# Catch Rates of Red Snapper on Single vs. Multiple Hook Rigs

Heather M. Christiansen and Beverly Sauls

Fish and Wildlife Research Institute

Florida Fish and Wildlife Conservation Commission

# At-Sea Observer Program

- The Florida Fish and Wildlife Conservation Commission (FWC) Fish and Wildlife Research Institute's Fisheries Dependent Monitoring (FWRI-FDM) At-Sea Observer Program

- Biologists are assigned to randomly selected headboat and charter vessels

- Collect information on number of anglers, rigs, time fished, fish captured

# At-Sea Observer Program

- Data from 2011-2020

- Data filtering
  - Red snapper data

  - Northeast Florida region only (722, 728, 732)

  - Remove rig types that do not target red snapper
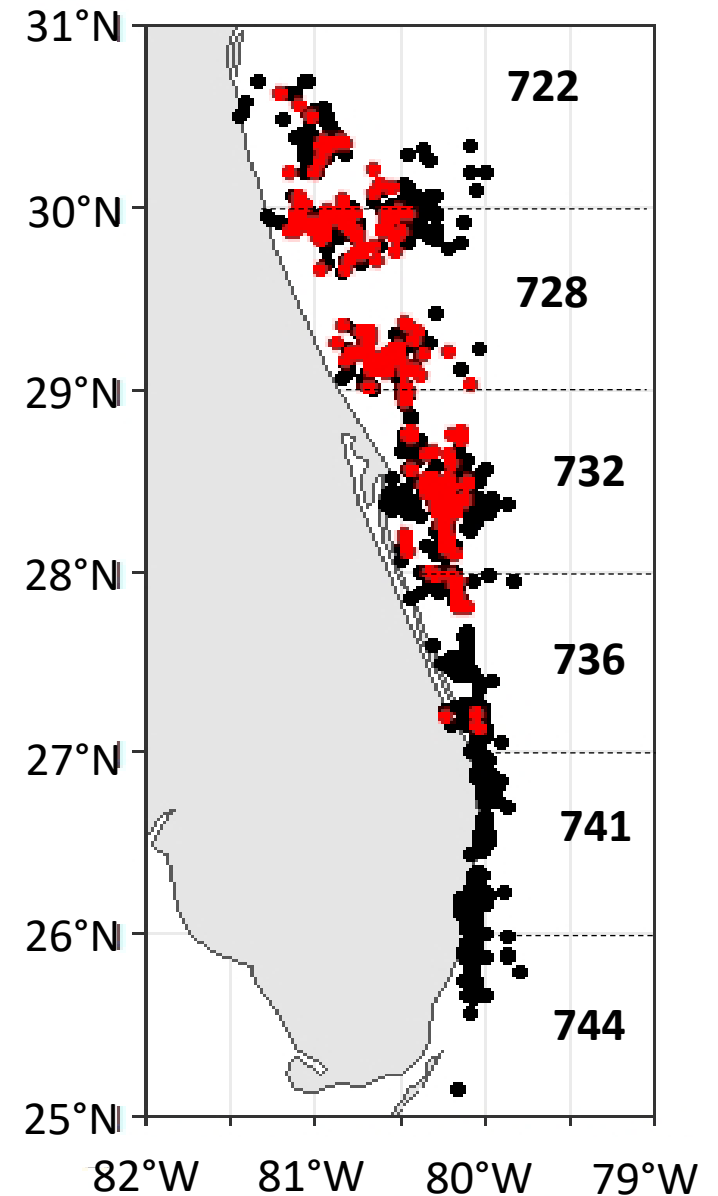
# Methods

- Summary data
  - Number of rods fished using either single or multiple hooks
  - Proportion of rods that were positive for red snapper
  - Total number of red snapper captured

- CPUE calculated as number fish captured/fishing hour for each hook category at each site

- Generalized linear mixed model
  - CPUE data
  - Negative binomial model included year, zone, and hook category

# Summary Data

| Rig Type | Single Hook | Multiple hook |
|---|---|---|
| Artificial | 166 | 6 |
| Egg/Carolina sliding/fixed | 11813 | 7 |
| Pyramid | 3451 | 8 |
| Knocker | 241 | 1 |
| Jighead | 111 | 1 |
| Chicken | 39 | 1572 |
| Unknown | 2320 | 93 |

Multiple Hooks
1688 (8.5%)

Single Hook
18141 (91.5%)
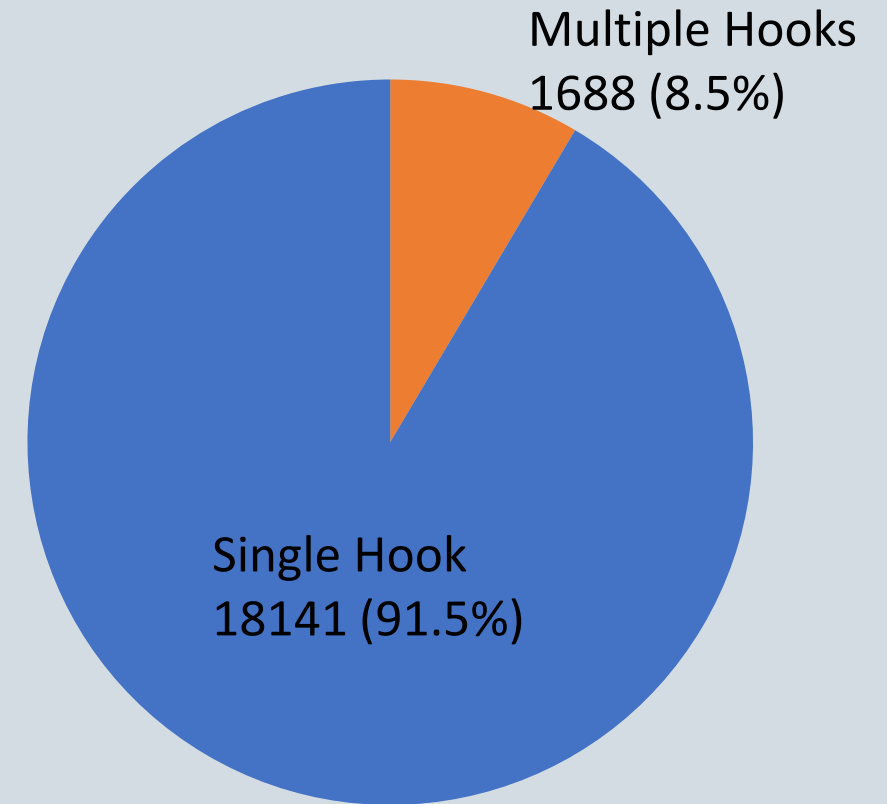
# Summary Data

- Proportion positive for red snapper
  - Single hook-16 %
  - Multiple hook-19%

- Number of red snapper captured
  - Single hook- 4972
  - Multiple hook- 599

# Negative binomial

| Effect | Num DF | Den DF | F | p |
|---|---|---|---|---|
| Year | 9 | 2195 | 7.66 | <.0001 |
| Zone | 2 | 2195 | 9.2 | 0.0001 |
| Hook category | 1 | 2195 | 8.89 | 0.0029 |

Mean hourly CPUE

| | Mean | Lower 95% CL | Upper 95% CL |
|---|---|---|---|
| Multiple hooks | 0.43 | 0.36 | 0.51 |
| Single hook | 0.33 | 0.29 | 0.38 |

# Conclusions

- Majority of rigs used on headboat and charter boats are single hook rigs

- Multiple hook rigs have a higher proportion positive for red snapper

- Multiple hook rigs have higher mean CPUE than single hook rigs

- Data is from for-hire survey, unknown what private recreational uses