Bridging the gap between industrial fleets & small-scale artisanal tuna fishers

Sophia Selina Natu1 Thanh Viet Nguyen2 Þór Heiðar Ásgeirsson3
1Ministry of Fisheries & Marine Resources, 2University of Akureyri, 3 GRÓ FTP

INTRODUCTION

In the Solomon Islands, approximately 190,000 tons of tuna are caught annually in its waters which accounts for 10% of the government's revenue.

However, misplaced industrial anchored FADs nearshore intercept and overexploit fish stocks, denying small-scale fishers access to fish while accelerating juvenile depletion and ecosystem collapse.

OBJECTIVES

- To assess the tuna stock status using established reference points and fishing effort
- To improve the efficiency of the tuna industrial fisheries and protect small-scale fisheries through policy advice
- To examine long-term trends in offshore tuna catch and effort to identify potential spatial conflicts with the archipelagic waters

METHODOLOGY

Gordon-Schaefer Model

Natural Growth Function

$$\frac{dx}{dt} = F(X) = rX\left(1 - \frac{X}{K}\right) - H$$

Harvest Function

$$H = (E, X) = qEX$$

Economic Performance

$$\Pi = TR - TC = p \times H(E, X) - c \times E$$

RESULTS

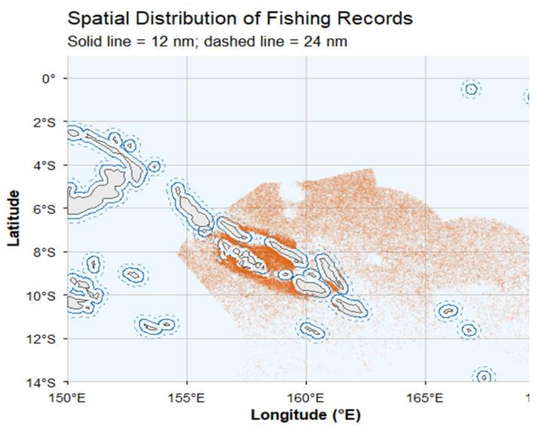

Figure 1: Spatial distribution of fishing effort relative to maritime boundaries in Solomon Islands

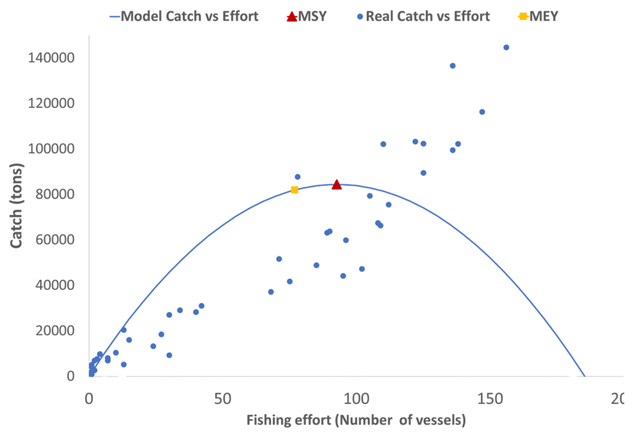

Figure 2: Schaefer Surplus Production Model: Catch vs. Number of vessels

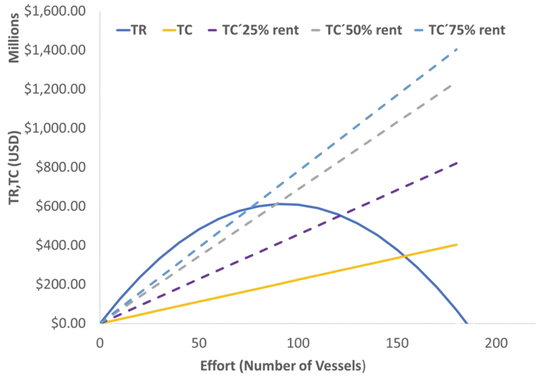

Figure 3: Bioeconomic Model showing total revenue and total cost under increasing license fees (three different scenarios and effort control)

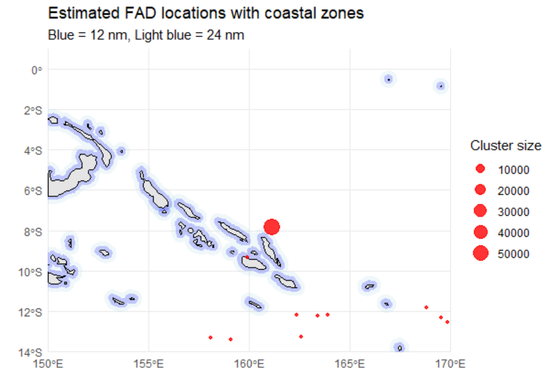

Figure 4: Fishing trips on Industrial Aggregating Devices (FADs) anchored and drifting in the Solomon Islands

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RECOMMENDATIONS

- Review current legislation on Vessel Entry and License Fees
- Develop a national anchored Fish Aggregating Devices (FADs) management Plan and implement FAD closures in the EEZ
- Better manage FAD placement to minimize resource conflicts between industrial fleets and small-scale, local fisheries.
- Strengthen data reporting and collection for Small-scale artisanal fishers in Solomon Islands

CONCLUSIONS

- High fleet sizes and low operating costs have led to economic overfishing and diminishing returns
- Fishing effort is heavily concentrated in the Main Group Archipelagic and around industrial Fish Aggregating Devices (FADs)
- Adjust administrative fees to improve financial rent capture for the nation and steer fishing back to optimal levels
- Incomplete tracking of anchored FAD locations, masking the true impact of industrial fishing on small-scale fishers