

Current State of Research in the Gulf of Mexico



Beverly Sauls
Florida Fish and Wildlife
Conservation Commission

My Background

- Fishery Dependent Monitoring for Florida FWC
 - Marine Recreational Information Program (MRIP)
 - For-Hire Survey
 - At-Sea Observer Surveys
 - Tag-recapture discard mortality study for reef fish
- Provide recreational data for state and regional stock assessments

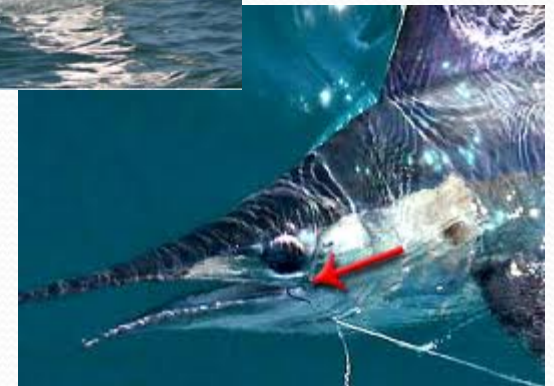
Gulf of Mexico Research

- Two types of research
 - The probability that individual fish will survive a single catch and release event, given some set of conditions
 - Experimental or controlled conditions, isolate effects
 - Insight into the relative importance of various factors
 - Quantify discard mortality in a prescribed fishery
 - Integrates across multiple factors
 - Also must factor in how the fishery operates
 - Both are relevant to assessment and management of fisheries

Gulf of Mexico Research

In general, at shallow depths, factors other than barotrauma are more important

- Snook, spotted sea trout, red drum*
 - <6% mortality
 - Attributed to hook injury, temperature (Taylor; Murphy; Flaherty, et. al)
- Tarpon
 - Predation, 64% of mortalities
 - Angling duration, handling time, and body size all significant (Guindon, 2011)
- Pelagic species
 - Angling duration
 - Circle hooks reduce fatal injuries for billfish (Prince et al. 2002, 2007)



Gulf of Mexico Research

At deep depths, barotrauma can be the over riding factor

- Rummer and Bennett, 2005
 - Internal injuries to liver, lower intestine at 98' (30m)
 - Internal injuries more pronounced at 164' (50m)
 - Advanced injuries at 361' (110m), included cardiac injury



Gulf of Mexico Research

A combination of factors determines whether or not an individual fish survives a catch and release event

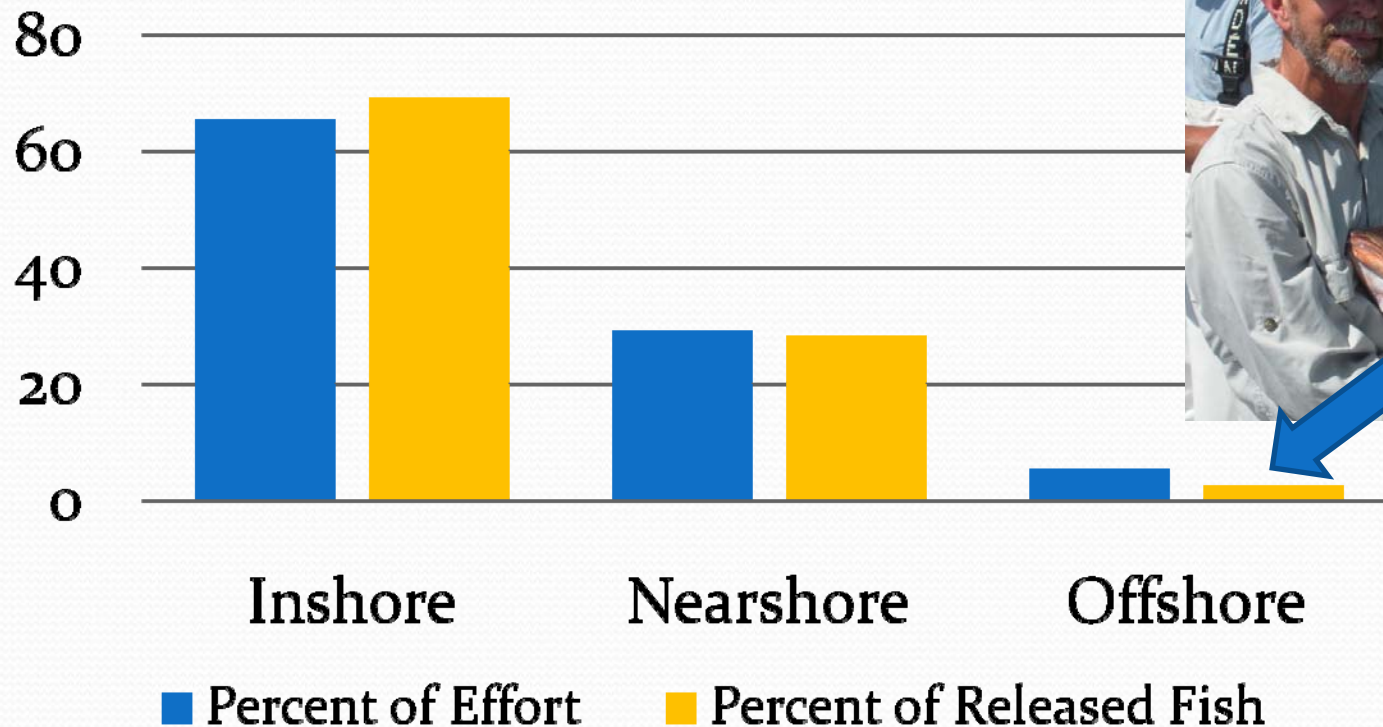
- Rummer (2007) evaluated a suite of factors for red snapper
 - Capture depth
 - Venting
 - Retrieval rate
 - Hook type
 - Water temperature
 - Predation
 - Handling time and hook location
- 20% acute mortality at 98' (30m)
- Other factors are additive
- Comprehensive study needed to validate this predictive model



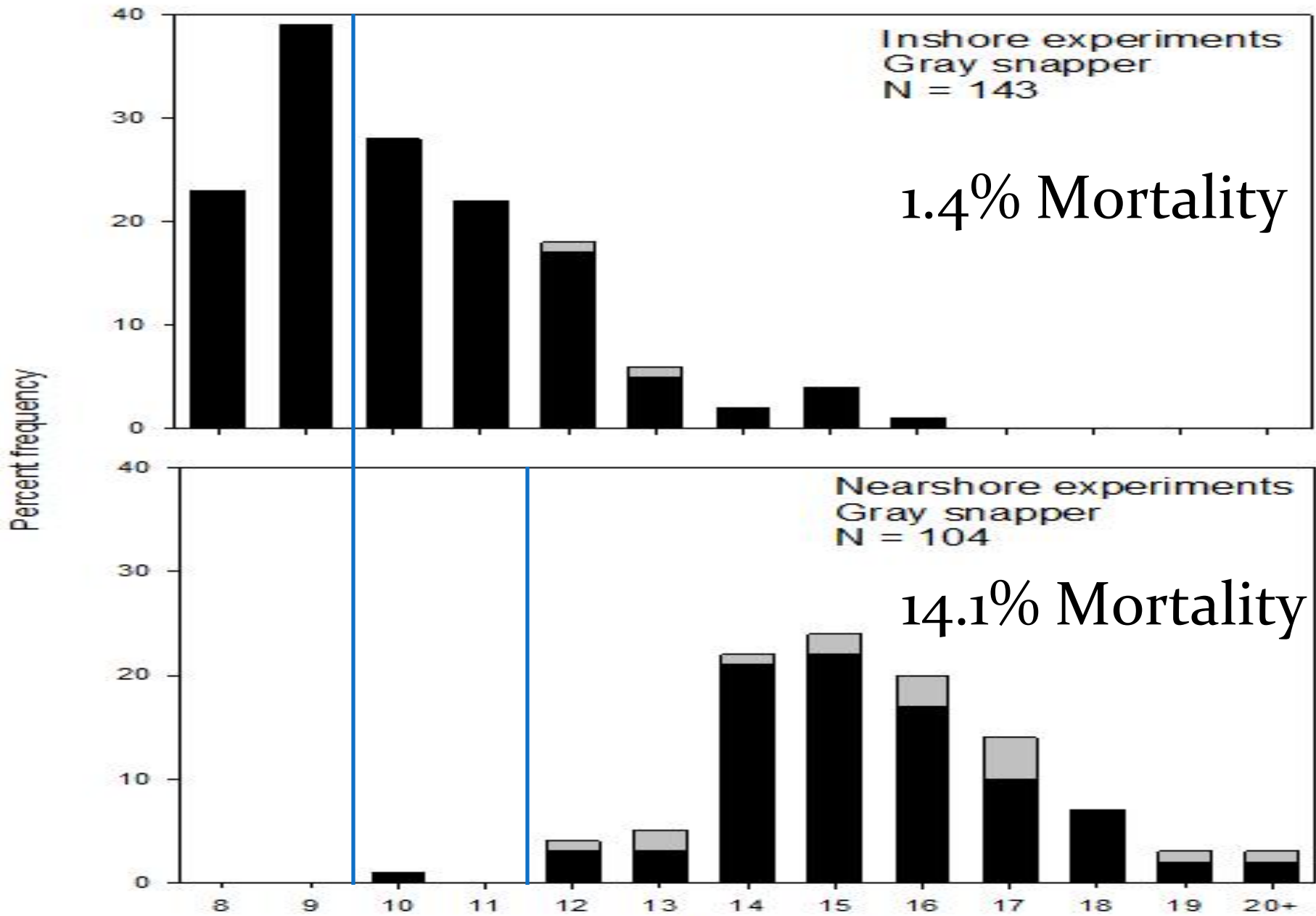
Gulf of Mexico Research

The distribution of fishing effort in relation to depth, and the size distribution of fish are important factors that can influence total discard mortality.

Gray Snapper, W. Florida



Based on
prelim. 2011
MRIP estimates



Gulf of Mexico Research

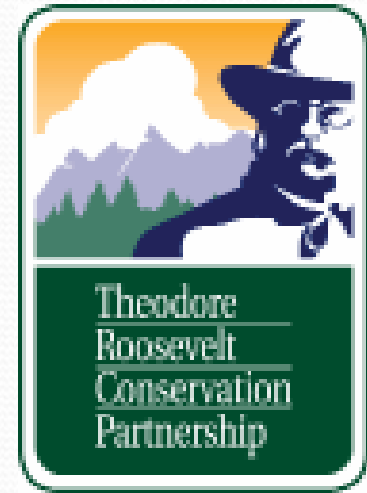
- Regional monitoring programs provide vital statistics on recreational fishing effort and/or numbers of fish released
 - Marine Recreational Fisheries Statistics Survey
 - Redesign effort underway (MRIP)
 - For-Hire Survey
 - Texas Parks and Wildlife
 - Southeast Headboat Survey
- Characteristics of effort and released catch
 - Low spatial resolution
 - No size or condition of released fish
 - Limited headboat observer coverage



Blue Ribbon Panel on Marine Recreational Fishing Data

Recommendations, July 2010

- More data needed on:
 - Characteristics and disposition of discards
 - Type of terminal gear
 - Depth and spatial data

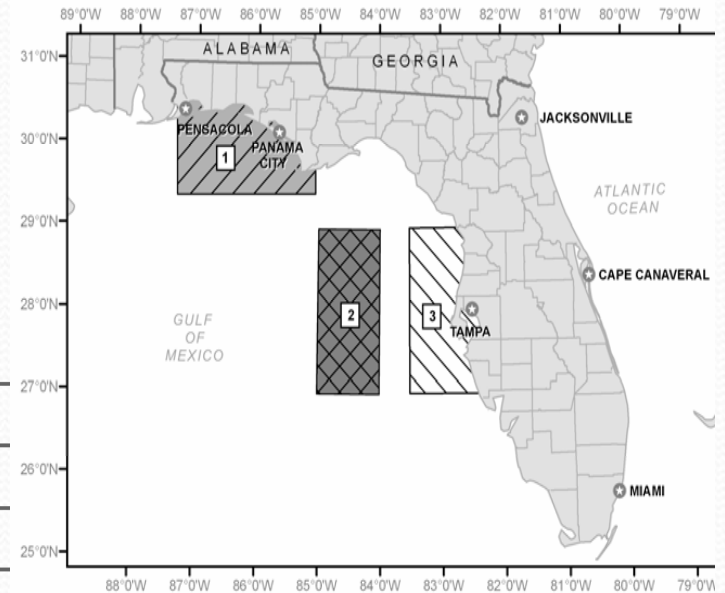
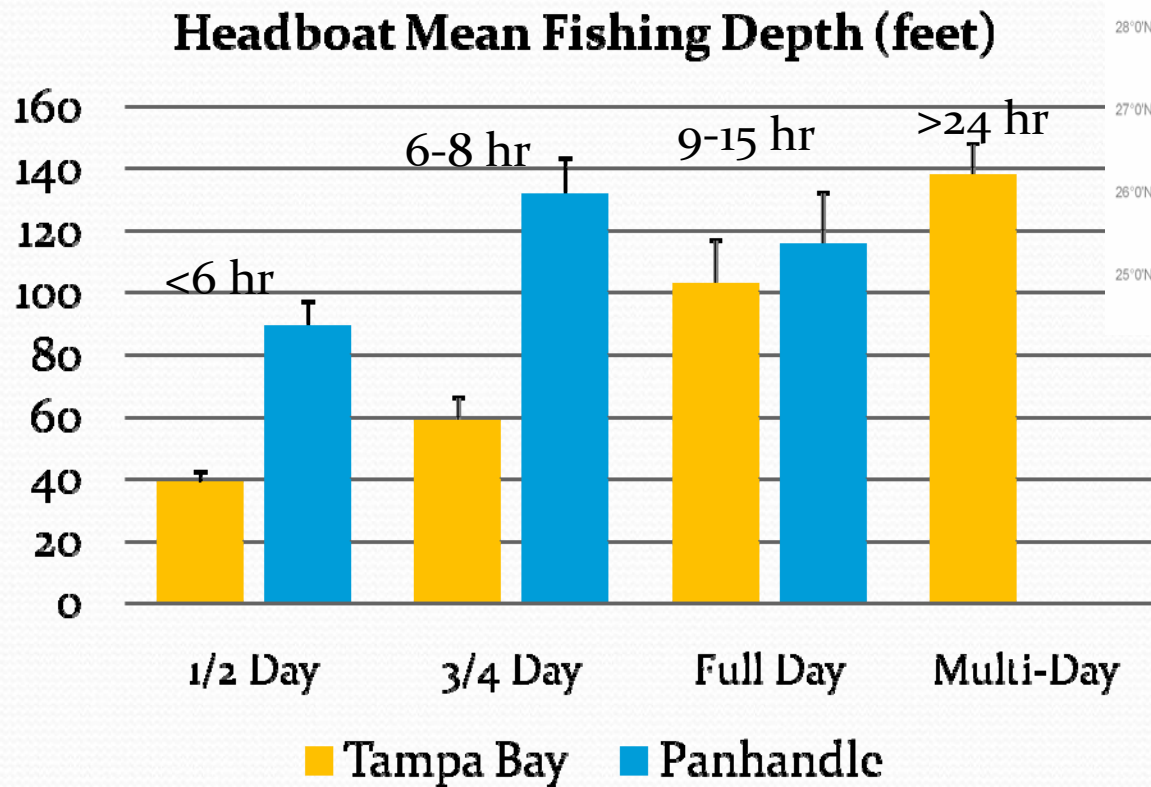


“Depth of capture also is very important information to obtain from recreational fishing trips, in addition to more detailed spatial data. It is widely known that depth is one of the most important factors affecting survival for numerous species, and hence depth could be used as a predictor of mortality associated with discards.”

- Design monitoring programs so they are directly comparable with fishery-independent sampling and research

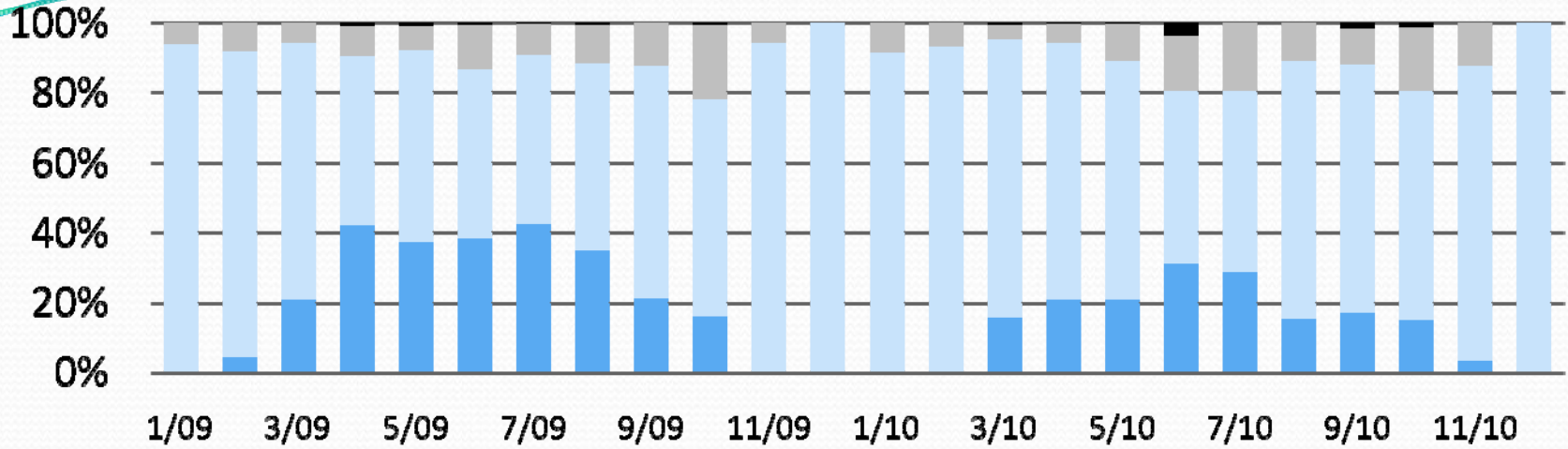
Access report at: www.trcp.org/assets/pdf/TRCP_BRP_Recommendations1.pdf

Distribution of effort is important for assessing the degree to which barotrauma effects recreational discards.

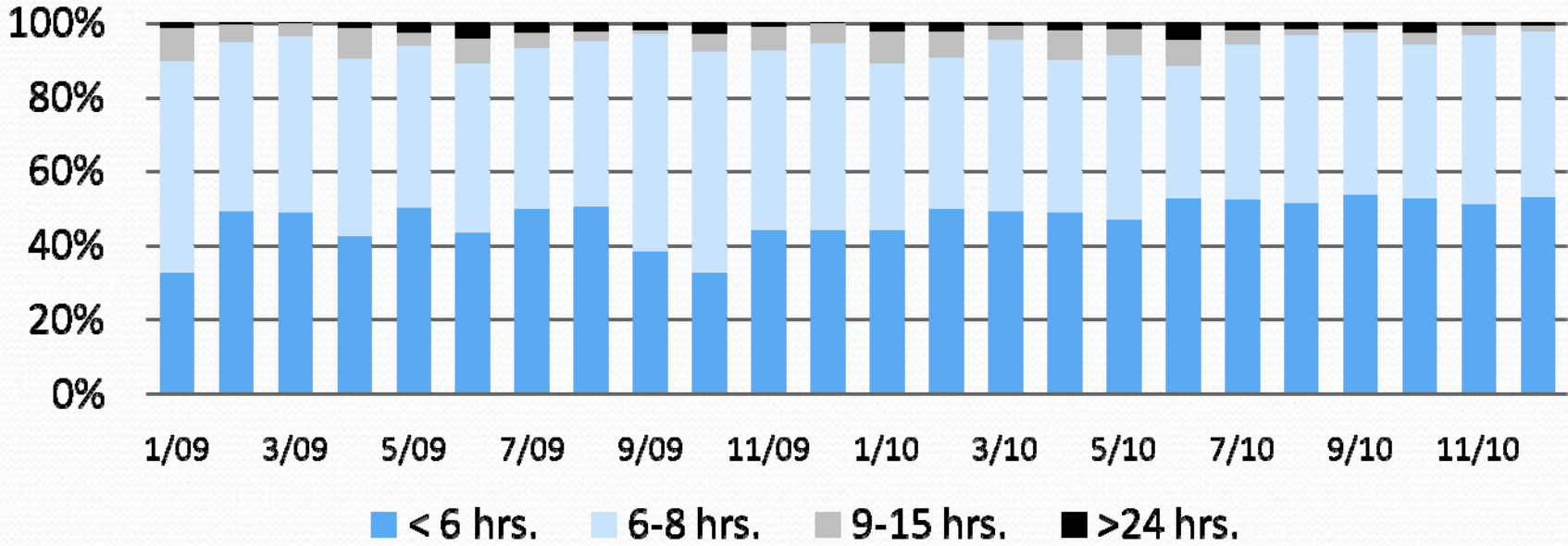


Based on at-sea observer data, funded by NMFS Cooperative Research Program, NA09NMF4540140

Fishing Effort - Panhandle



Fishing Effort - Tampa Bay

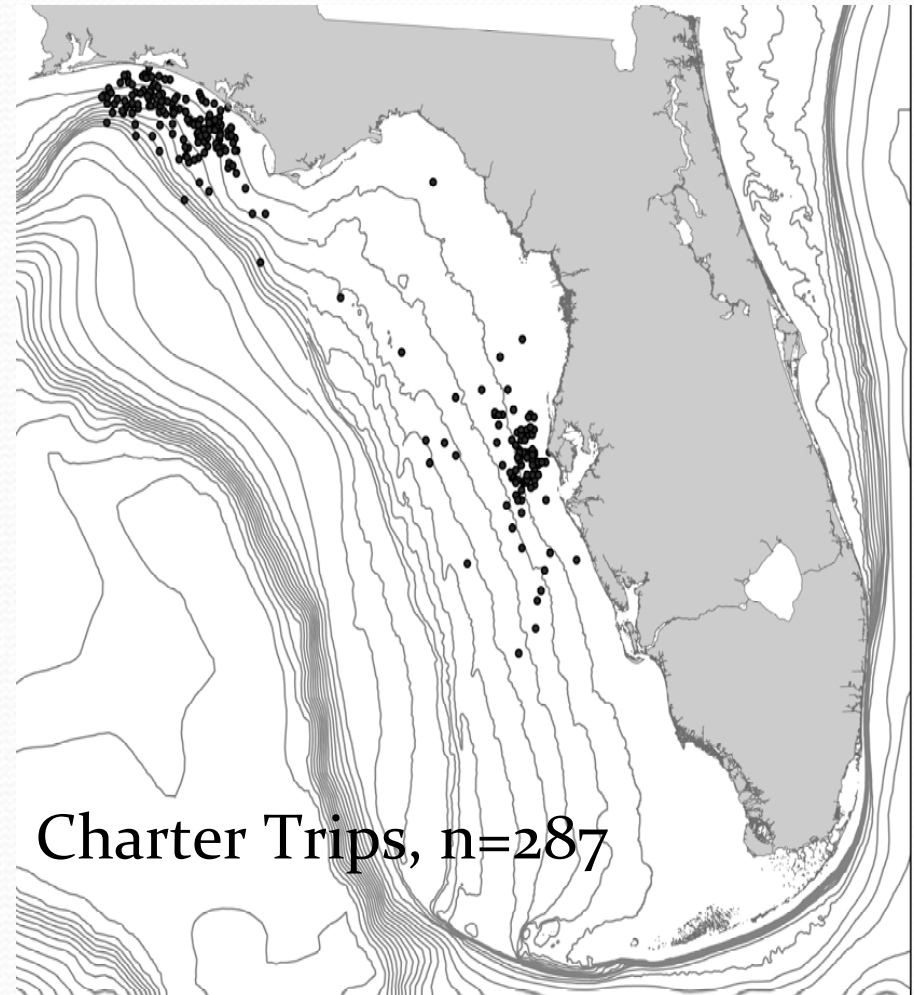


■ < 6 hrs.
 ■ 6-8 hrs.
 ■ 9-15 hrs.
 ■ >24 hrs.

West Florida Shelf

Characterization of recreational fisheries for reef fishes

- At-sea observers on charter and headboats
- Volunteer anglers
- Distribution of effort/catch by depth and area fished
- Expand methods to surveys in other regions



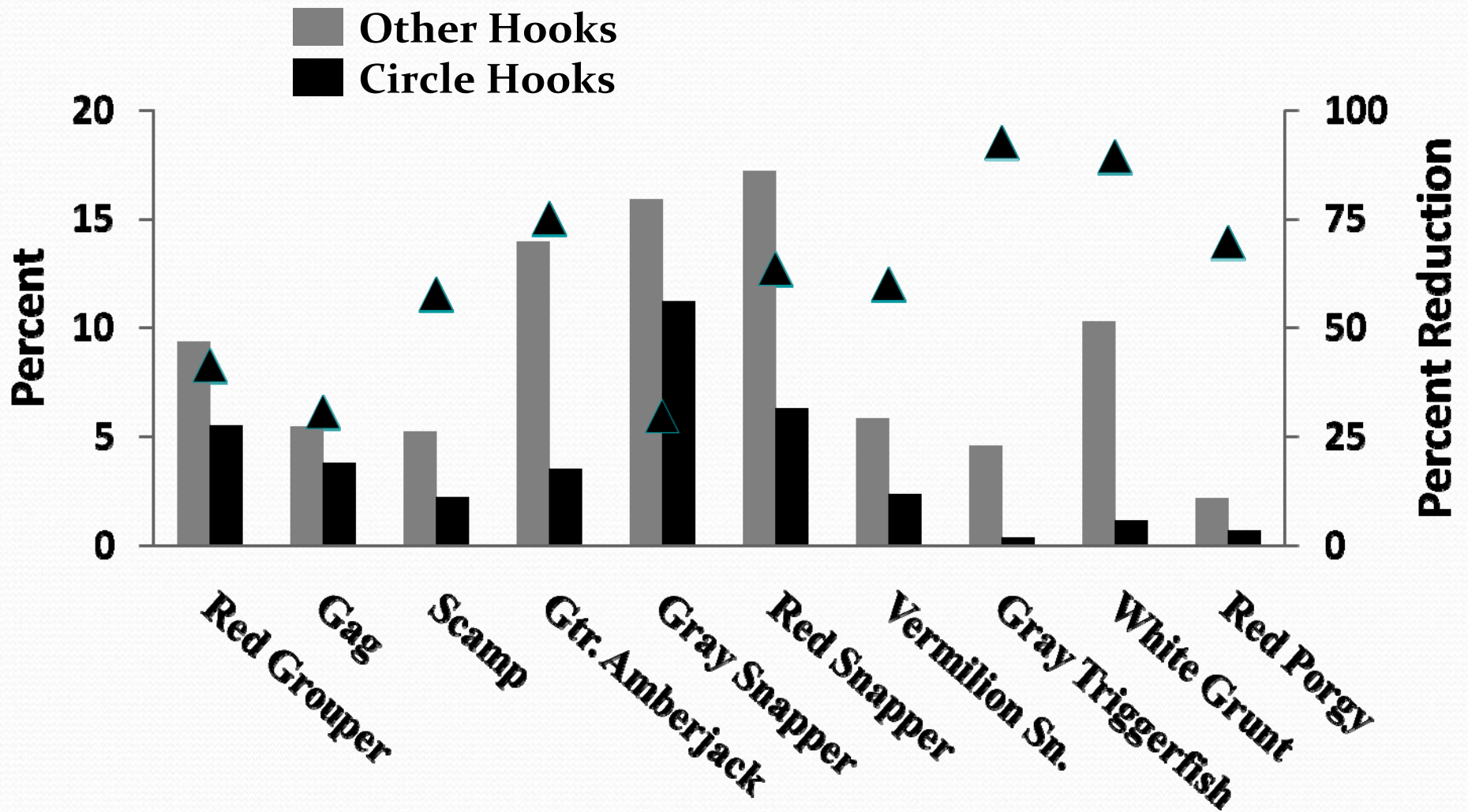
Non-recurring Congressional appropriation

West Florida Shelf, cont.

Mark-recapture survival study

- Coordinated fishery-dependent/independent data
 - Capture depth, lat/long
 - Hook type, hook size, bait type, hook configuration
 - Hook location, barotrauma, handling (de-hooking, venting)
 - Fish length, release condition
- Estimate post-release survival rates
 - Similar to approaches used by Hueter et al (2006), McGovern et al. (2005), South Atlantic fisheries covered by previous presentation
 - Can be extended to other regions in Gulf and South Atlantic if characteristics of fishery are known

Potentially Lethal Hooking Locations

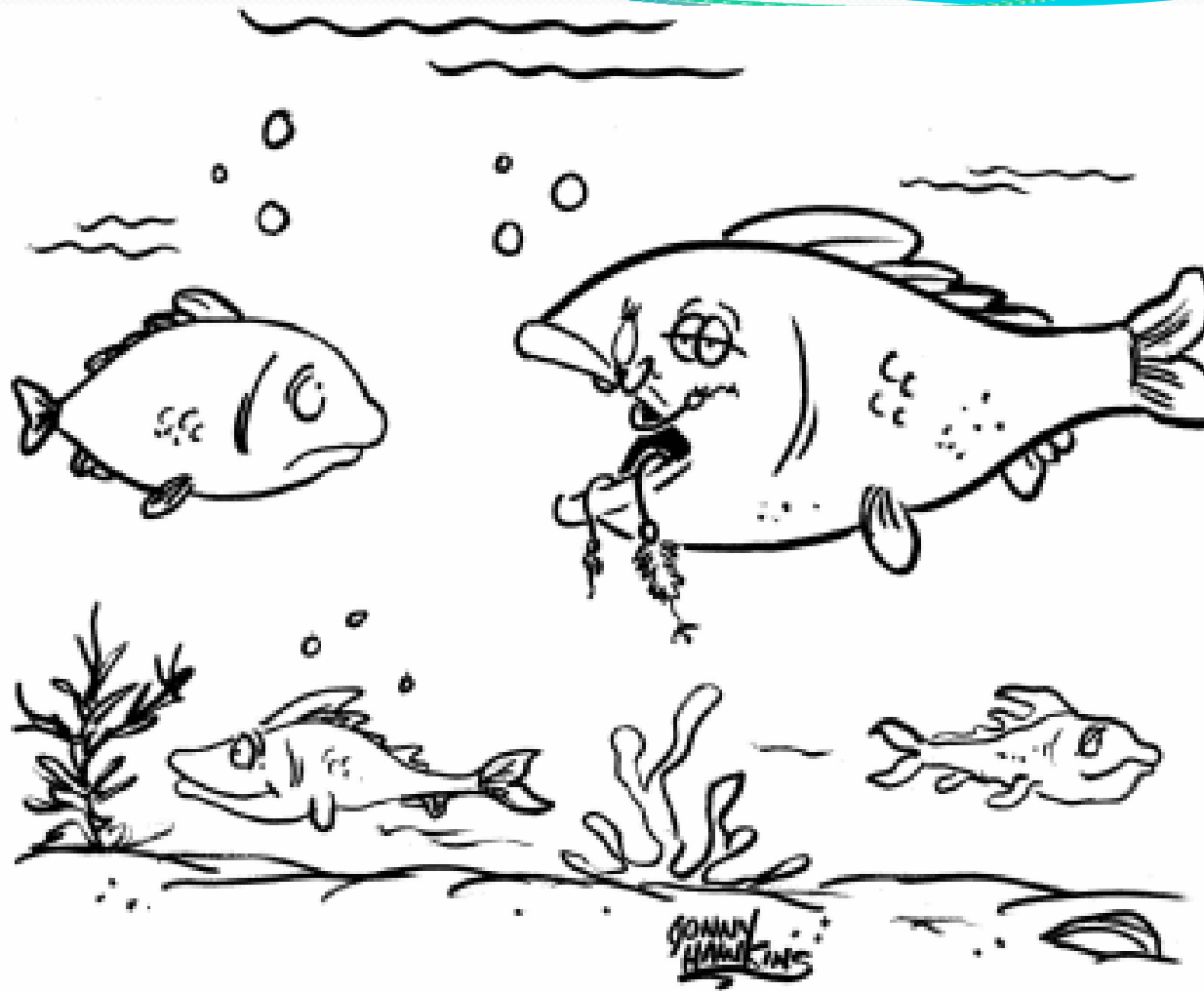


Sauls and Ayala, in press

Research Needs

- Sub-surface predation
- De-hooking tools, effectiveness
- Recompression devices
 - Effective release depths and weight for various species, sizes
 - What about large fish?
 - Effective depth to evade predator interactions
- Regional scale fishery characterization
 - Better spatial and temporal coverage
 - Higher resolution recreational data





"Stories? Oh, I have a few."



Literature Cited

Hueter et al. 2006. *Trans. Amer. Fish. Soc.* 135:500-508

McGovern et al., 2005. *Bull. Mar. Sci.* 76:47-59

Murphy et al., 1995. *N. Amer. J. Fish. Mgt.* 15(4): 748-753

Guindon, 2011. PhD Dissertation, Univ. S. Florida

Prince et al., 2002. *Amer. Fish. Soc. Symp.* 30:66-79

Prince et al., 2007. *Fish. Mgt. & Ecol.* 14:173-182.

Rummer and Bennett, 2005. *Trans. Amer. Fish. Soc.* 134: 1457-1470

Rummer, 2007. *Amer. Fish. Soc. Symp.* 60:123-144

Sauls and Ayala, in press. *Bull. Mar. Sci.*

Taylor et al., 2001. *N. Amer. J. Fish. Mgt.* 21: 70-75