frequencies within their buoys, still work in progress to discriminate tunas.

- New acoustic technology as broadband, has been explored and shows promising for acoustic discrimination (work in progress).

Recommendations

- **Vessel owners**: Share echo-sounder data (biomass) with research institutes, governments and/or RFMOs.

- **Scientits**: Be prepared for the arrival of these data. Knowledge on Big data and Artificial Intelligence is needed.

- **Buoy manufacturers**: Facilitate the outputs of the buoy (biomass estimates, track positions) in a format that are useful for scientist.

- **RFMO**: Encourage this previous points. Explore the creation of a working group (joint RFMOs ?) to work on it.

- **Funders**: Continue funding fundamental research and be patiente for a medium-long term results.