

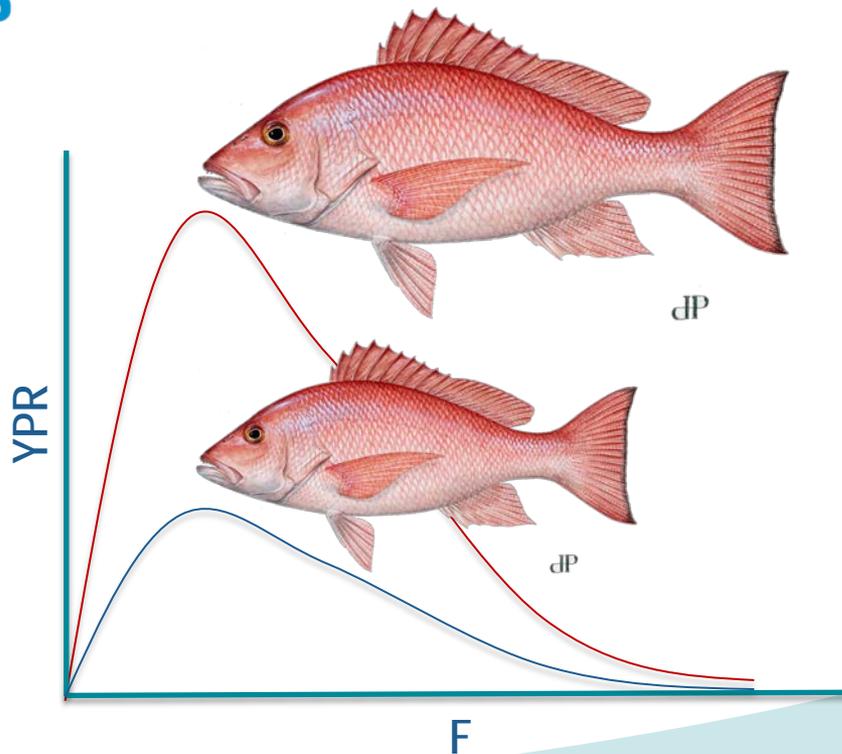


NOAA
FISHERIES

Southeast
Region

Gulf Red Snapper Yield Per Recruit

Impacts of Alternative Recreational Size Limits



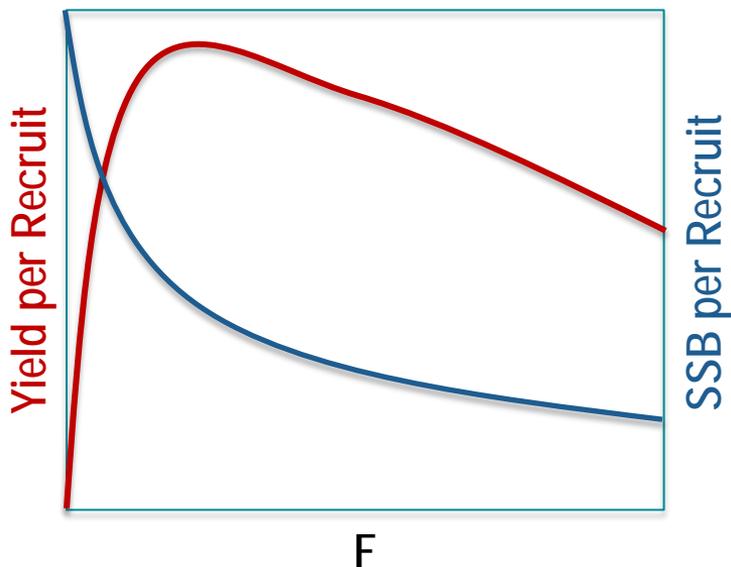
Presentation for Gulf Council
August 21, 2013

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(NMFS-SEFSC Miami)

What is Yield Per Recruit (YPR)?

Maximizing effort does not maximize yield

- There is an optimum fishing rate that maximizes yield.
- YPR estimates yield in terms of weight for a fixed number of individuals entering the fishery (i.e., **recruits**) based on various combinations of natural mortality, fishing mortality, and selectivity/retention (i.e., **size limits**)



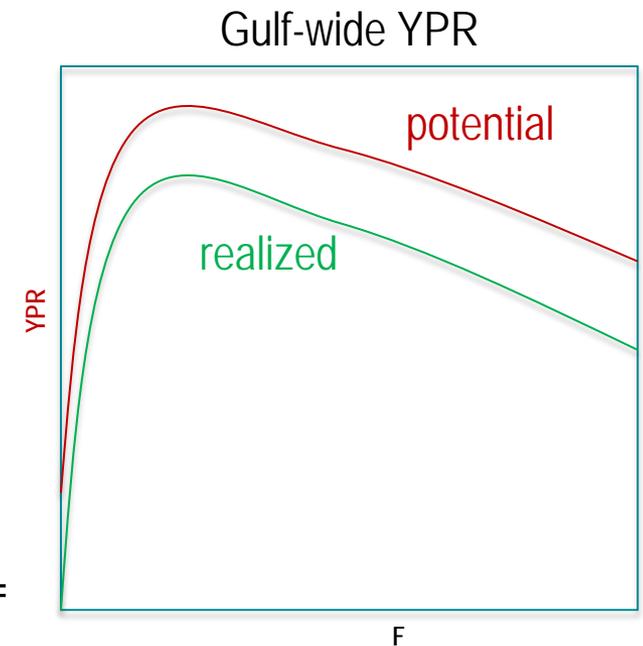
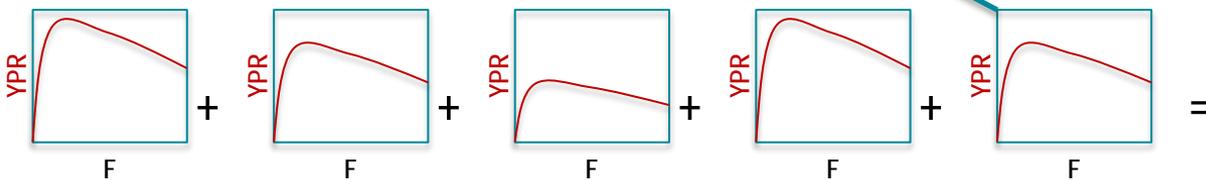
YPR models include:

1. Number of recruits
2. Growth rate
3. Natural mortality rate
4. Selection pattern in the fishery → **alternative size limits**
5. Overall fishing mortality → **includes other sectors**

Why is YPR important for regional management?

Although red snapper may be managed separately by each Gulf state, it is **one unit stock**

- Different size limits in different states may be desired → **impact YPR**
- A39 allows regions to set size limits ranging from 14-18" TL

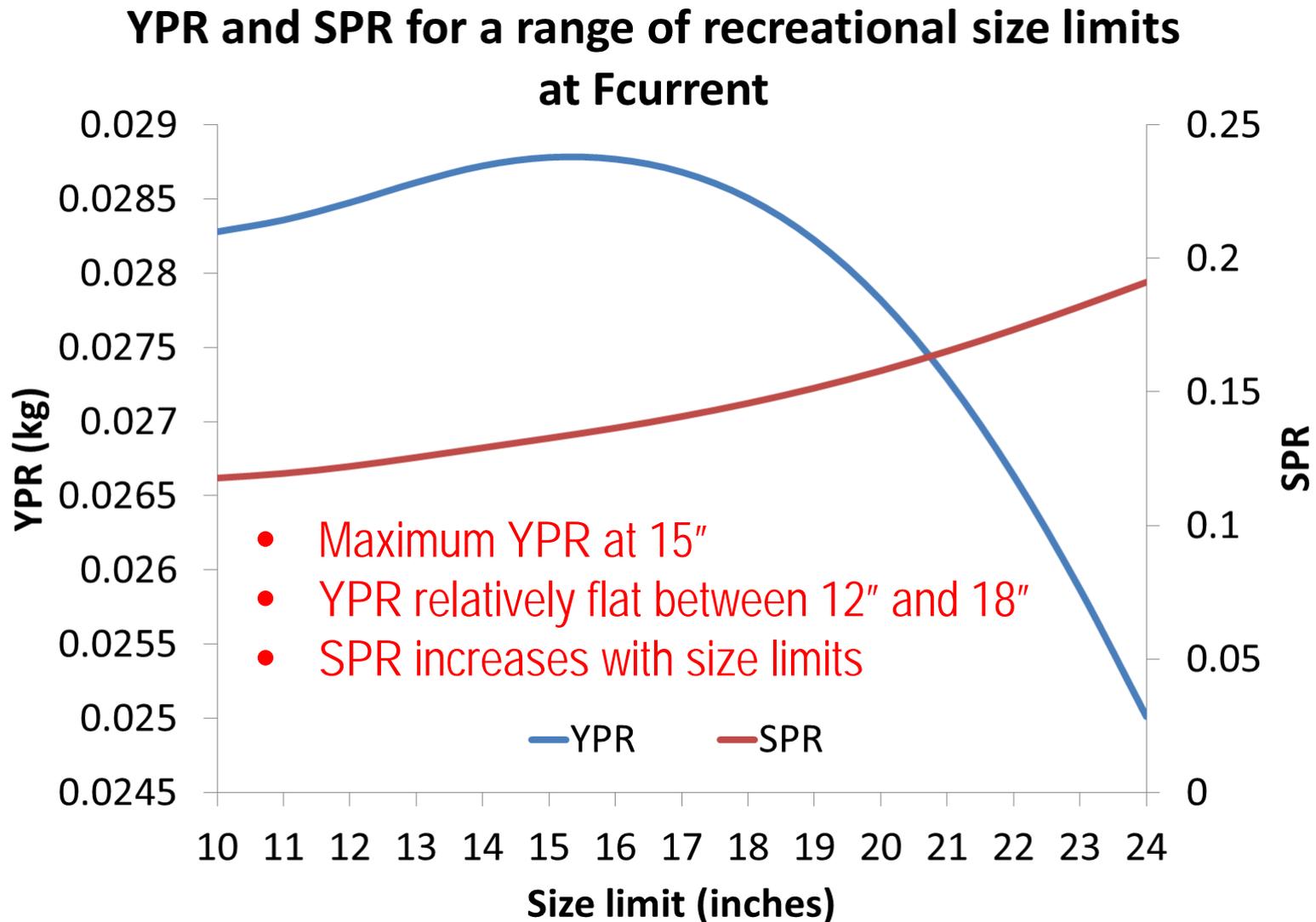


YPR for Gulf Red Snapper

Implemented in **Stock Synthesis 3** (SS3: SEDAR-31 Base Model)

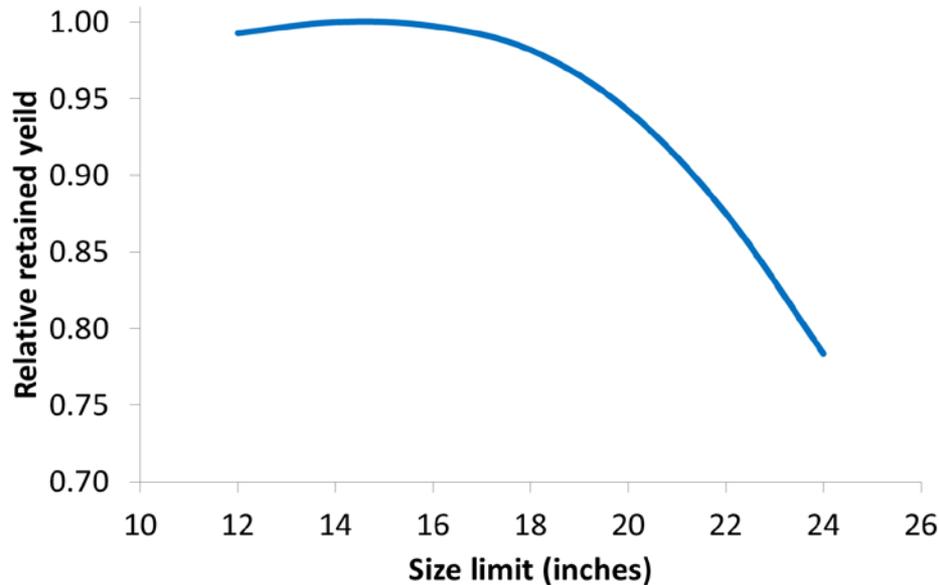
- All base model input parameters held constant:
 - Commercial fishing mortality/selectivity/retention
 - Recreational selectivity
 - Shrimp fleet bycatch
 - Recruitment
 - Growth function
 - Recreational release mortality = 10% East & West
 - Etc.
- Evaluated YPR for different **recreational size limits** by altering SS3 retention patterns in most recent year
- Evaluated size limits from 10 – 24 inches TL

Yield per Recruit at different recreational size limits

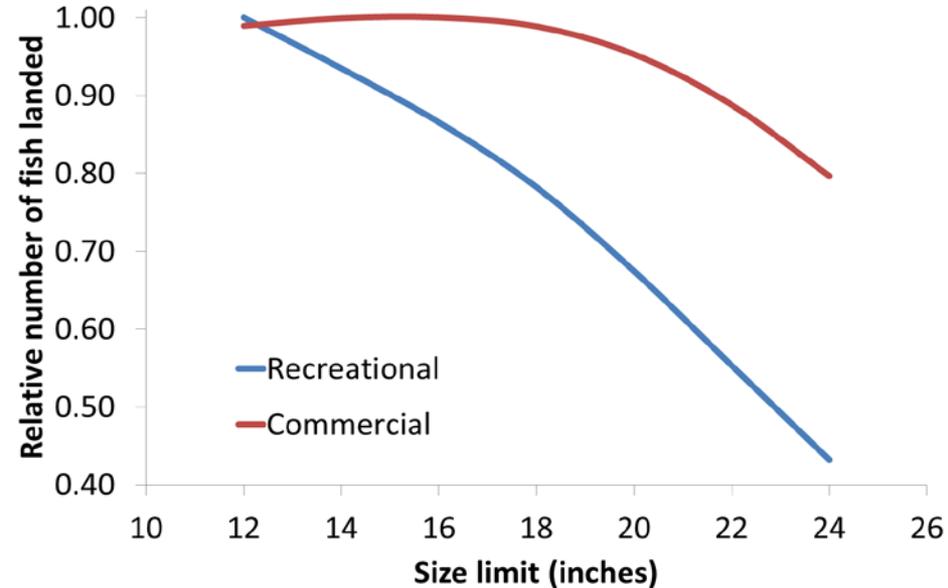


Projected landings at different recreational size limits

Gulf of Mexico 2013 relative projected landings in biomass for a range of recreational size limits



Gulf of Mexico 2013 relative projected landings in numbers for a range of recreational size limits



- Gulf-wide landed biomass maximized at a recreational size limit of 15", although relatively constant between 12" and 18"
- Increasing the size limit for the recreational fishery decreases the projected number of fish caught since landed fish will be bigger

YPR for Gulf Red Snapper

- Given current state of stock and selectivity patterns of fisheries, size limits 13"-18" appear effective (<1% difference)
 - 15" optimal to maximize landings (lbs)
- Changes in the state of the stock or selectivity patterns of the fisheries would lead to alternative optimal size limits

Questions?