

Rights-Based Management for For-Hire Recreational Fisheries? Results of a Policy Experiment

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Introduction

- Marine recreational fisheries matter
 - ~12% of global harvest (Cooke and Cowx 2006)
 - 23% of US harvest of “populations of concern” (Coleman et al. 2004)
 - Significant consumer surplus and regional impact
 - Increasing conflict with commercial fisheries for same species
- Almost always regulated open access management (bag & size limits, season limits)
 - Short seasons, allocative inefficiency, congestion, discards, poor enforcement...
 - Inefficient production decisions in related sectors (e.g., for-hire)
- The recreational fishing sector is heterogeneous
 - Private vs. for-hire (charter & headboat)
- There is much potential to directly extend rights-based management to the for-hire recreational sector (Abbott & Wilen 2009)
 - There are promising (untested) second-best approaches for private recreational angling (Sutinen & Johnston 2003; Johnston et al. 2007; Abbott 2015)

In case you just walked in...



- We examine a 2 year policy 'experiment' in the US Gulf of Mexico
- Experiment: 17 (2014) & 19 (2015) vessels received individual annual allocations of red snapper and gag grouper
 - The Gulf Headboat Collaborative (GHC) – basically a cooperative
 - Almost complete seasonal flexibility on the use of quota
 - Stringent reporting requirements and enforcement
 - Still subject to 2 fish bag limit per angler
- Default management: regulated open access in combination with private recreational angling (until 2015)
 - Result: derby seasons (for red snapper) → reaching only 9 days in 2014



Data

1. 2003-2015 NOAA logbook data for all vessels owned by GHC members
2. Aggregated & censored logbook data by region & week/year
3. 2013, 2014 & 2015 economic surveys of GHC vessel owners
 - Trip pricing and variable cost (e.g., fuel, bait, wages) estimates
 - Open-ended questions about changes in operations
4. Internet survey of 2014 & 2015 GHC passengers

Results

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- Redistribution of red snapper
- Discards
- Changing trips
- Changes in revenue/profits

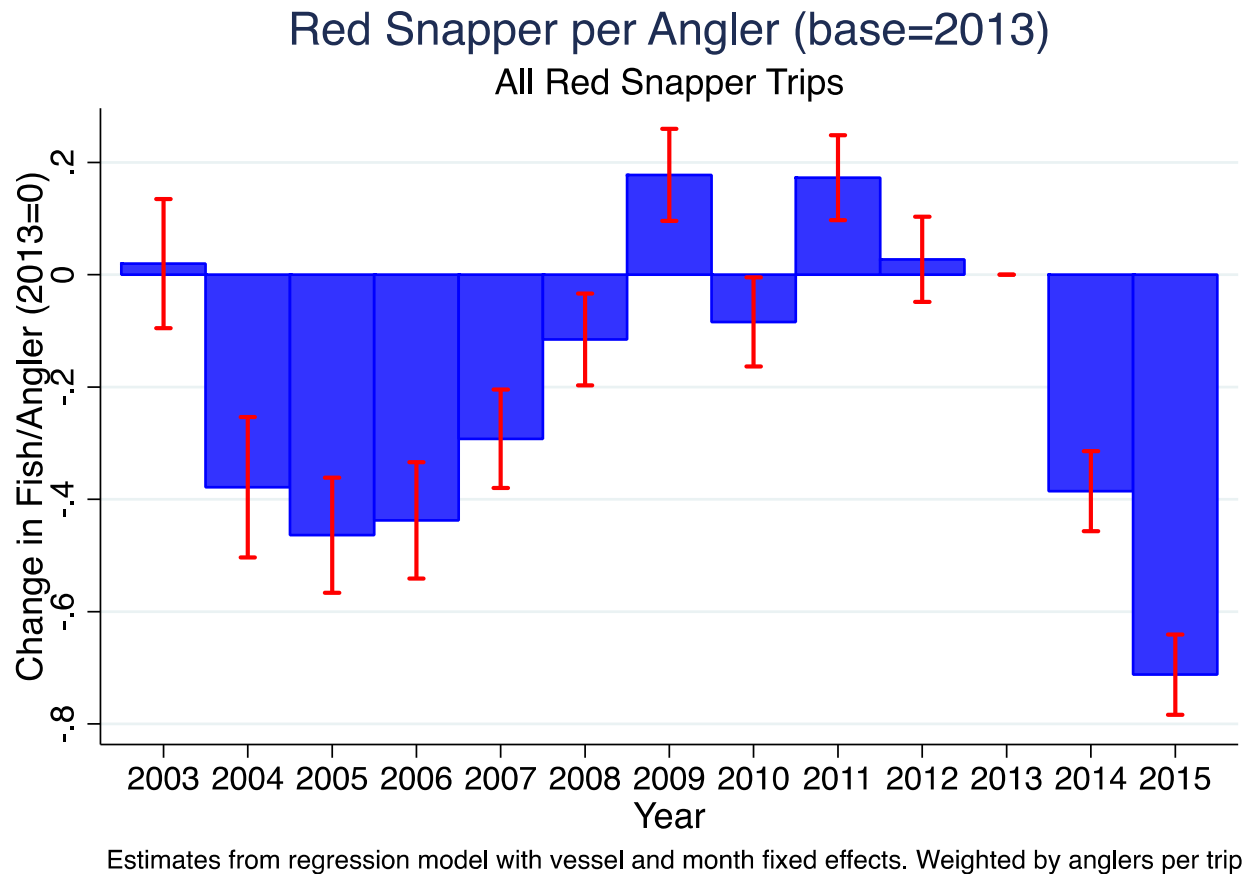


Redistribution of red snapper

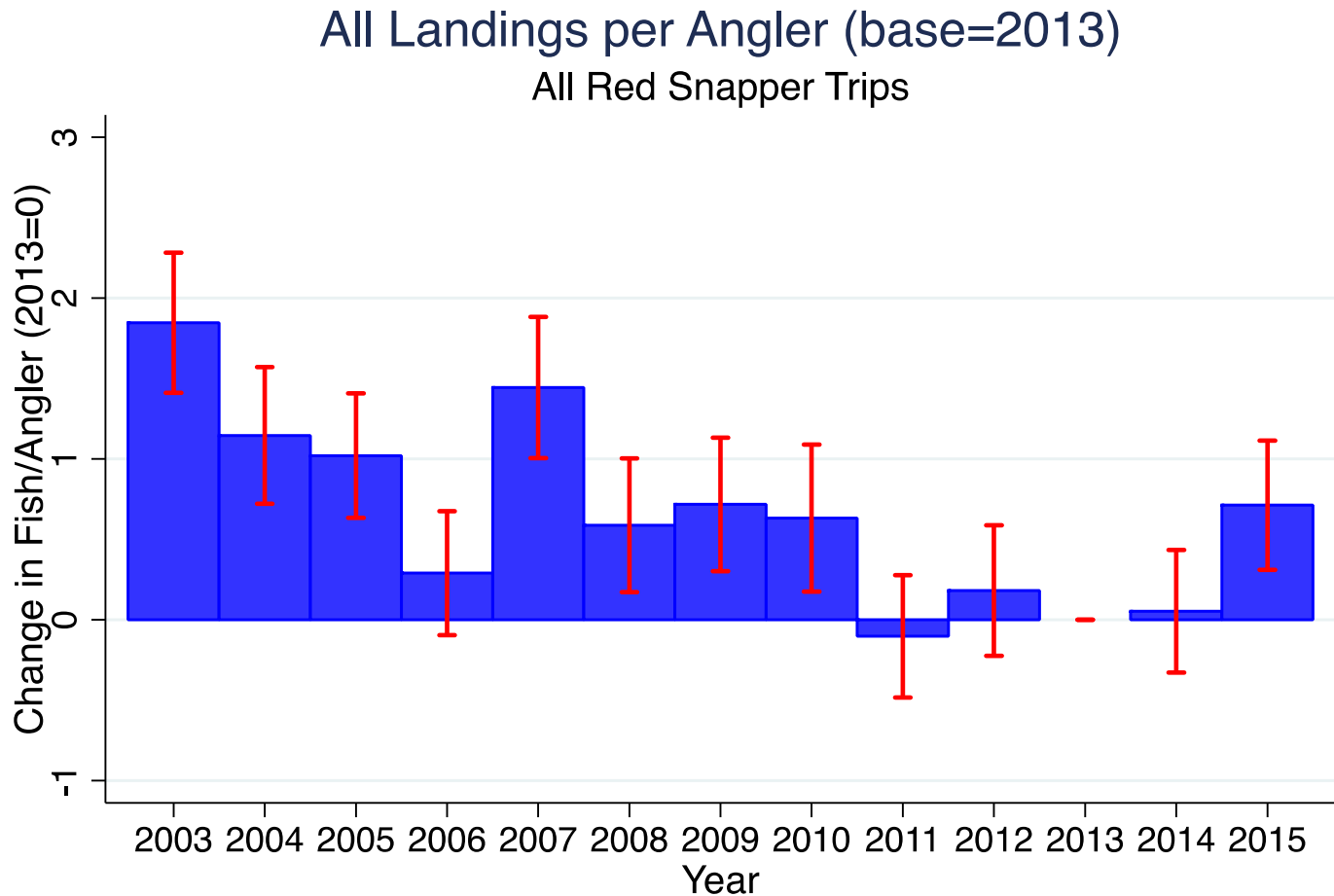


Redistribution of red snapper landings

- 146% increase in trips with red snapper retention but with only 34% (2014) and 24% (2015) increases in total red snapper landings.



Redistribution of red snapper landings

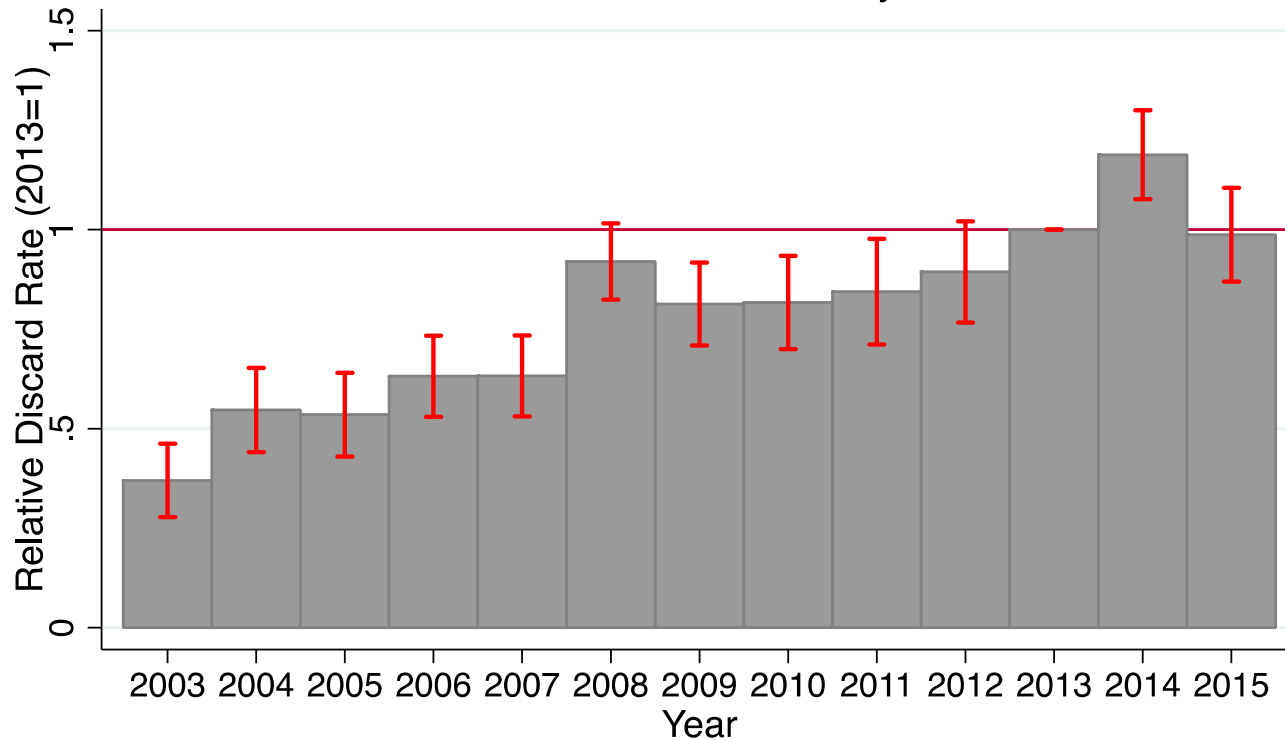


Estimates from regression model with vessel and month fixed effects. Weighted by anglers per trip

- Reductions in red snapper per angler were offset by landings of other species – mostly other reef fish

Red snapper discards

Relative Discard Rate of Red Snapper (Discard/Catch)
Non-GHC Vessels Only

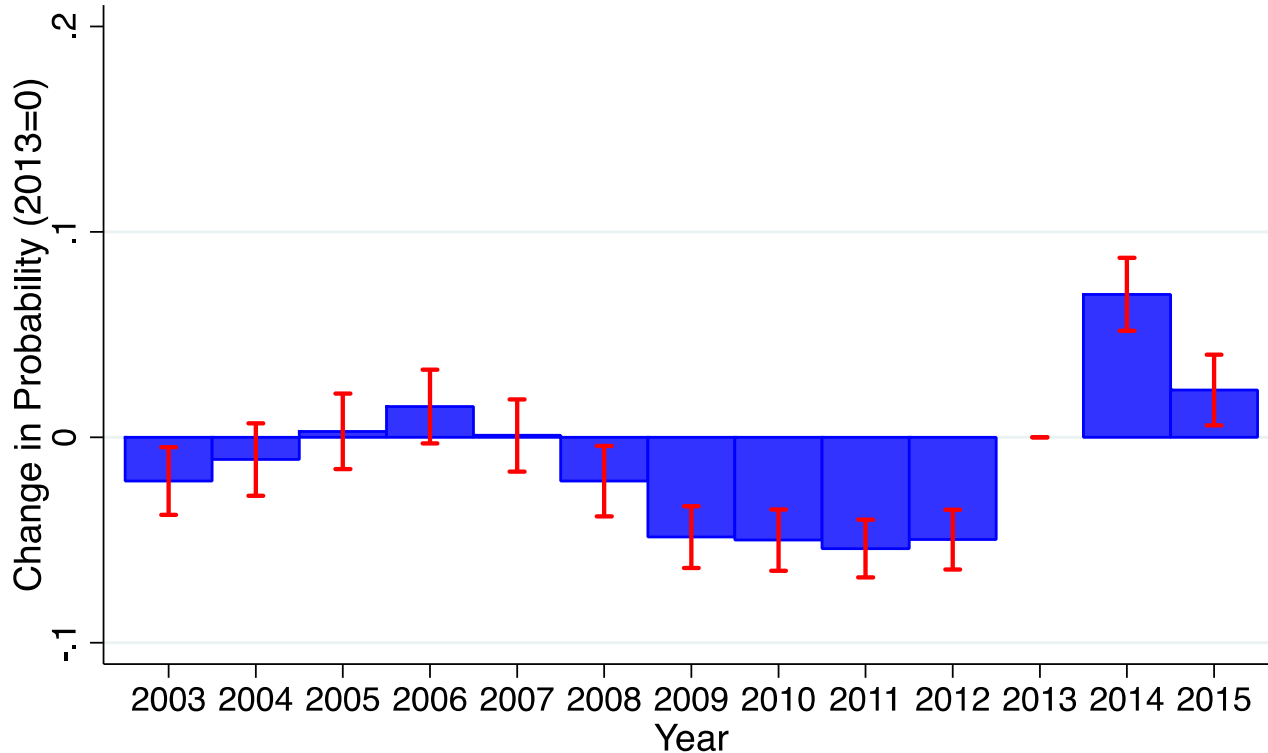


Estimates derived from a linear regression model of weekXregion data with regional fixed effects and weighted by # trips with > 0 red snapper

- Reduced landings per customer have not come at the cost of increased discards/highgrading.

Changing nature of trips

Change in Probability of a Daytrip (base=2013)
All Trips

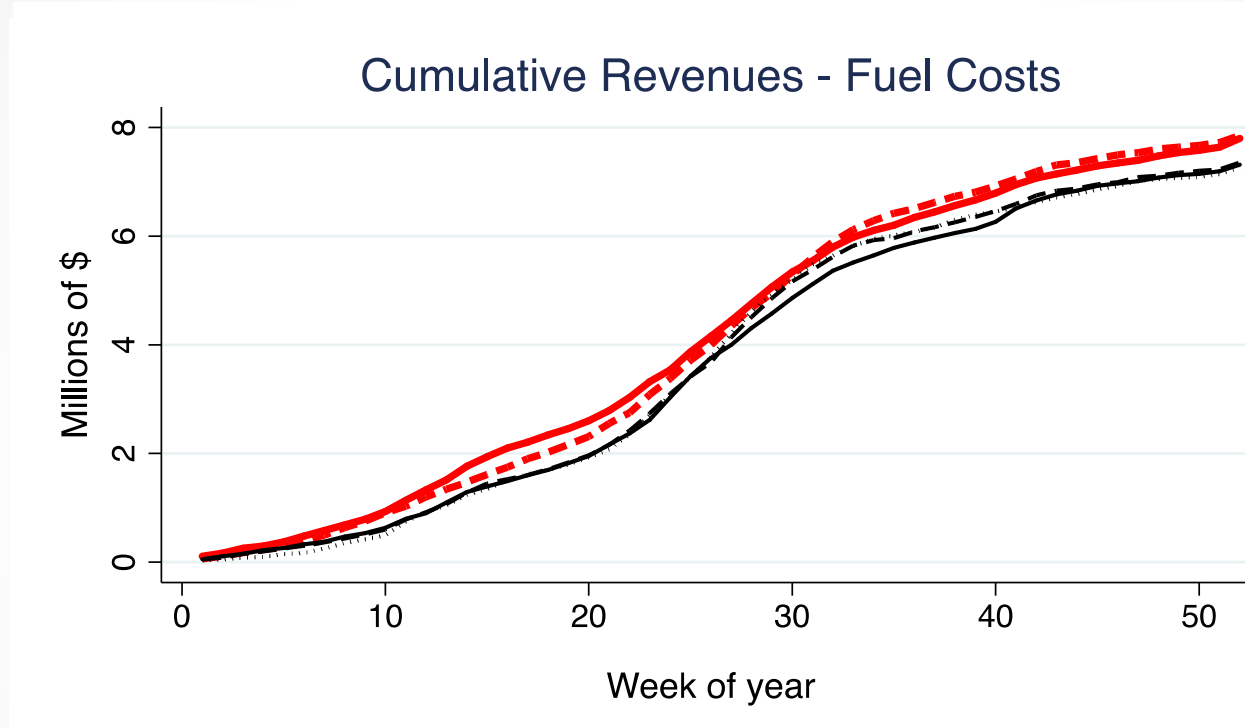


Estimates derived from a linear probability model with vessel, month and weekend fixed effects.

(Net) revenues?: challenges

- Limited accuracy of data
 - Variable costs are estimated based on *ex post* assessments for a representative trip in 2014 or 2015.
- Compared to what? (what's the counterfactual?)
 - Only aggregated and censored data are available for the “untreated” vessels (NO economic data)
 - The 2014-2015 fishery was very different from past seasons in multiple ways
 - 9 day season in 2014, 45 day season in 2015 (sector separation)
 - Allocation of 2015 red snapper to GHC was disproportionately low
 - It's hard to argue that the non-GHC vessels are not indirectly treated
- In-sample results may have limited external validity for a permanent program
 - Short-run “burn in” as owners/captains learn
 - Rational postponement of investments
 - Strategic avoidance of pricing changes

(Net) revenues (@ 2014 prices)

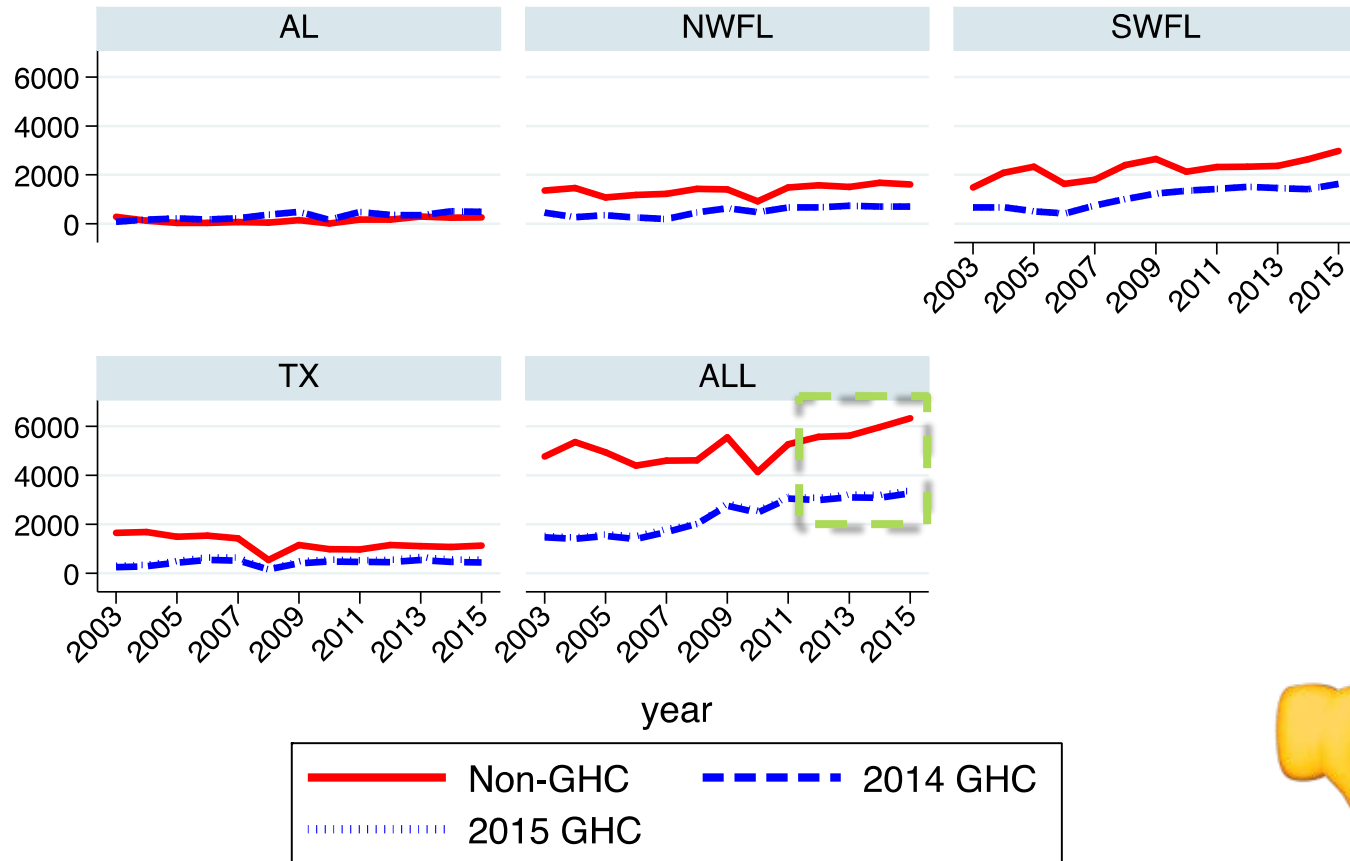


Ways to increase net revenues:

- More customers (quantity response)
- Shift customers to more profitable trips (product mix response)
- Charge more (price response)

Quantity response

Number of Total Trips



Graphs by HP_State

Product mix response

- Using trip level data, we regress trip price on vessel FEs and annual dummies
 - Weight by number of customers per trip (observation = individual customer)
- RESULT: No evidence of any “structural break” in prices due to a shift in trip offerings in 2014-2015
- This is consistent with findings of only minimal shifts toward full-day trips after 2014.



Price increases

- In 2014, 5 vessels charged an upfront \$5-\$20 (4-16%) premium for trips retaining red snapper
 - NW Florida and Texas
 - 1 provided a discount (!)
- What are the effects on # customers & trip revenues of a \$1 increase in trip premium?
 - Sample: GHC vessels in TX and NWFL targeting EFP species, and ≤ 1 day
 - Controls: year, vessel & week FEs; day of week; trip duration; derby indicator
 - Cluster-robust SEs (stateXmonth)

- **Result 1: NO effect of premium on anglers/trip**
 - Beta = 0.08, T = 1.08
- **Result 2: \$33 (T=4.7) (1.3%) increase in trip revenues for every \$1 of price increase**

Preliminary conclusions

The experimental cooperative:

1. Drastically redistributed red snapper across a broader population of anglers during a virtually year-round season
2. Allowed many vessels to shift their scarce red snapper catch to longer full-day trips
3. Reduced discards due to strong monitoring and enforcement of discard rules
4. Had weak or no effects on net revenues from increased demand or shifting customers to higher valued trips
 - o Limited customer awareness?
5. Revealed inelastic demand for out-of-season red snapper trips – at least for a segment of anglers
 - o Is this valid for a larger, permanent system? How much can prices increase?

Thank you!

