

Fishing practice and the ecosystem approach

- case studies on Panama and Ecuador small pelagic fisheries and how Fishery Improvement Projects can effect management strategy and sustainability

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Introduction

- Two case studies describe how fishery improvement projects (FIPs) encourage changes in management and conservation goals.
- Panama and Ecuador faced several challenges, including overexploitation, excessive fishing effort, conflicts among the fishers and illegal fishing.
- These factors excluded the fishmeal industry from using local raw material to access certain markets, limiting the socioeconomic benefits to the local communities.¹



Panamanian pelagic vessels

Methods



- We investigate;
 - What critical problems the fisheries were facing.
 - Did the FIPs improve the fisheries, did they meet their objectives?
- We first looked at the history of the fisheries and identified the critical problems and barriers to certification.
- How did the FIPs guide the fisheries to meet the MarinTrust criteria.
- Can these improvements be measured with environmental and socioeconomic indicators

Turtle release Source: smallpelagics.org/en/responsible-fishing/

Results

The critical problems found in both countries were;

- The lack of data to feed stock assessments for the exploited species
- The consequent lack of biological reference points to guide management
- Undetermined interaction of fishing gears with the sea bottom and its associated communities
- Impacts of unknown intensity over other fisheries
- Undetermined interaction with endangered, threatened or protected, (ETP) species²



Hammerhead shark release. Source Panama FIP

Did the FIPs improve the fisheries?

Ecuadorian Small Pelagics

- TARGET SPECIES USED AS WHOLE FISH FOR MARINE INGREDIENT PRODUCTION:
- PACIFIC CHUB MACKEREL (*SCOMBER JAPONICUS*)
- FRIGATE TUNA (*AUXIS SPP*)
- SHORTFIN SCAD (*DECAPTERUS MACROSOMUS*)
- LARGEHEAD HAIRTAIL (*TRICHIURUS LEPTURUS*)
- PACIFIC ANCHOVETA (*CETENGRAULIS MYSTICETUS*)
- ROUND HERRING (*ETRUMEUS ACUMINATUS*)

Ecuador: Timeline of verifiable improvement in policy/management and fishing practices

- 2019**
 - First stock assessment for all 9 species
 - Reactivation of annual hydroacoustic research surveys for decision-making
 - Data collection of ETP interactions
 - Increase in closure days on reproductive season
- 2020**
 - New Organic Law for the Development of Aquaculture and Fisheries
 - Mandatory Program for On-Board Fisheries Observers, MPCEIP-SRP-2020-0056-A
 - Ecuadorian Small Pelagic Fishery Dialogue Platform SPDFP established MPCEIP-SRP-2020-0054-A
 - Yearly analysis of impacts of the fishery on habitat and ETP species.
 - e-Logbook system has been implementation
- 2021**
 - New Fishery Management Plan and National Action Plan MPCEIP-SRP-2021-0073-A
 - First year of Control Rule implementation based in Management Plan Strategy
 - Implementation of best practices for release of marine megafauna species for crew members FIP
 - Resolution No. MAE-SPN-2021-001 established
 - Research of small pelagic eggs and larvae on board FIP vessels for decision-making.
 - Establishment of closure days for juveniles' season
- 2022**
 - Fourth stock assessment and peer review.
 - New regulations to enforce implementation of the new fishing law³
 - Implementation of a participatory data collection system on board the FIP fleet
 - First analysis of fishery and ecosystem based on Ecosim and Ecopath models

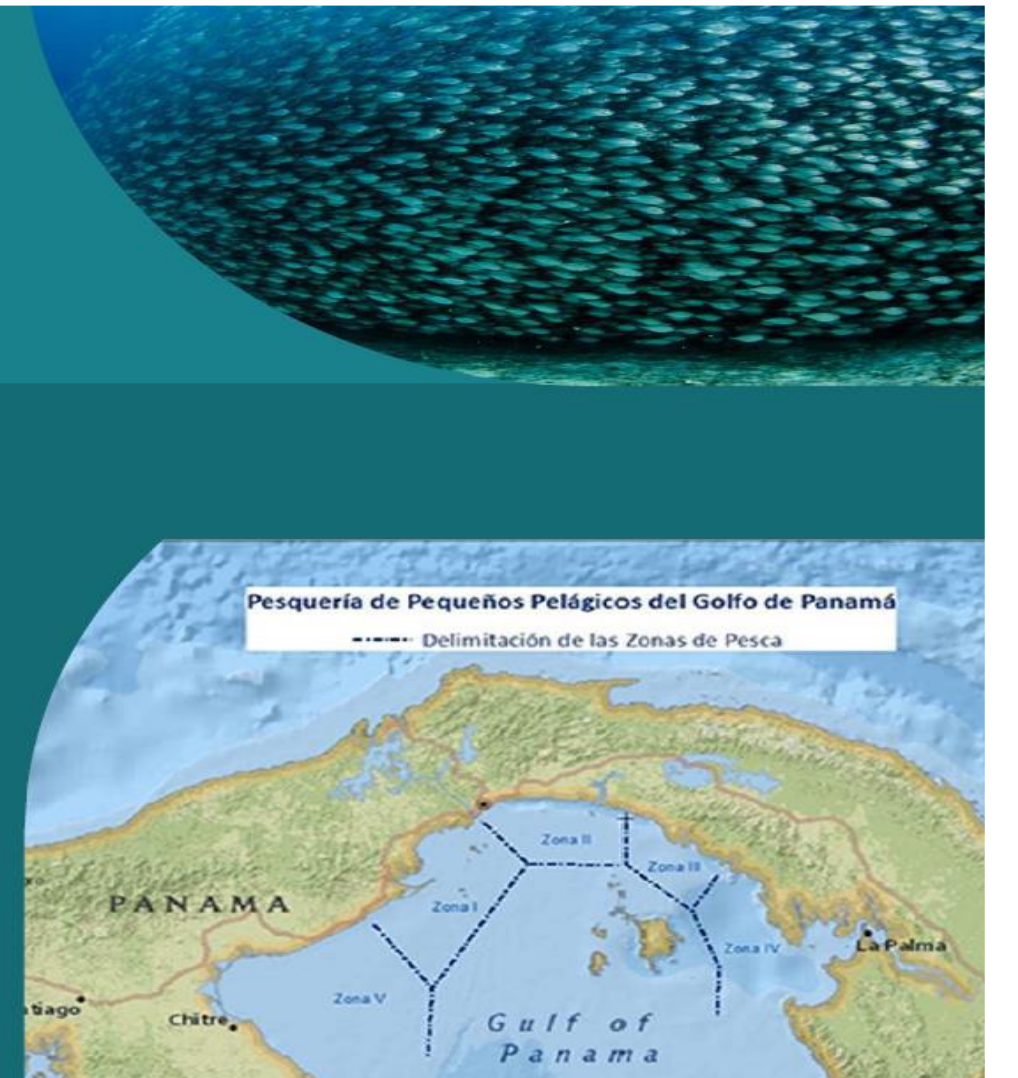
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Panama Small Pelagics

- TARGET SPECIES USED AS WHOLE FISH FOR MARINE INGREDIENT PRODUCTION:
- PACIFIC ANCHOVETA (*CETENGRAULIS MYSTICETUS*)
- PACIFIC THREADHERRINGS (*OPISTHONEMA SPP.*)

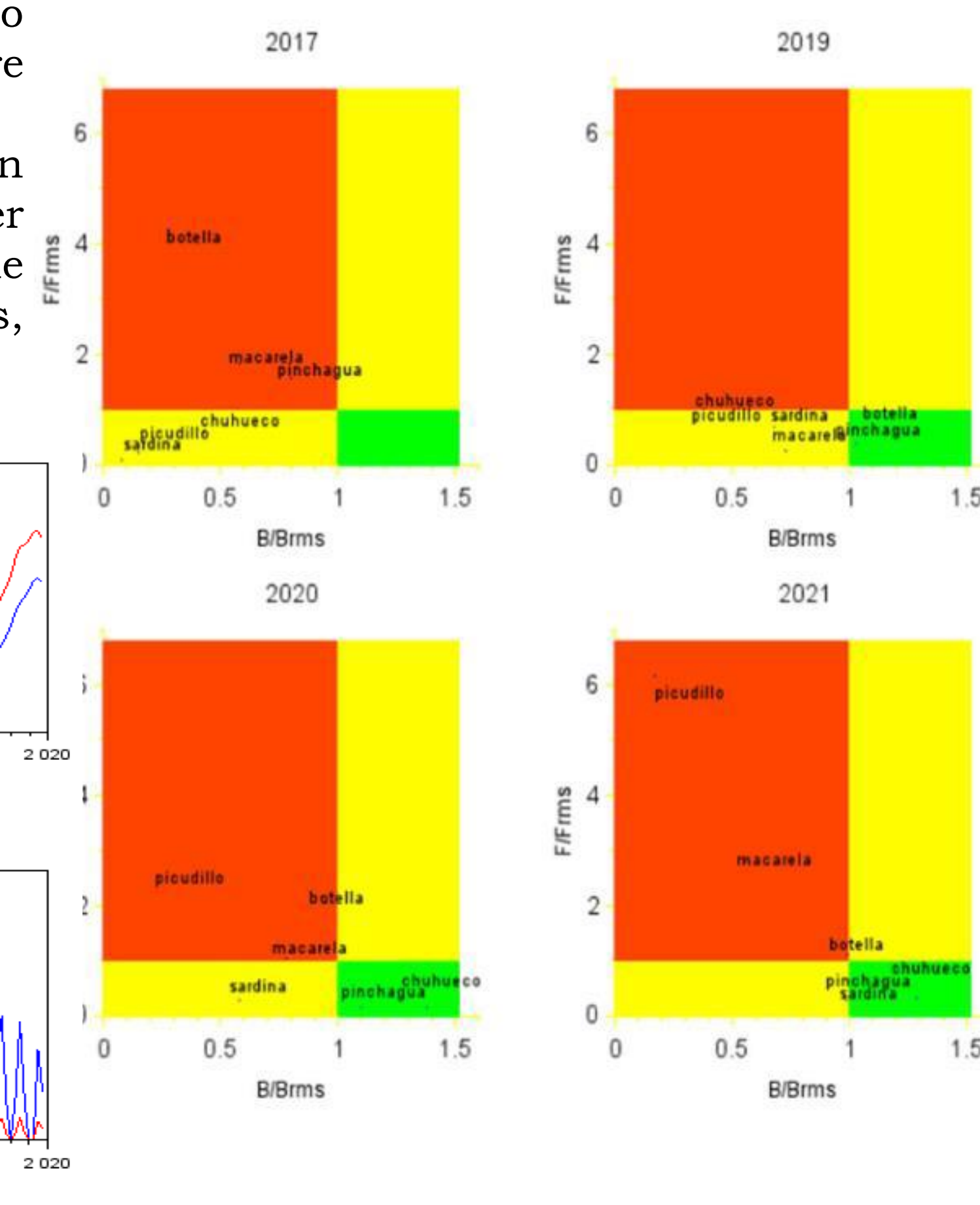
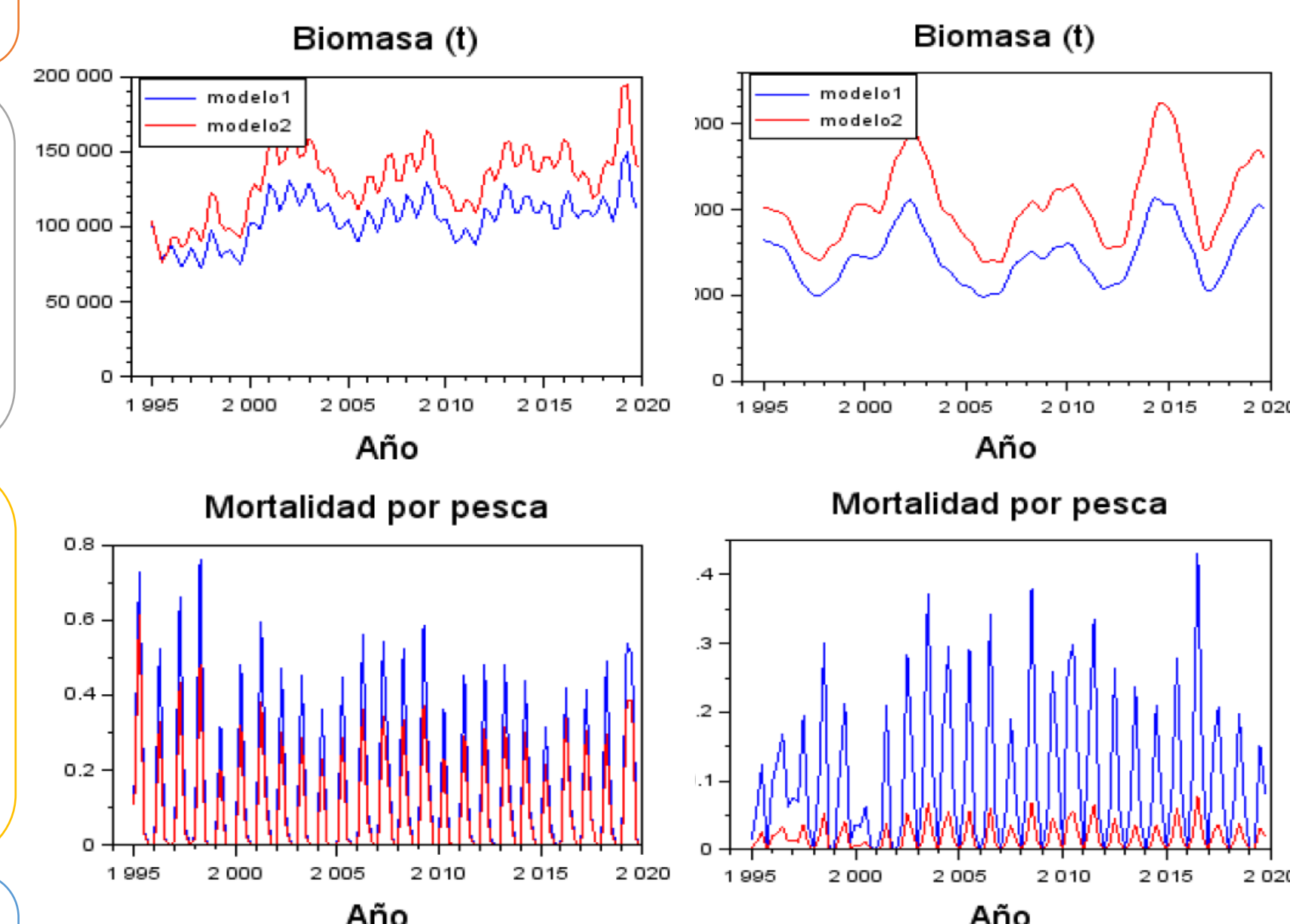


Panama: Timeline of verifiable improvements in policy/management and fishing practices:

- 2016**
 - Executive Decree N° 107-2016 updating that of 1977 regarding fleet capacity, net regulations, TACs, adopts observer programme, fishery opening based on minimum sizes
 - Second annual stock assessment made public
 - Catch and effort database, and bycatch of sharks and turtles continued.
- 2017**
 - Annual Hydrographic surveys of the Gulf of Panama began
- 2018**
 - Commencement of official Fishing Seasons opening and closing according to official Resolutions
 - RESOLUTION ADM / ARAP No. 027- Management Plan of the fishery of small pelagic in the Pacific of Panama.
- 2019**
 - Workshop with fishing captains on management plan and ETP
 - Workshop on Estimation and Recommendation of the Maximum Allowable Capture
 - Weekly monitoring of the catch per unit effort (CPUE)
 - Monthly monitoring of bycatch
- 2020**
 - Final year of FIP
 - Extension granted due to COVID-19
 - A peer review for the stock assessment was conducted and delivered to the authorities¹

Conclusion

- The case study reveals that FIPs use a systematic approach to guide a fishery to improvement and looks at which practices were most effective in creating impact.
- The MarinTrust FIP concentrates on environmental issues however another important layer of information reviewed is the inclusion of socioeconomic impact indicators, which help assess the impact of FIPs.



Biomass and fishing mortality over time for Panama Pacific anchoveta (left) and Thread herrings (right)⁴

Kobe plots for the 6 target species of the Ecuadorian small pelagics fishery⁵

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