

The Structure-Conduct-Performance of nearshore marine fisheries in Kenya: The case of parrotfish and lobster fisheries



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Definitions

Structure-Conduct-Performance (S-C-P) paradigm is used as an analytical framework to make the relationship amongst market structure, market conduct and market performance

S-C-P paradigm of strategy assumes market structure determines firm conduct which would determine performance.

Structure: refers to industry structure, measured by such factors as the number of competitors, the heterogeneity of products, and the cost of entry and exit.

Conduct refers to specific actions in an industry, including price taking, product differentiation, collusion, and exploitation of market power.

Performance: that of individual firms or of the economy as a whole.

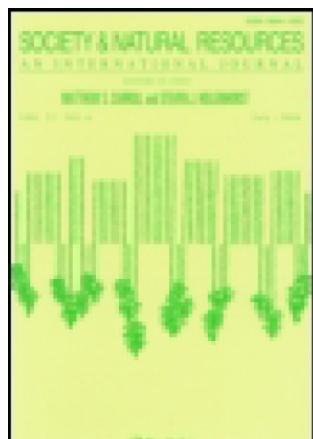
Background

Several studies have looked at the link between fish trade and local food security and livelihoods for developing countries.

In particular, the livelihood/food security benefits arising from international fish trader are debatable.

This has led scientists to suggest that small-scale fisheries in developing countries can be more beneficial if trade was restricted among those countries.

Two years ago, we looked at how relative power in fish markets between sellers and buyers can provide important insights that speak to the debate over the links between fishing and poverty.



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The Importance of Selected Individual Characteristics in Determining Market Prices for Fishers and Traders in Kenyan Small-Scale Fisheries

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Background

The often cited relationship between increasing market integration and income inequality is not straight forward.

Therefore, even within small-scale developing country fisheries (multispecies), there are a variety of dynamics that shape economic benefits and food security that needs to be understood.

This presentation is an extension of this thinking, that an enhanced understanding of local level dynamics are likely to provide useful insights in the fishery-poverty nexus

Background

We choose the parrotfish and lobster fisheries to represent fisheries that are fished differently and that cater for different market needs

Essentially, the parrotfish caters more for the local/regional markets, and provides income to fishers and local processors (mama karangas) and small scale traders.

The lobster on the other hand caters mostly for high-end market because of its comparatively high value (Wamukota et al 2015).

Besides the ecological functions, both parrotfish and lobster are exploited for food and income (thus contribute to food security).

Methods

Players in the Kenyan marine artisanal fishery have been described to employ different strategies to ensure consistent/regular supply of fish.

Such strategies are likely to have different implications on livelihoods/food security

We employ the Structure-Conduct-Performance (SCP) framework to understand how the characteristics and behaviour of fishers and traders explain economic benefit

Approach

Here, we measure market structure by describing the number of fishers and traders, developing a measure of market concentration based on the the nature of the product (fish types)

We also describe income inequality, identifying the nature of competition in terms of activities that actors engage in to increase profitability, and measure fish type specific income by actor

Activities that actors engage in

And

Economic benefits arising from these

Approach

More specifically, the Hirschman-Herfindahl index was calculated as

$$HHI = \sum_{i=1}^N s_i^2$$

Where s_i is the market share of individual fishery

The values HHI range from 0 (pure competition) to 1(monopoly).

Gini coefficient

$$G = 1 + 1/n - 2/(n^2 a) [(y_1 + 2y_2 + 3y_3..... + ny_n)]$$

Where

$$y_1, \dots, y_n$$

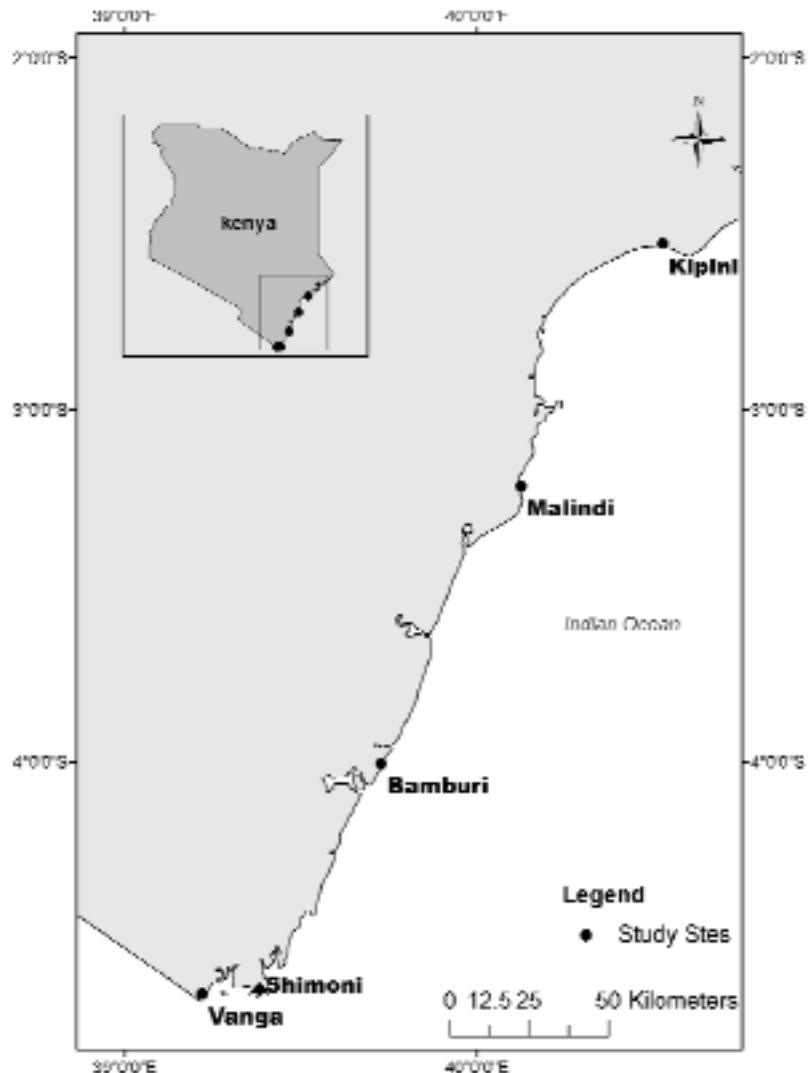
are individual quantities in a decreasing order, a is the mean value of the output and n is the number of observations.

The Gini coefficient lies between zero and one

The value of the Gini coefficient greater than 0.35 are said to be higher ([Dillon & Hardaker, 1993](#)) indicating inequitable distribution of incomes (wealth concentrated among a few wealthy individuals), and thus inefficiency in the market structure ([Afolabi, 2007](#)).

Study area

The study relied on cross-sectional primary data obtained from a survey of fishers and fish traders at five major coastal landing sites in Kenya, viz. Kipini, Malindi, Mombasa/Bamburi, Shimoni and Vanga



To collect the data, the participants in the study sites were systematically selected, based on their own declaration of target /regularly bought and sold.



Results

Characteristic	Description	<i>Kipini</i>	<i>Malindi</i>	<i>Shalishali</i>	<i>Mombasa</i>	<i>Shimoni</i>	<i>Vanga</i>	Average
Fishers age	Minimum age	22	35	27	36	32	28	30
	Maximum age	60	54	43	47	55	54	52
Trader age	Minimum age	24	37	0	31	31	36	27
	Maximum age	44	48	0	48	49	38	38
Gender	Male (%)	94	100	100	100	95	100	98
	Female (%)	6	0	0	0	5	0	2
Marital status	Married (%)	89	100	86	100	100	94	95
	Single (%)	11	0	14	0	0	6	5
Formal education	No education (%)	56	33	14	53	35	50	40
	Primary (%)	39	33	71	47	45	50	48
	Secondary (%)	6	28	14	0	15	0	11
	Madrasa (%)	0	6	0	0	5	0	1
Number of children	Average	4	5	2	4	4	4	4

Concentration ratio

The Herfindahl-Hirschman index (HHI) is a measure of market concentration.

The higher the HHI (concentration), the closer the market is to being a monopoly (and therefore low competition).

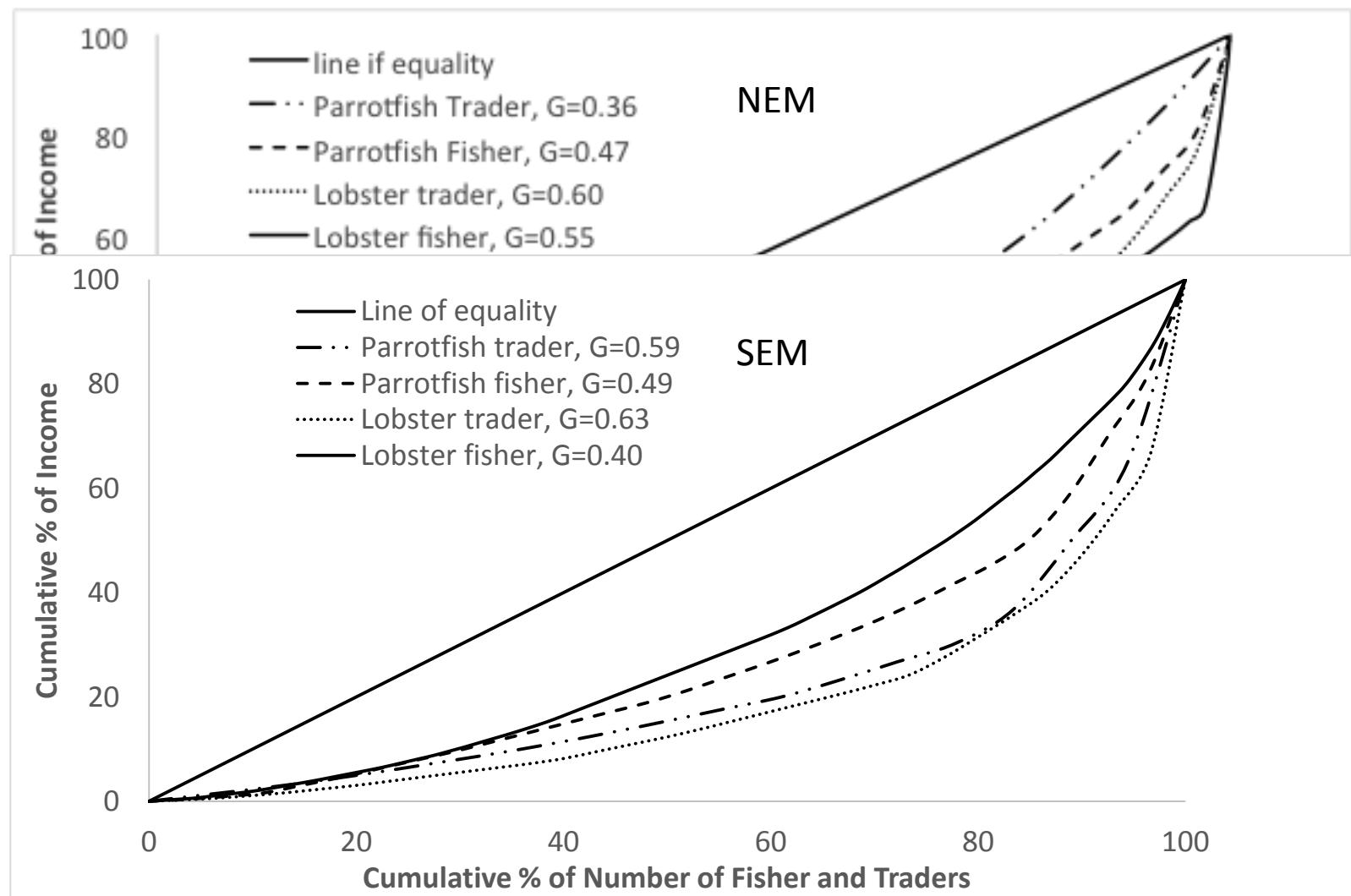
The lower the HHI (concentration), the closer the market tends towards perfect competition (and therefore high competition).

Highly competitive when the HHI is less than .1, not concentrated when HHI is less than 0.15, moderately concentrated when HHI is between 0.15 and 0.25 and highly concentrated when the HHI is above 0.25.

	NEM	SEM	
Parrotfish traders	0.08	0.17	Moderate concentration
Parrotfish fishers	0.07	0.08	Low concentration=high comp
Lobster traders	0.09	0.14	Not concentrated
Lobster fishers	0.07	0.02	

Moderate concentration is witnessed in SEM, for parrotfish traders

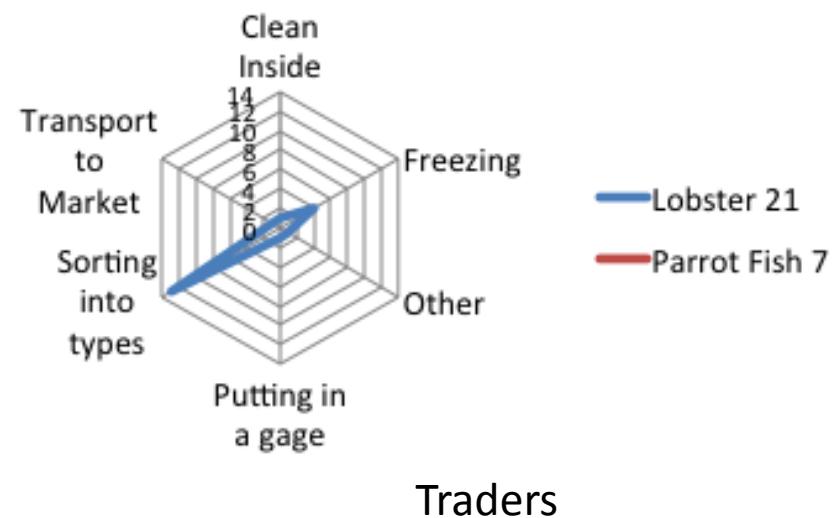
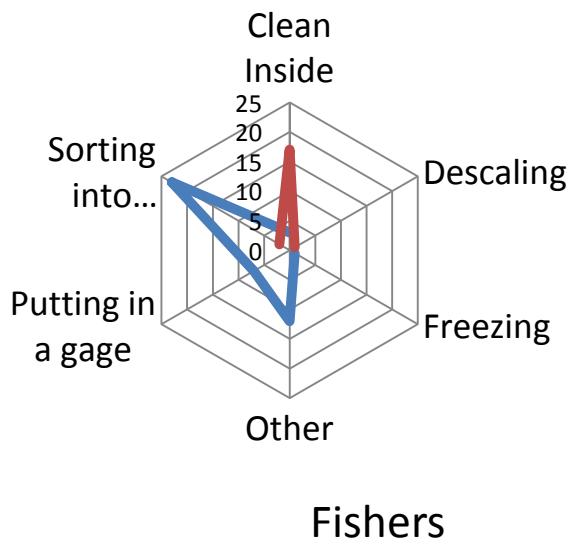
Income inequality



There tendency of high inequality (a few actors get more) during SEM

Activities before selling/Barriers to entry?

What you do to the fish before selling?

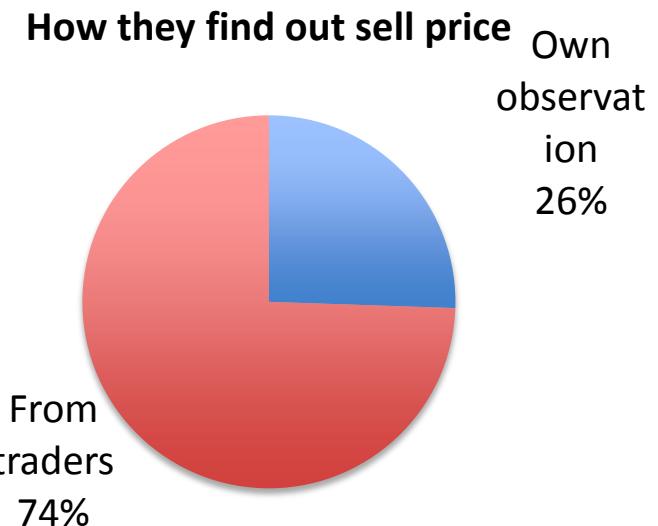


Sorting is the main activity by fishers and traders in both fisheries

Storage is a major barrier for fishers and most of the traders

Distance to market was not a significant barrier

Market conduct

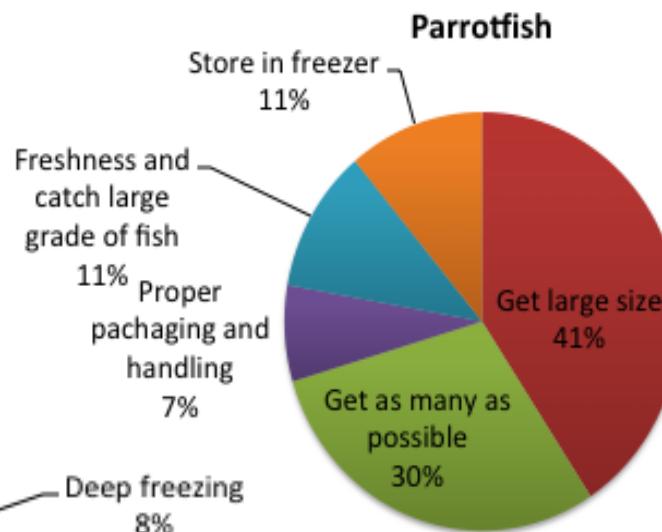
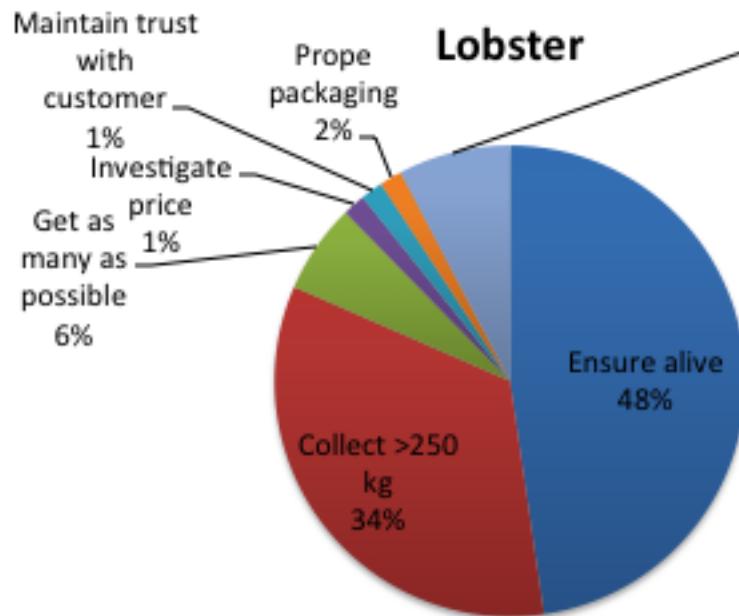


Collusion in price setting and quantities to sell were not mentioned

Prices were standard at the landing sites and any changes were determined by traders depending on how much they claimed the end market provided

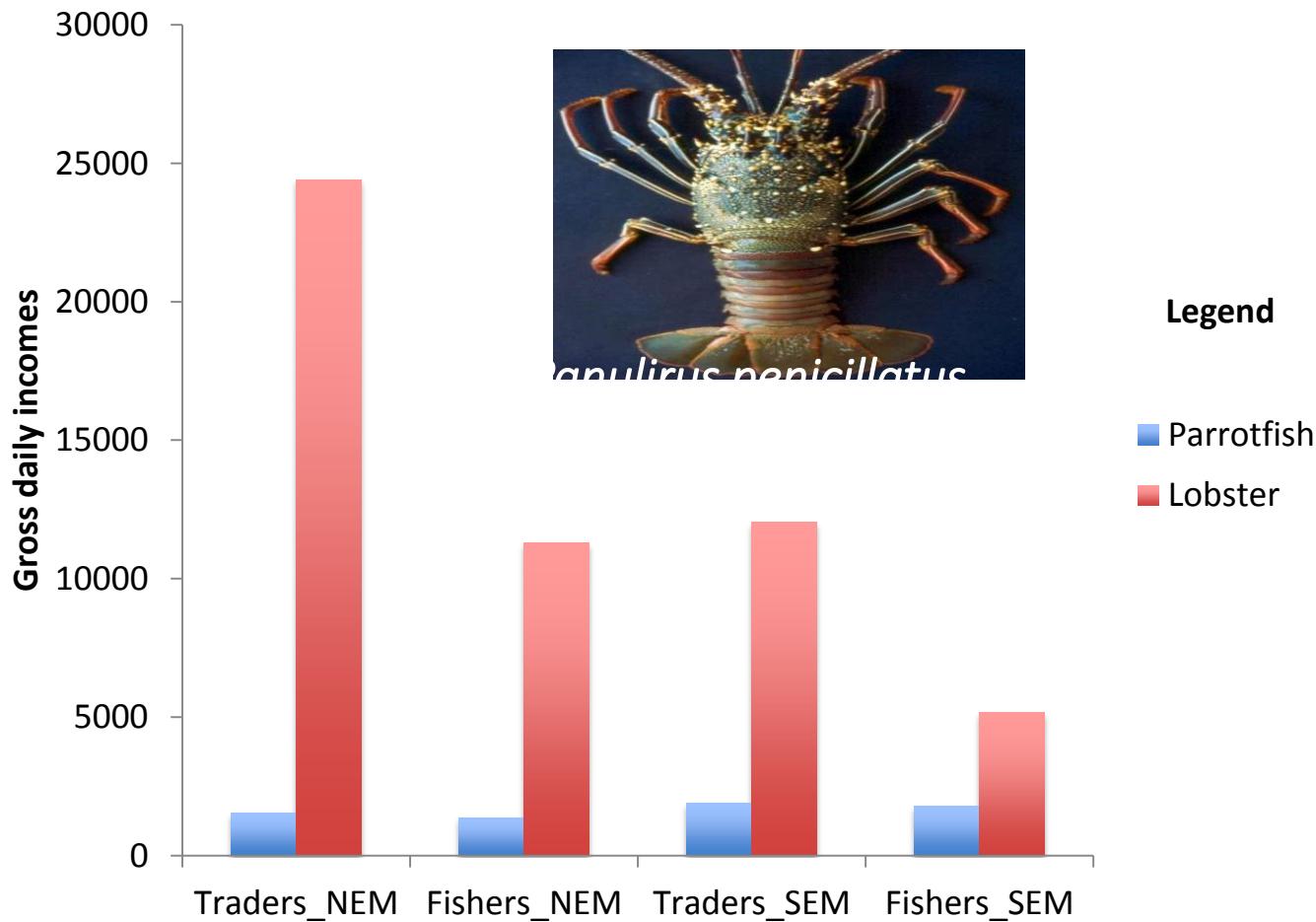
Strategies to ensure maximum economic benefit from sell of products

Parrotfish fishers mainly invested in targeting large size and as many as possible



Lobster fishers mainly invested in targeting large size and ensured they remained alive

Market performance



Market performance

Conclusions

Economic welfare outcomes arising from trade in parrotfish and lobster are highly influenced by seasons and differ for different actor groups

No apparent coordination in decision making but competition is high

Income inequality differs among fisheries and traders and across seasons

Barriers to entry only relate to limited value addition (product differentiation)

The tendency to capture larger and higher quantities during NEM could have +ve livelihood but –ve ecological implications

Any intervention to rationalize economic benefits may have to be aware of the benefits of disaggregating fisheries (in the multispecies fishery)

This analysis once more proofs that small scale/artisanal fisheries **are “are not” poor**

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