

Evaluation of APAIS 2013 Design Changes

Descriptive Analysis Part 2: Results for Catch Rates Quasi Design-based Approach for Calibration

John Foster
MRIP Calibration Workshop #2

Charleston, South Carolina
8 September 2014

Outline

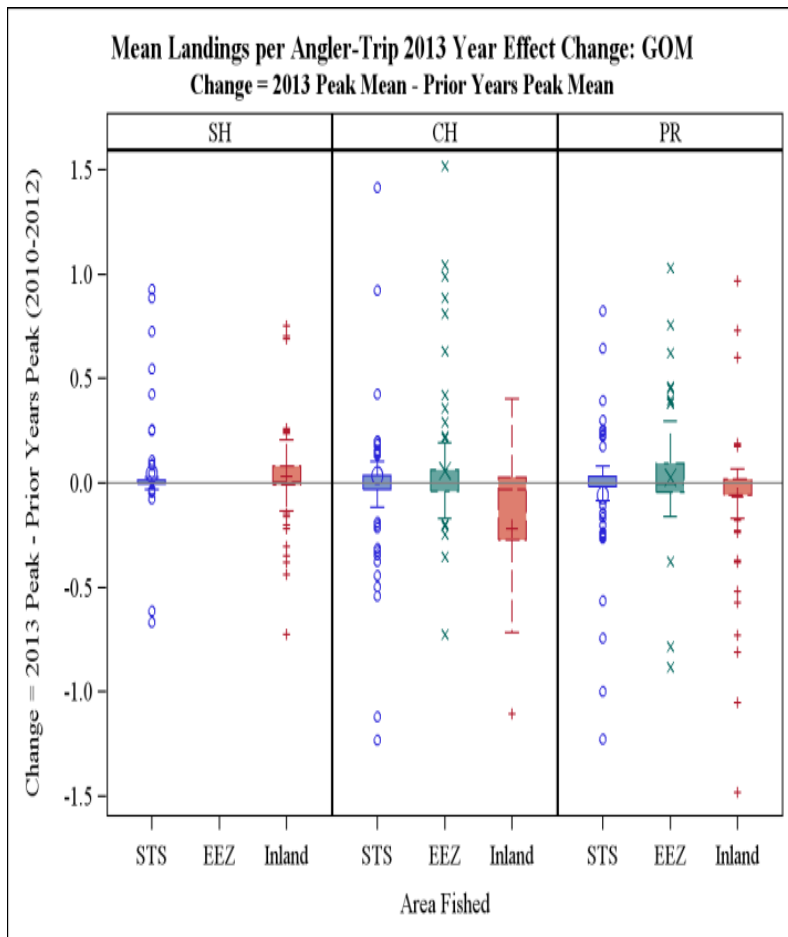
- Results for MRIP Catch Rates
 - Landings per angler-trip
 - Summary
 - Select Species
- MRIP Red Snapper Landings
 - Gulf of Mexico, Wave 3
- Quasi Design-based Approach for Calibration

MRIP Catch Rates

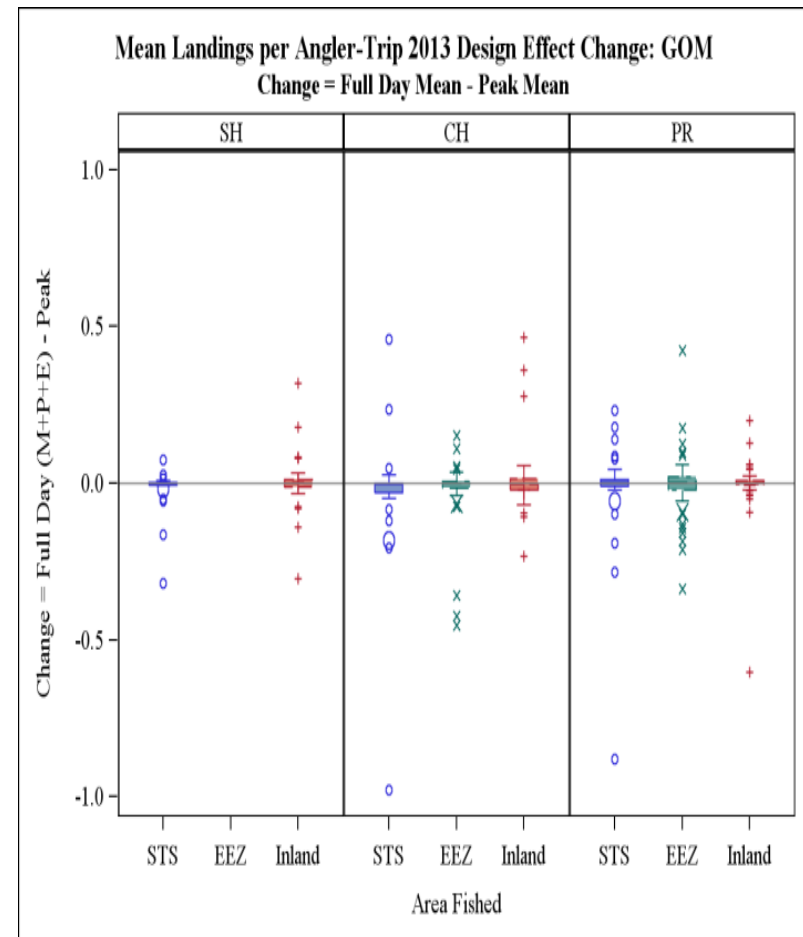
- Landings per angler-trip (no.)
 - By State, Mode of Fishing, Area Fished, Year, Time Block, and Species
 - Summary - 23 spp GOM, 26 spp Atlantic
 - Select individual species
- Comparisons
 - Year effects: Peak 2013 with Peak in prior years (2010-2012)
 - Design change effects: Total (full day) in 2013 with Peak in 2013

Results Mean Landings GOM

Year Effects



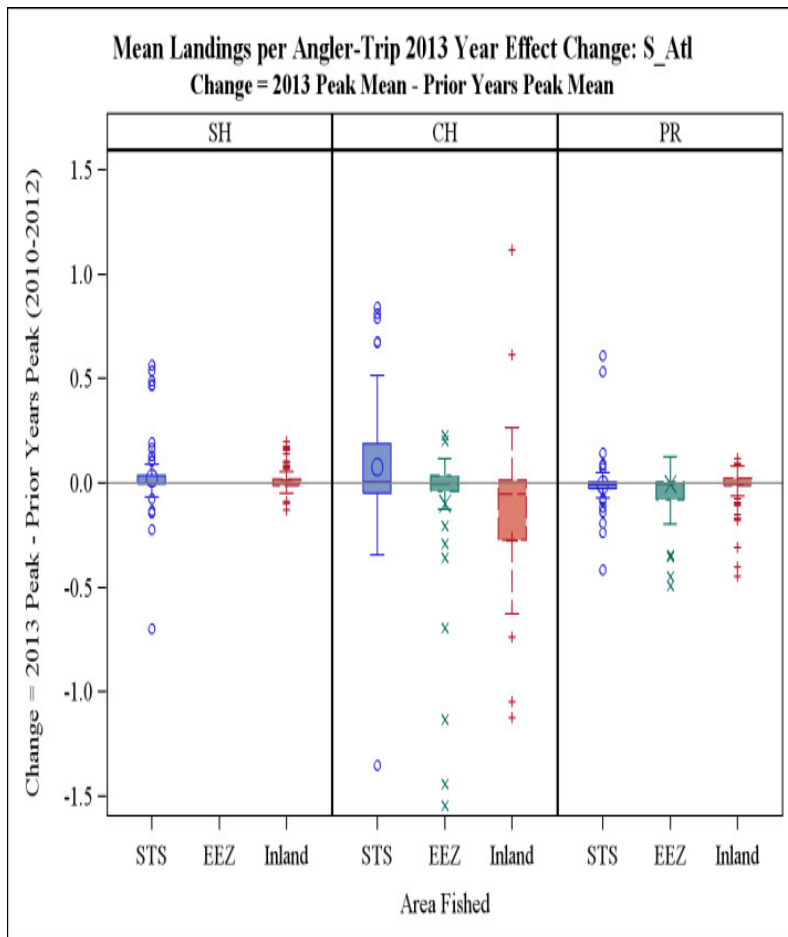
Design Change Effects



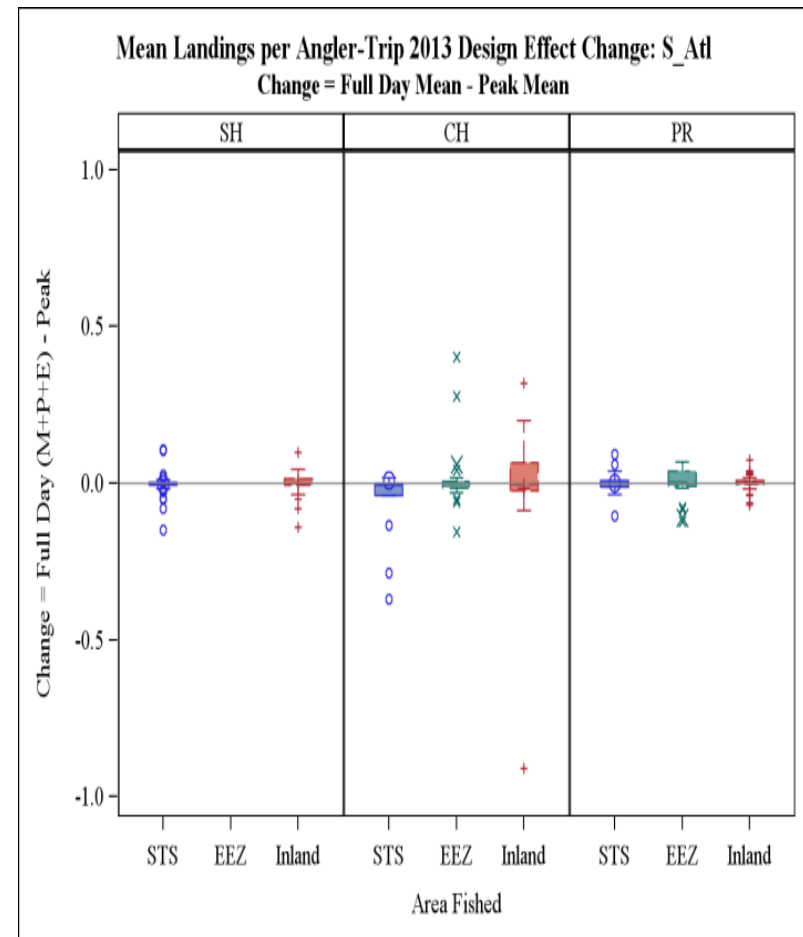
- Variable differences across species centered around zero

Results Mean Landings South Atlantic

Year Effects



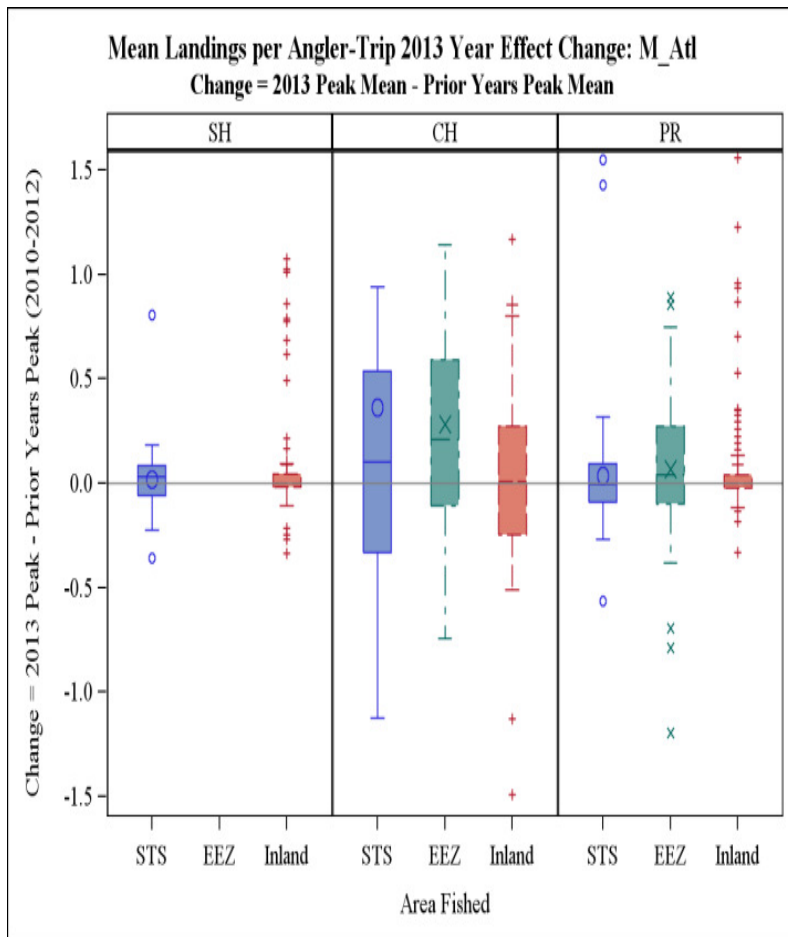
Design Change Effects



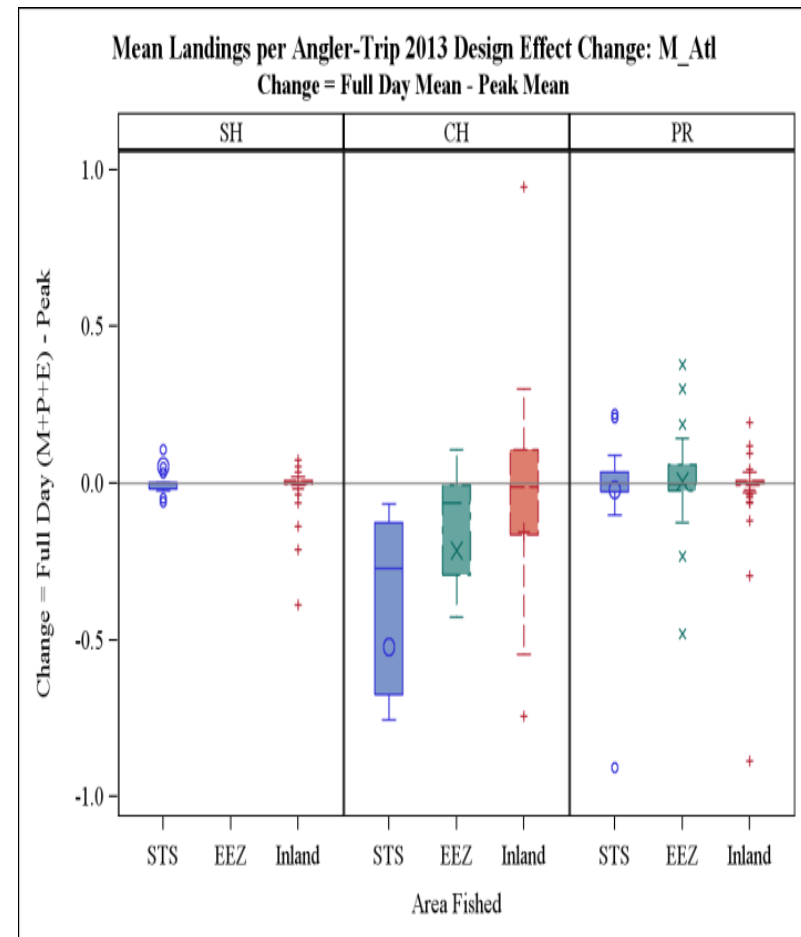
- Variable differences across species centered around zero

Results Mean Landings Mid-Atlantic

Year Effects



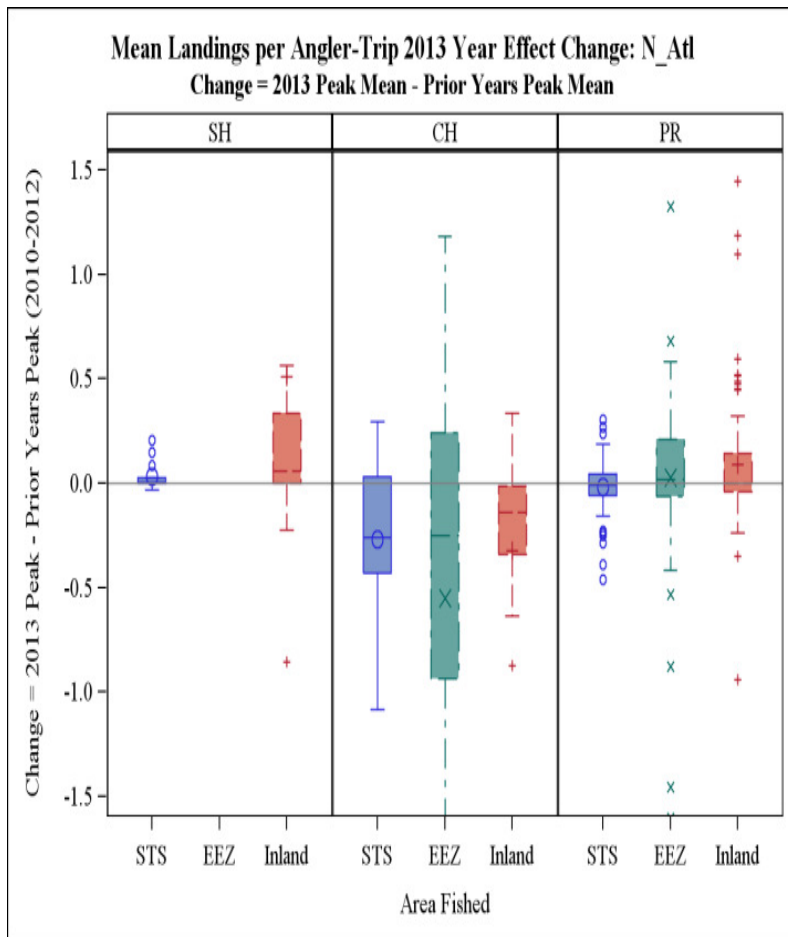
Design Change Effects



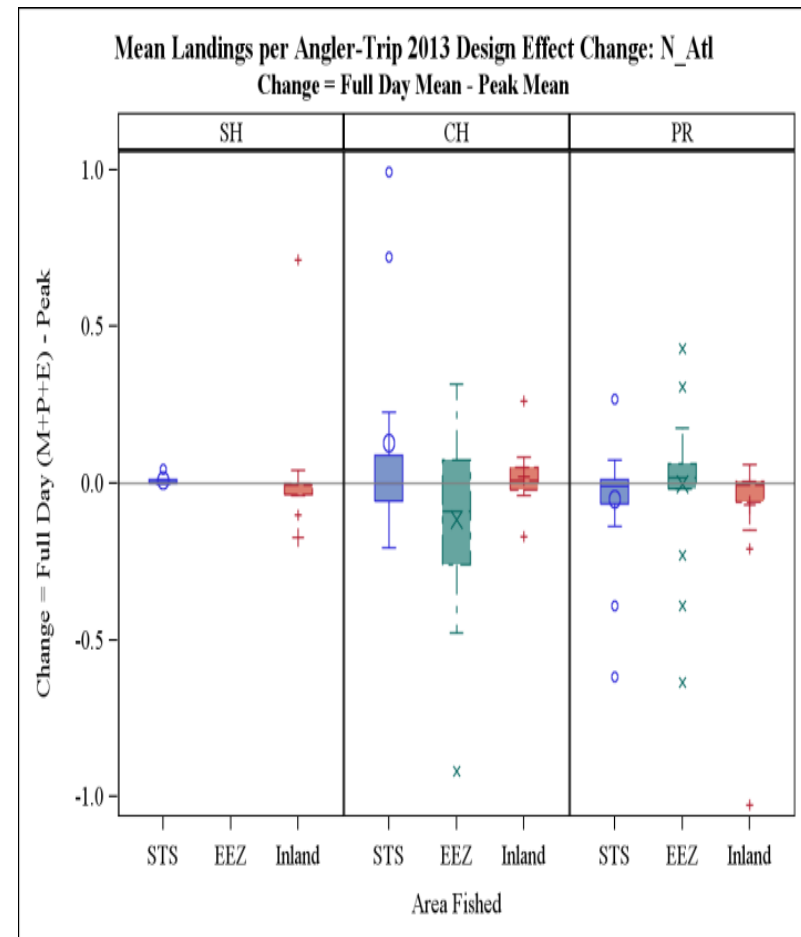
- Wide distribution of year effects, more systematic design change effects in CH

Results Mean Landings North Atlantic

Year Effects



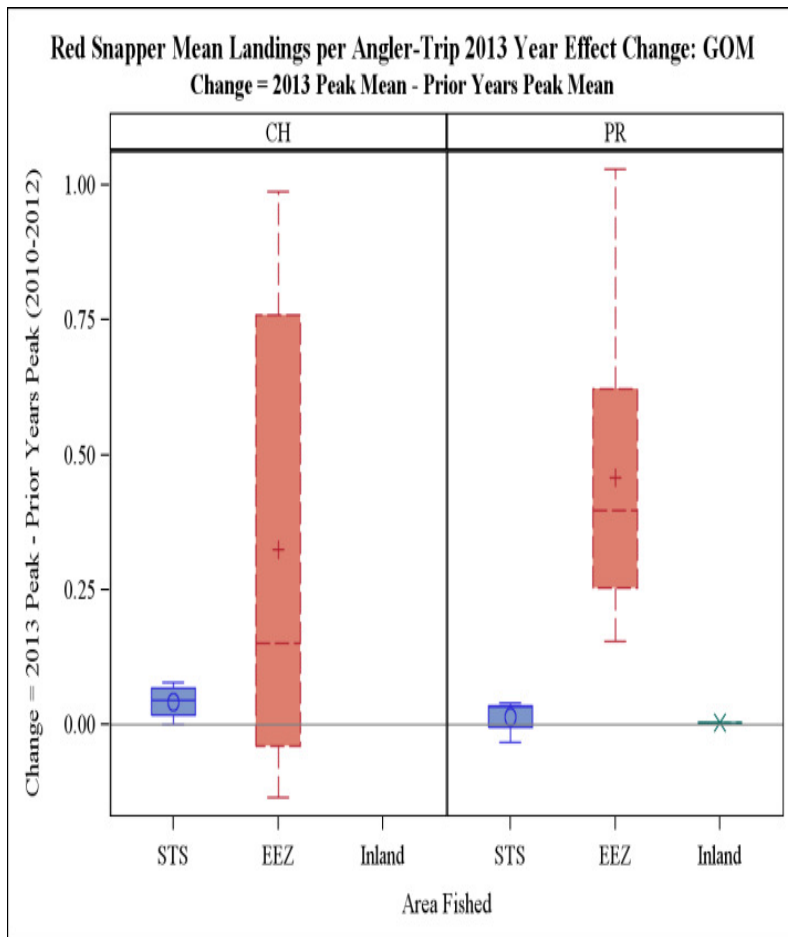
Design Change Effects



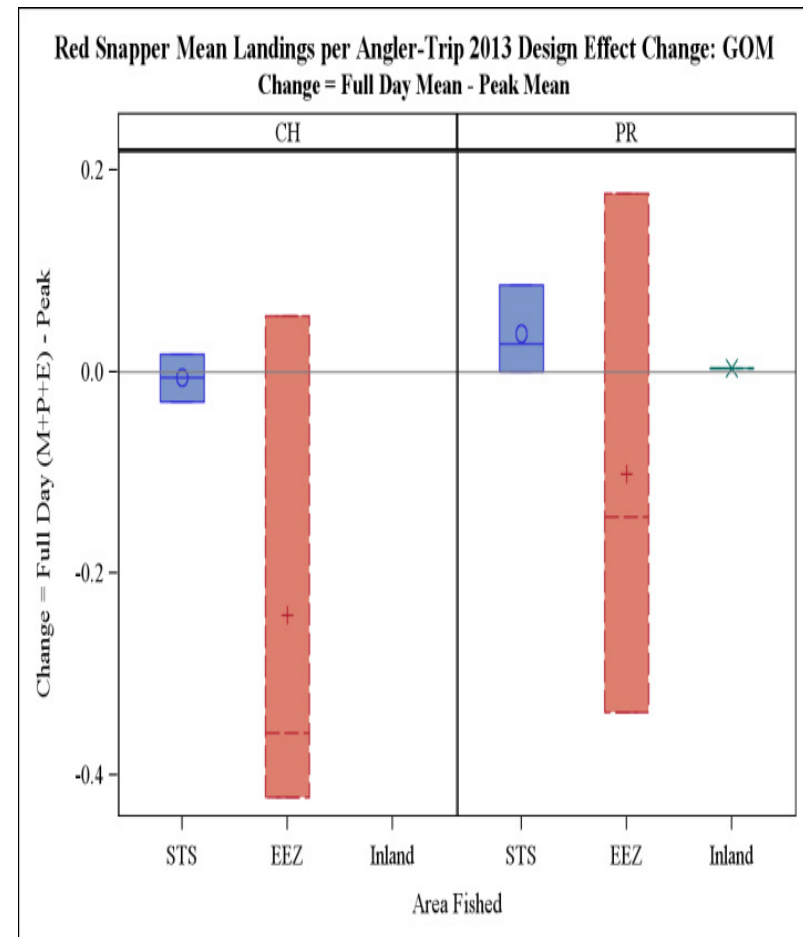
- Wide distribution of year effects, more systematic year effects in CH

Results Mean Landings Red Snapper - GOM

Year Effects



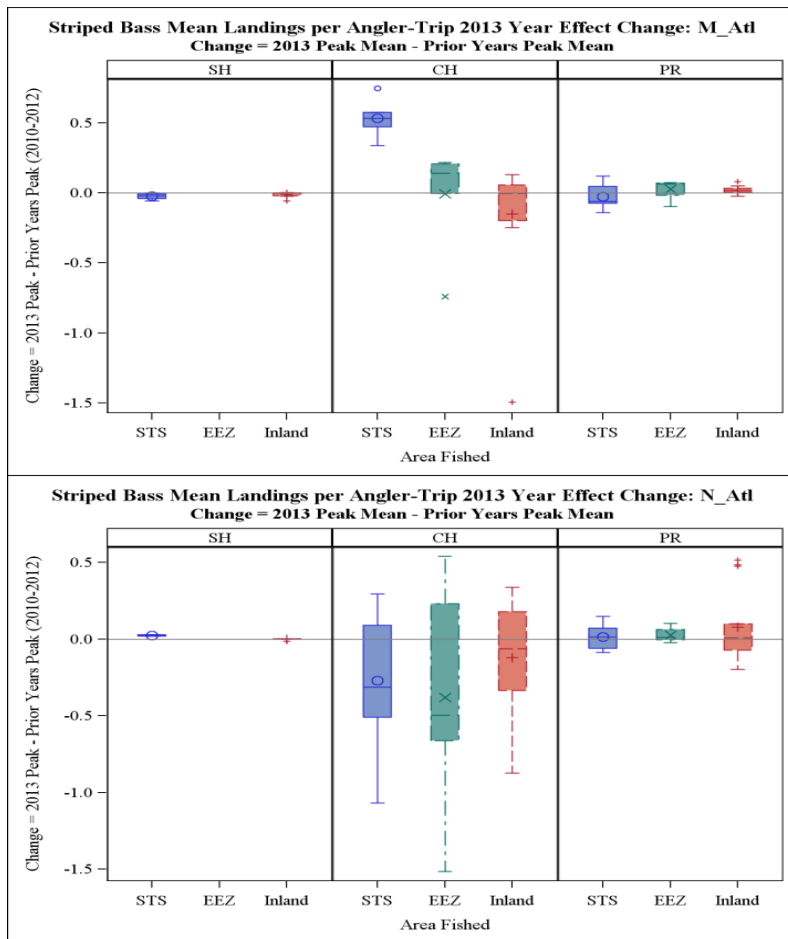
Design Change Effects



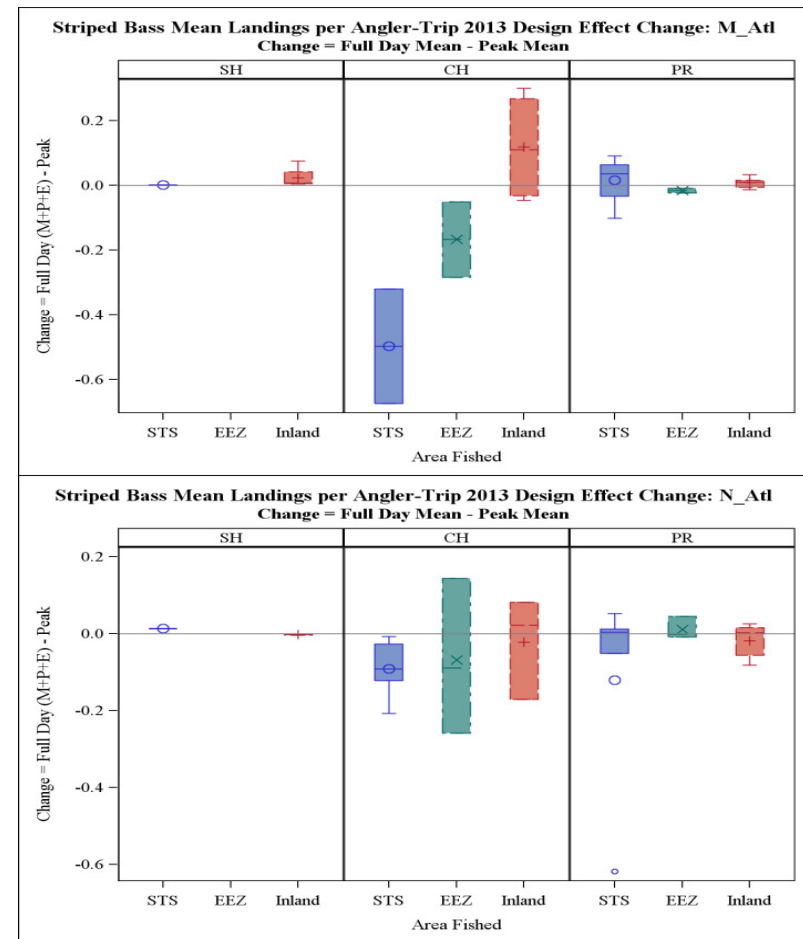
- Consistent year effects, variable and smaller design change effects

Results Mean Landings Striped Bass – Mid, N Atl.

Year Effects



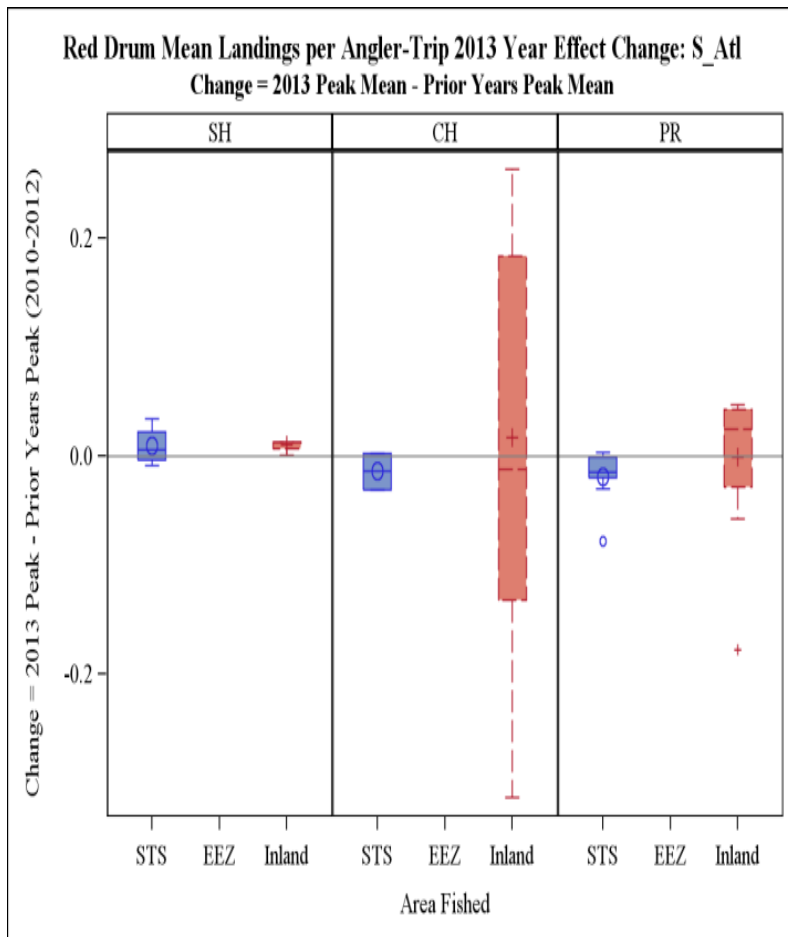
Design Change Effects



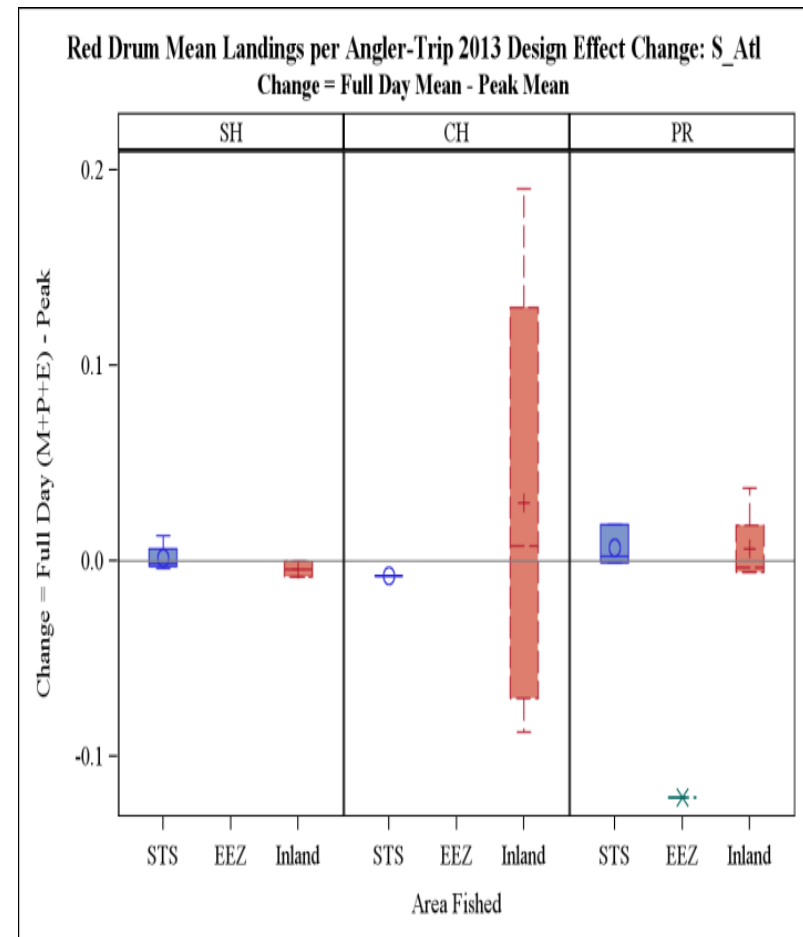
- Variable effects by sub region, larger effects in CH mode

Results Mean Landings Red Drum – S Atl.

Year Effects



Design Change Effects



- Minimal effects except for CH mode in Inland waters

MRIP Catch Rates

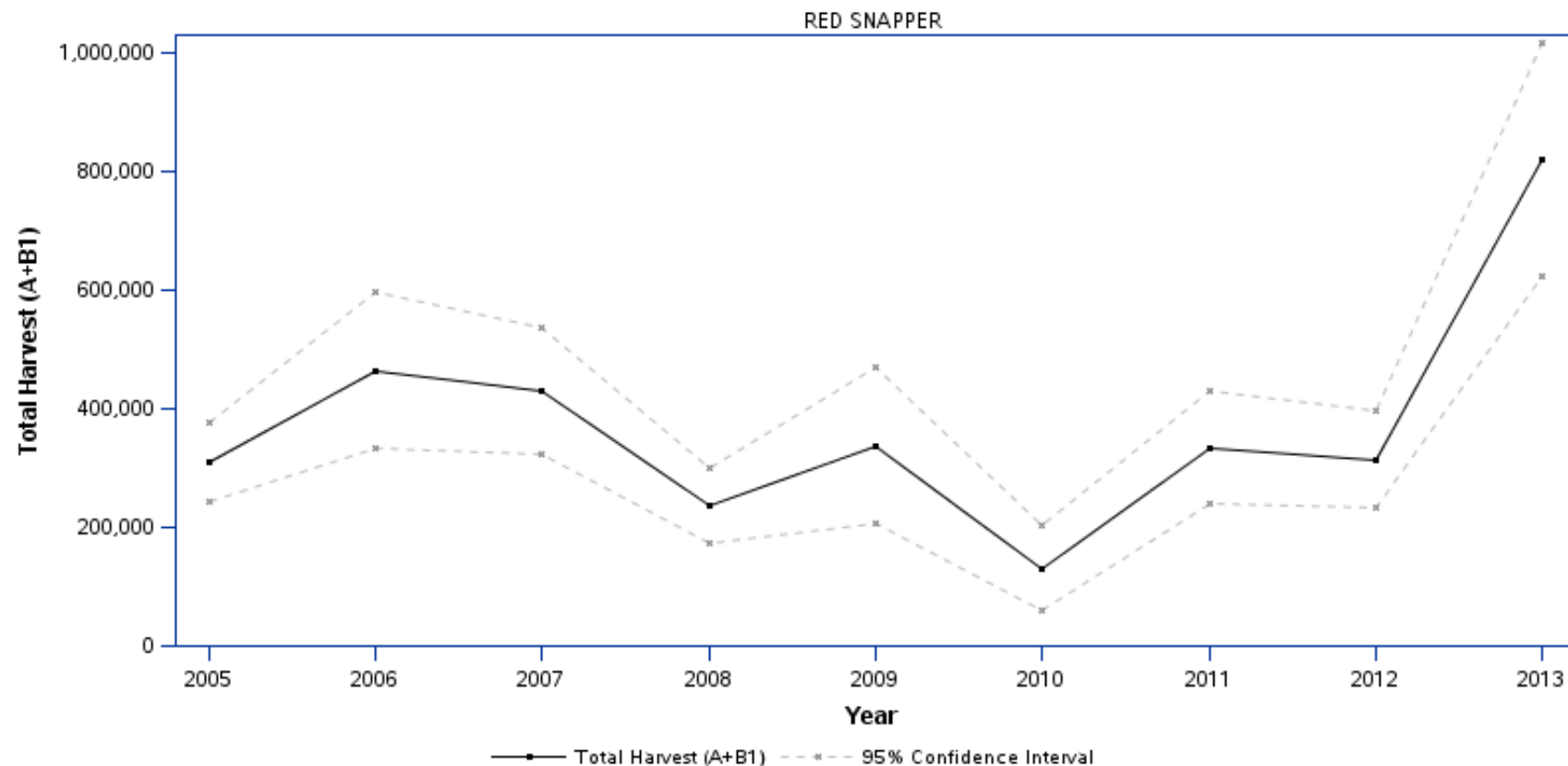
- Results for landings per angler-trip highly variable
 - Across species, sub regions, modes, areas
- Support for year and design change effects at individual species level
- Effects in CH mode often larger than in other modes
- Design change effects typically smaller than year effects

MRIP Red Snapper Landings

- Gulf of Mexico
- Wave 3
- By State, Mode of Fishing, and Area fished

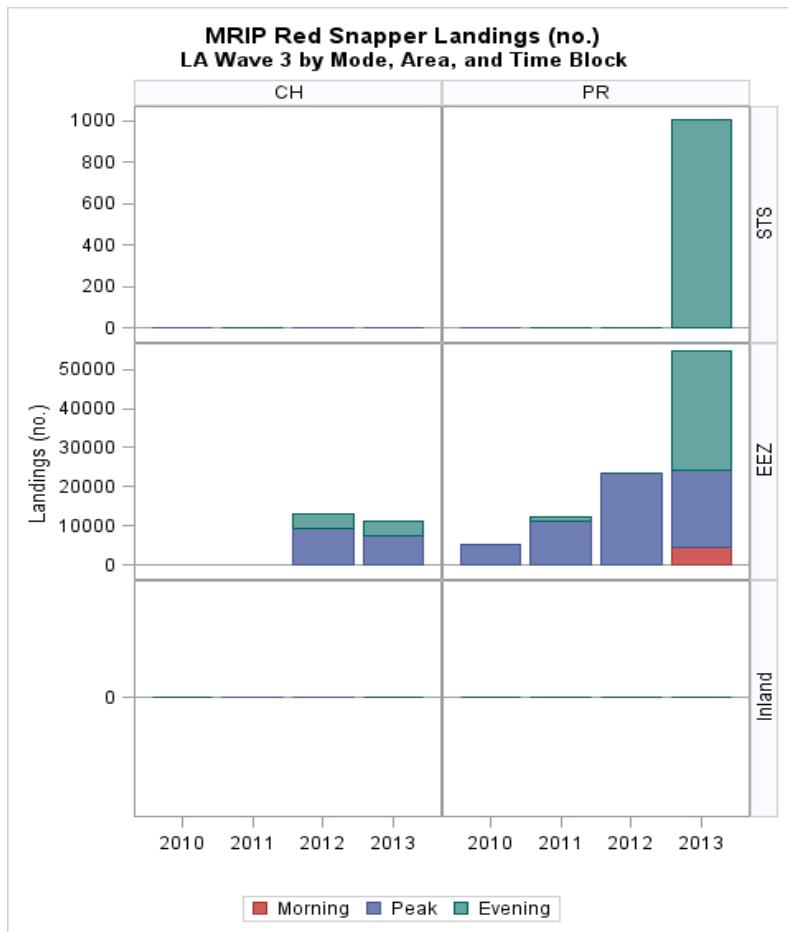
MRIP Red Snapper Landings – GOM, Wave 3

- LA-wFL, Wave 3, All Modes, All Areas, 2005-2013

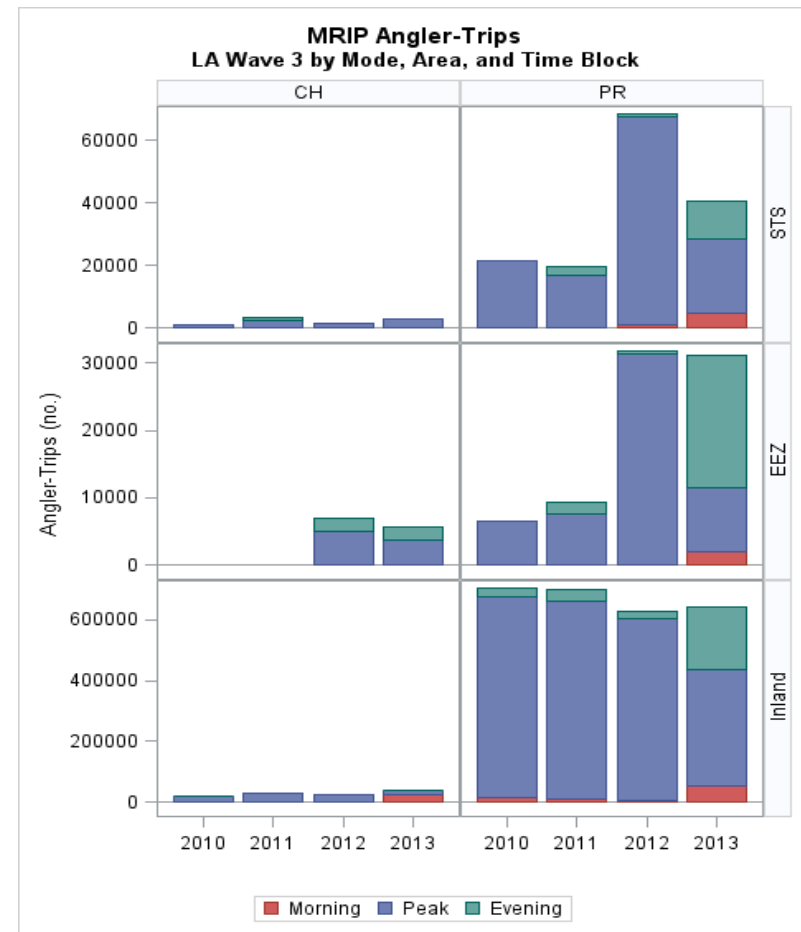


MRIP Wave 3 Estimates - Louisiana

Red Snapper Landings (no.)



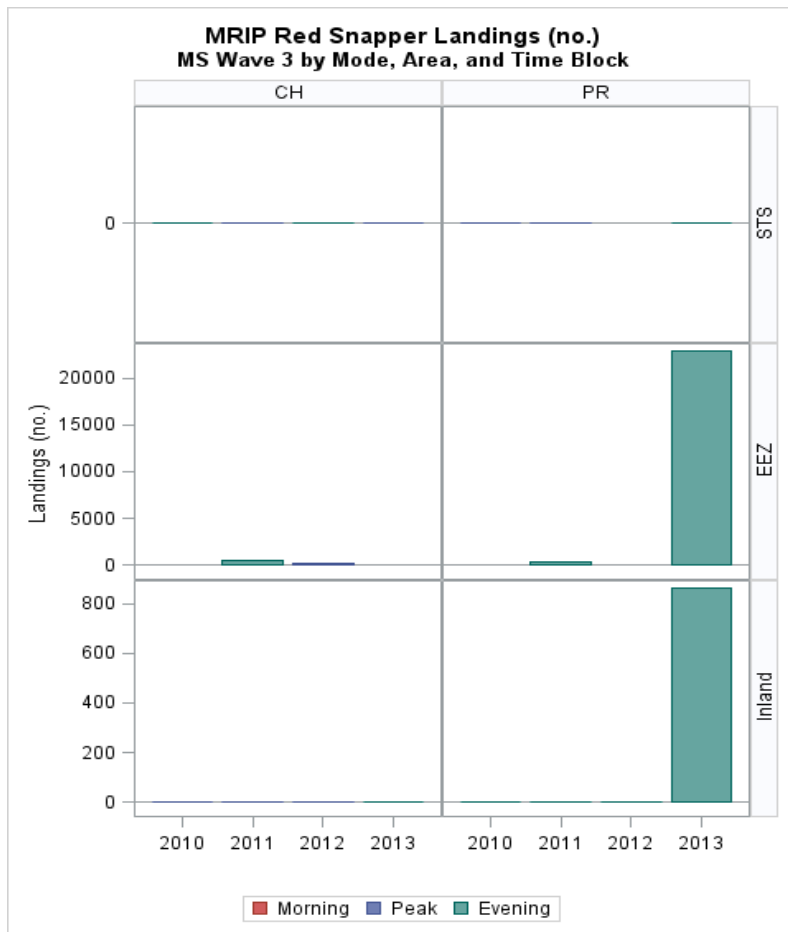
Total Angler-Trips



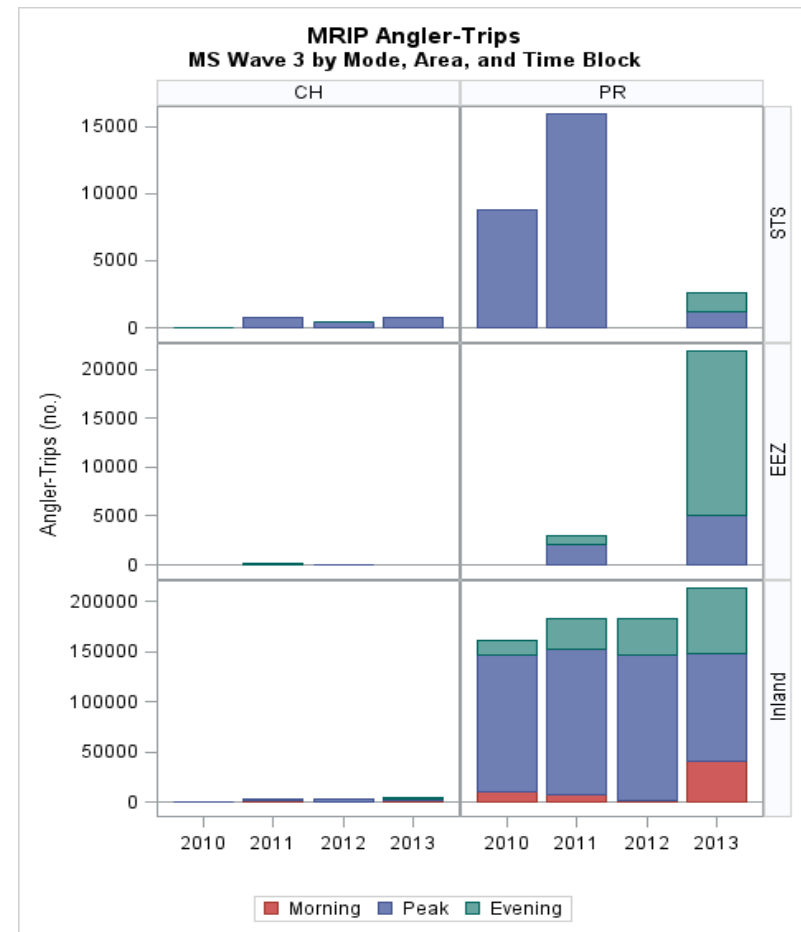
- Increases in Evening trips and red snapper landings in 2013

MRIP Wave 3 Estimates - Mississippi

Red Snapper Landings (no.)



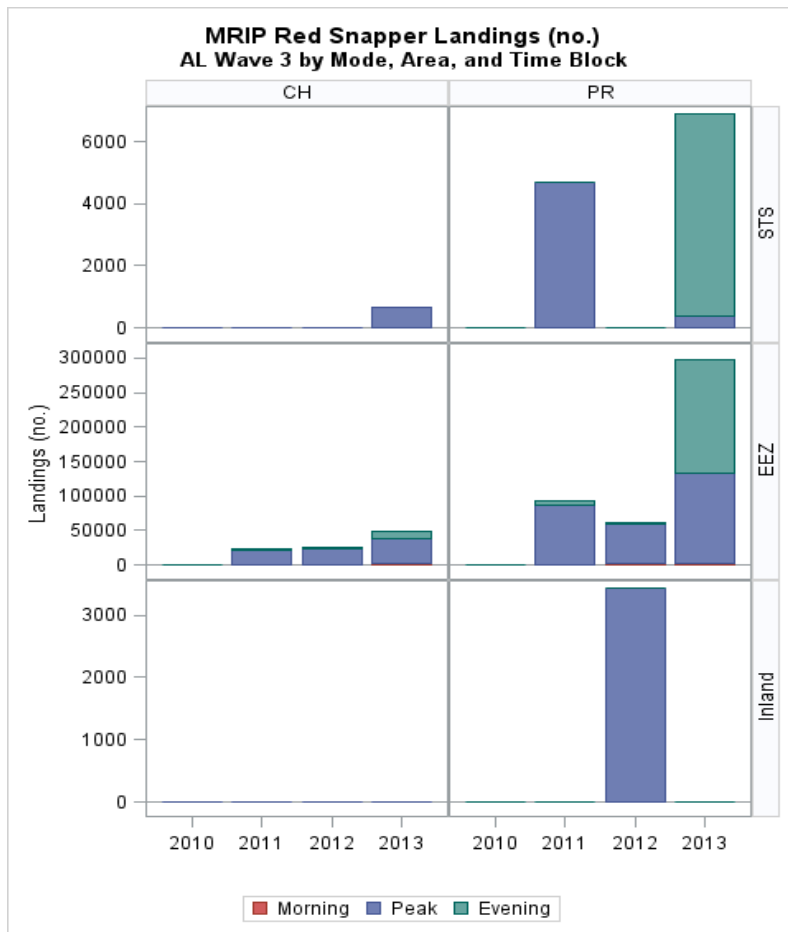
Total Angler-Trips



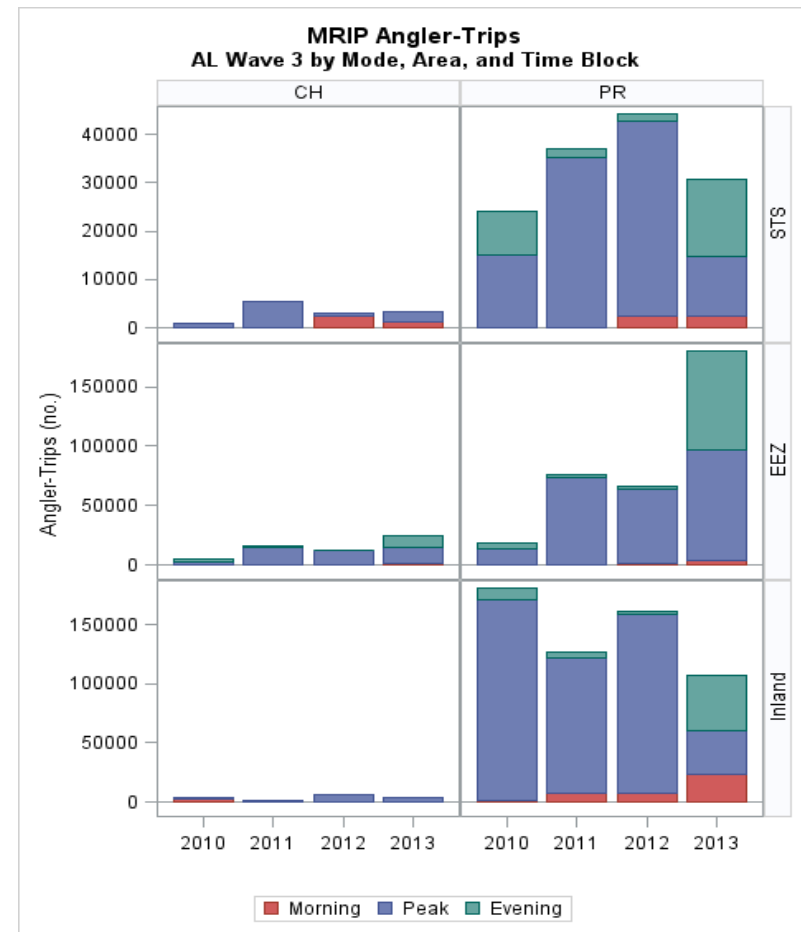
- Increases in Evening trips and red snapper landings in 2013

MRIP Wave 3 Estimates - Alabama

Red Snapper Landings (no.)



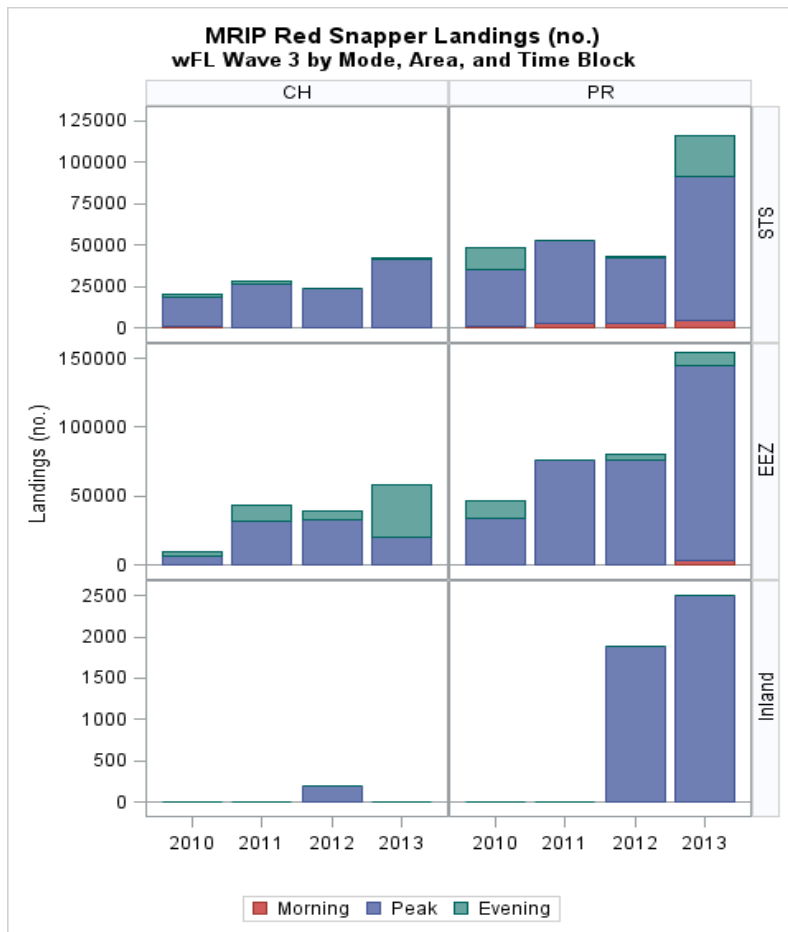
Total Angler-Trips



- Small increase in Peak, Large increase in Evening in EEZ 2013

MRIP Wave 3 Estimates – Florida-West

Red Snapper Landings (no.)



Total Angler-Trips



- Differences driven mainly by increases in Peak, trend in Peak from Inland to Ocean trips

MRIP Red Snapper Landings – GOM, Wave 3

- Results at the wave level generally consistent with annual level results
- Increase in Evening trips, predominantly in ocean areas (STS, EEZ)
- Largest increases in red snapper landings in Evening time block in all states except FL where increases typically in Peak time block
- Changes consistent with APAIS temporal coverage design change in 2013

Quasi Design-based Approach to Calibration

- Effects of design change appear highly variable across sub regions, states, modes of fishing, species, etc.
- A single comprehensive approach could minimize time and effort associated with numerous case-specific adjustments
- Ideal approach could be applied to years prior to MRIP re-estimation years, 2004-2011

Quasi Design-based Approach to Calibration

- Adjust sample weights of existing MRFSS APAIS data, in years prior to 2013, such that temporal distributions of reweighted intercept data approximate corresponding MRIP APAIS distributions
- Re-calculate catch and effort estimates using updated APAIS sample weights in years prior to 2013

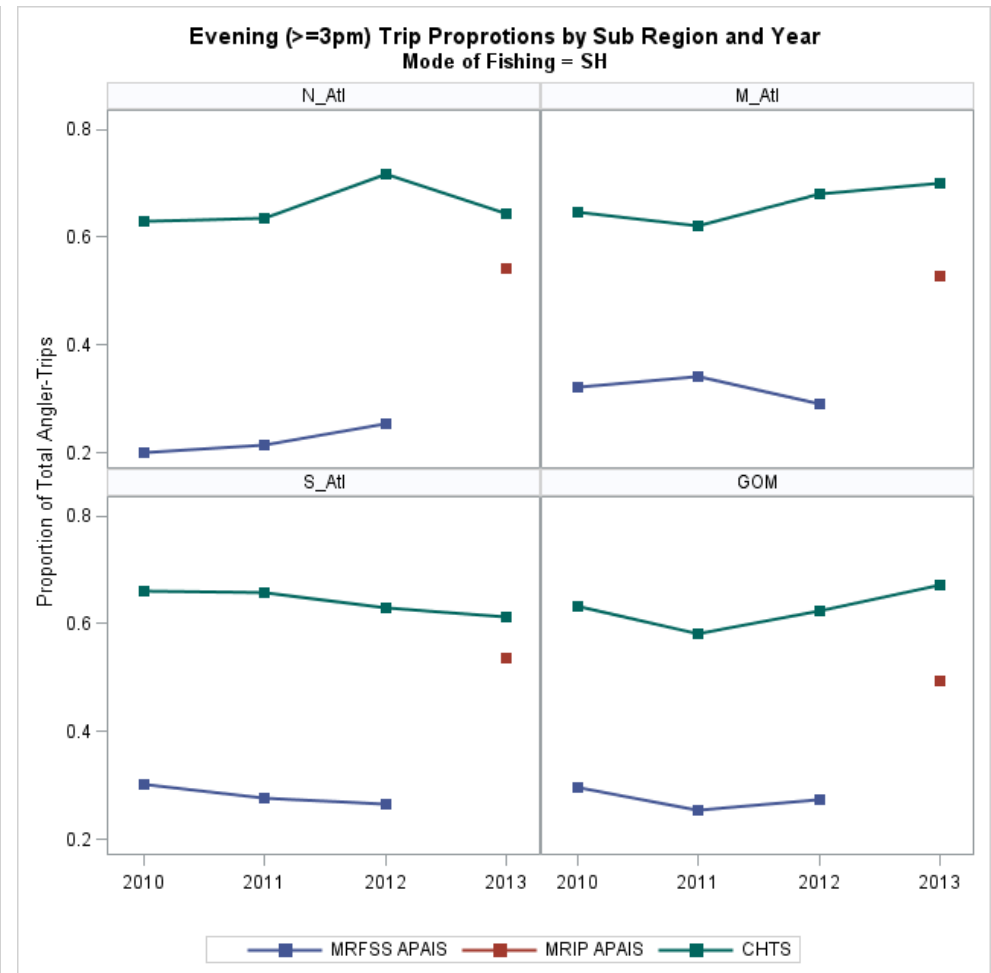
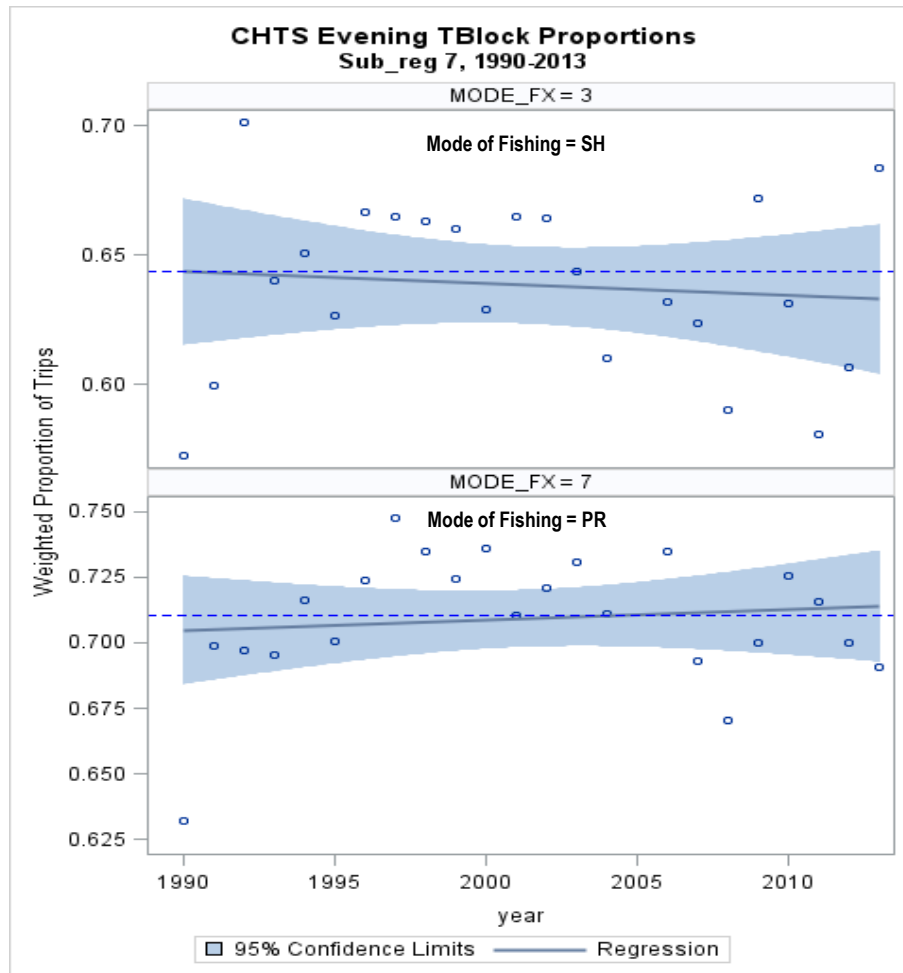
Quasi Design-based Approach to Calibration

- Challenges
 - Often very few intercepted angler-trips in off-Peak time blocks
 - Upweighting small numbers of intercept records has potential to create unstable estimates
- Need to estimate MRIP APAIS temporal distributions for years prior to 2013

Quasi Design-based Approach to Calibration

- Estimating MRIP APAIS temporal distributions
 - CHTS
 - Trip times recorded starting in 1990
 - Distributions fairly consistent over time
 - Higher proportions of Evening trips
 - MRIP APAIS
 - CHTS distributions similar but not exact match to MRIP APAIS
 - Need to adjust CHTS to MRIP APAIS

Quasi Design-based Approach to Calibration



Quasi Design-based Approach to Calibration

- Limited off-Peak MRFSS APAIS data
 - Modeling effort to identify characteristics of Morning, Peak, and Evening trips – by sub region, state, mode, and wave
 - Partition existing MRFSS APAIS data among adjustment groups (M,P,E) based on modeling results
 - Approach somewhat similar to propensity score methodology used in survey nonresponse adjustments

Quasi Design-based Approach to Calibration

- Approach steps
 - Identify characteristics of Morning, Peak, and Evening trips using available MRFSS APAIS and MRIP APAIS data
 - Assign MRFSS APAIS trips to exclusive Morning, Peak, or Evening adjustment groups using trip characteristics (not based solely on trip time)
 - Calculate Morning, Peak, and Evening proportions of total trips from CHTS and MRIP APAIS temporal data

Quasi Design-based Approach to Calibration

- Approach steps
 - Adjust sample weights in MRFSS APAIS data such that weighted proportions of trips by adjustment group (M,P,E) match the corresponding time block proportions (M,P,E) calculated from CHTS and MRIP APAIS
 - Recalculate catch and effort estimates using the adjusted sample weights

Quasi Design-based Approach to Calibration

- Standard approach to adjust all catch and effort estimates from 1990-2012
- Dynamic adjustments across space, time, and species
- Approach strengthened as more years of MRIP APAIS data become available
- Revised estimates available would be available from MRIP web queries and datasets
- Revised public-use datasets would be available for custom domain estimation



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