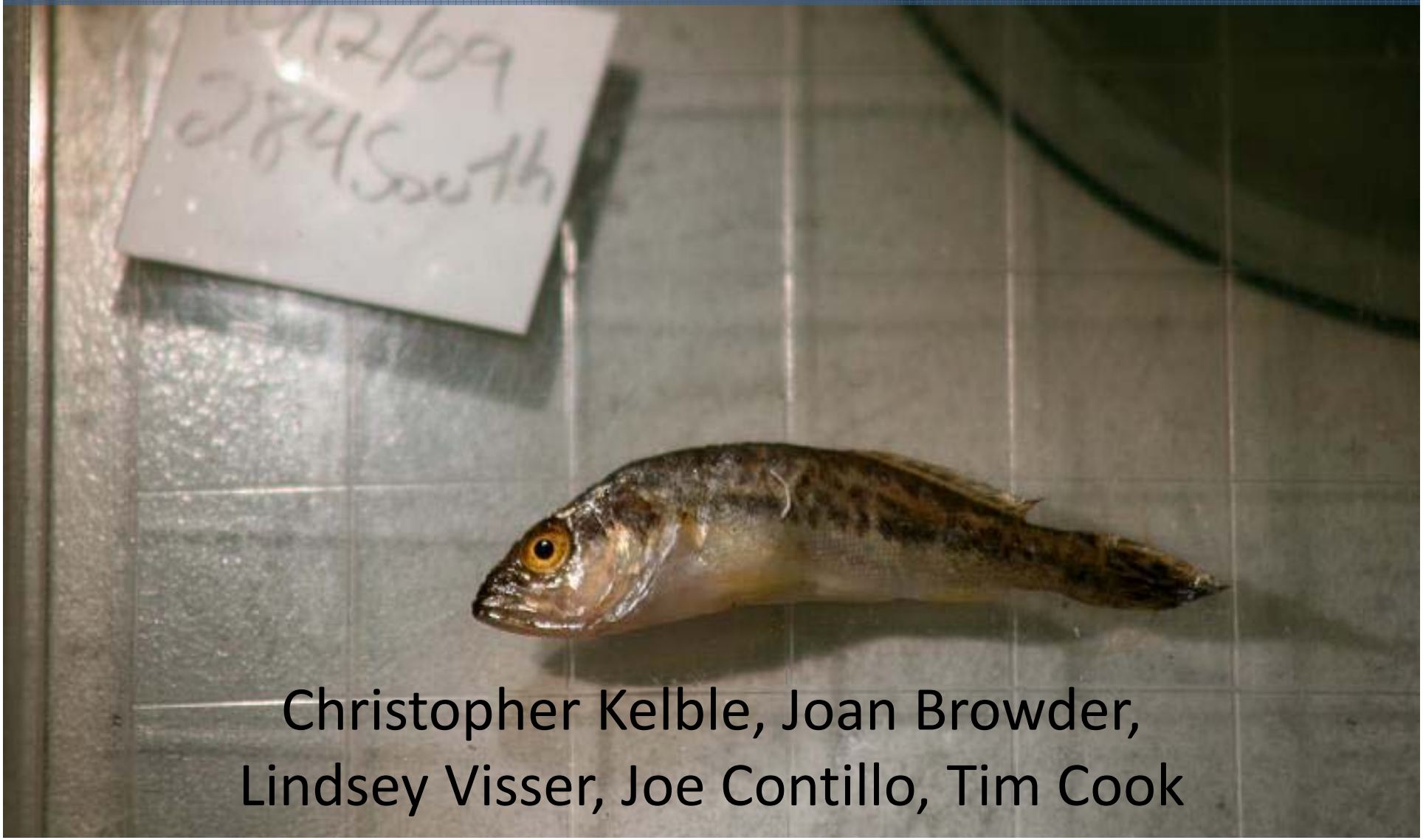
MONITORING AND MODELING JUVENILE SPORTFISH IN FLORIDA BAY



Christopher Kelble, Joan Browder,
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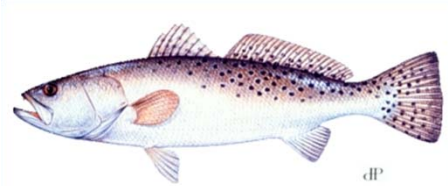
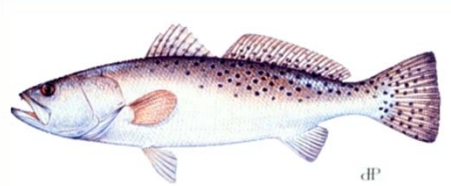
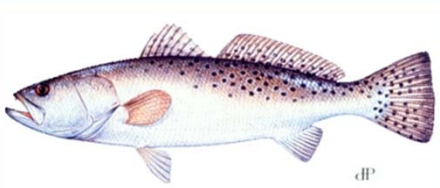


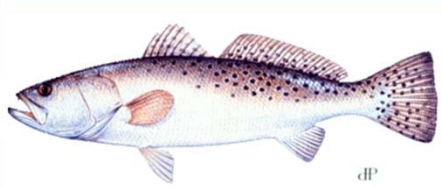
Outline



- Why sportfish are important?
- Methodology
- Results (likelihood to be affected by CERP)
- Informing Management
- Future Directions

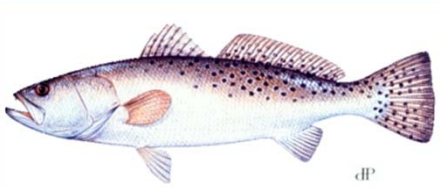


verglades Sport Fishe

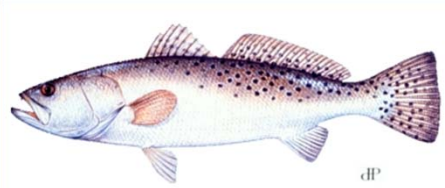


- Generates ~US $880 Million per annum and >6,000 jobs (Fedler et al. 2009)

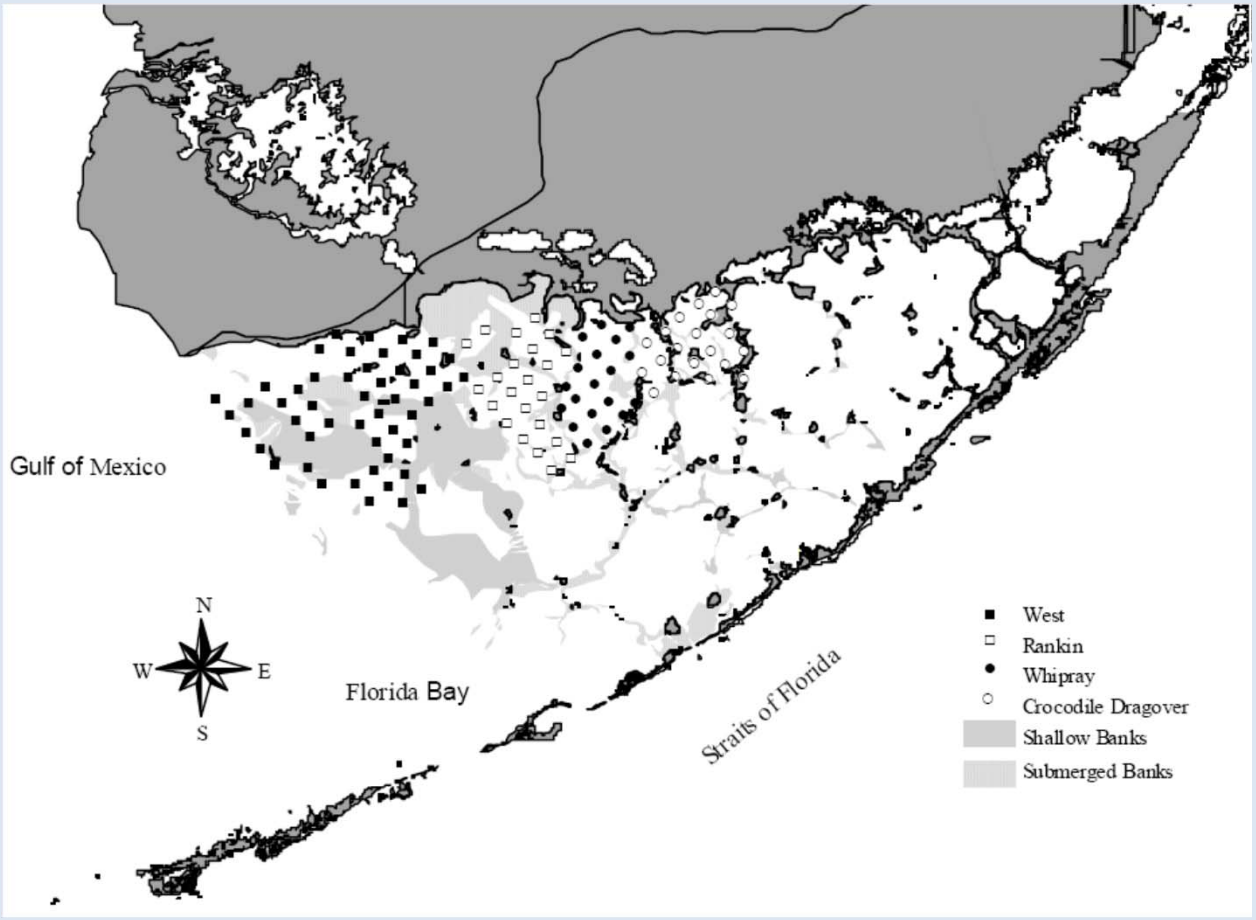
- Spotted Seatrout (*C. nebulosus)* 2nd most commonly caught fish in Florida Bay
- *C. nebulosus* spend entire life history in natal Bay



Methodology

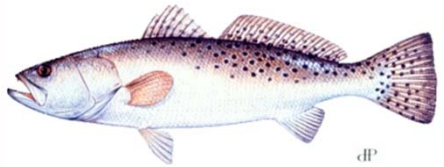


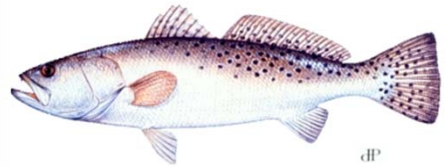
- May-Oct
- Monthly
- Otter trawls
- Seagrass, T, S
- Stratified Random Sampling
- Optimized with power analysis

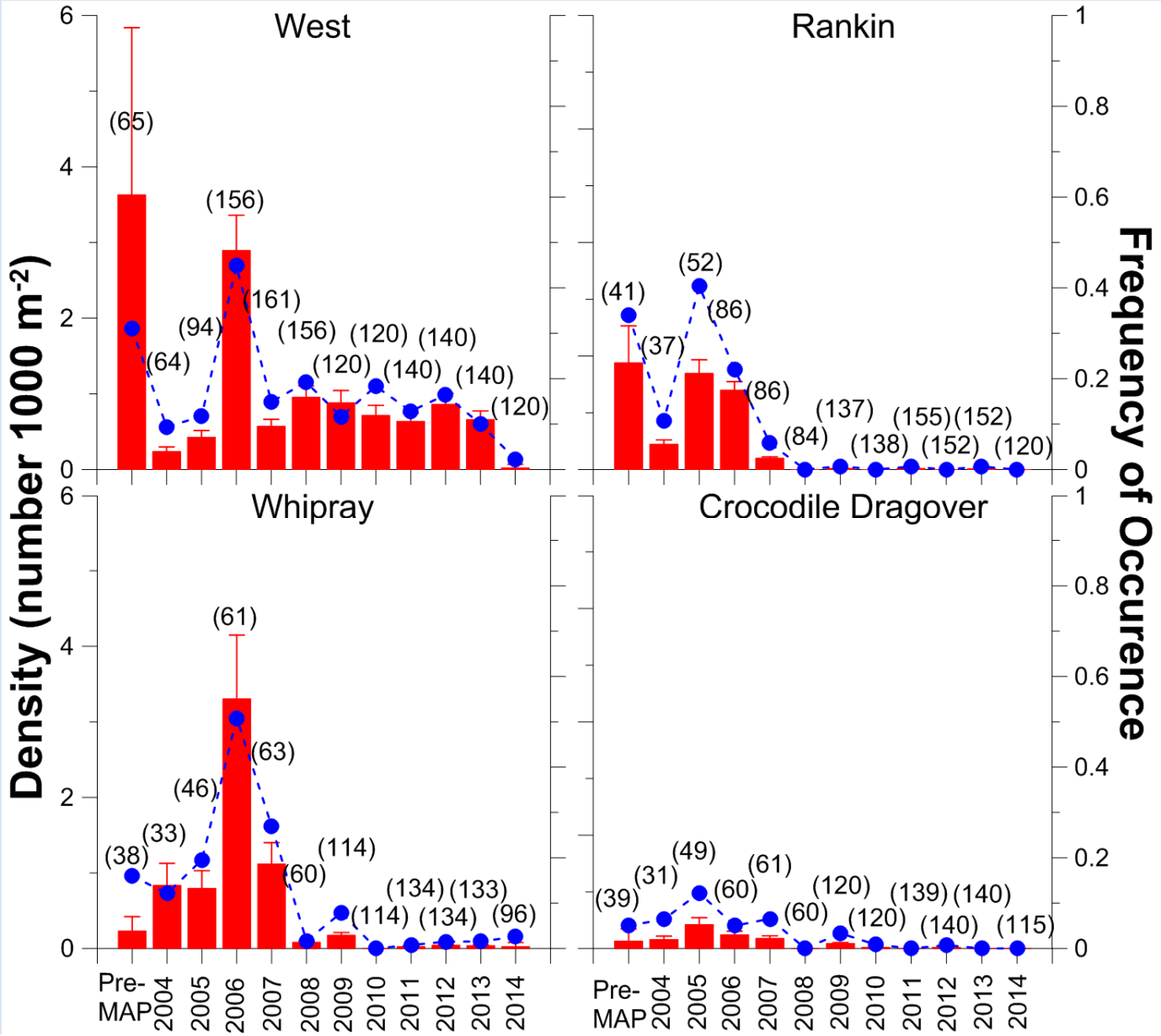


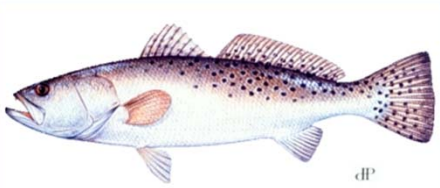
Sampling: 2004-present, 1994-2001, 1984-1985

10 yr Time Series

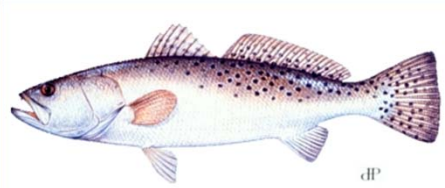


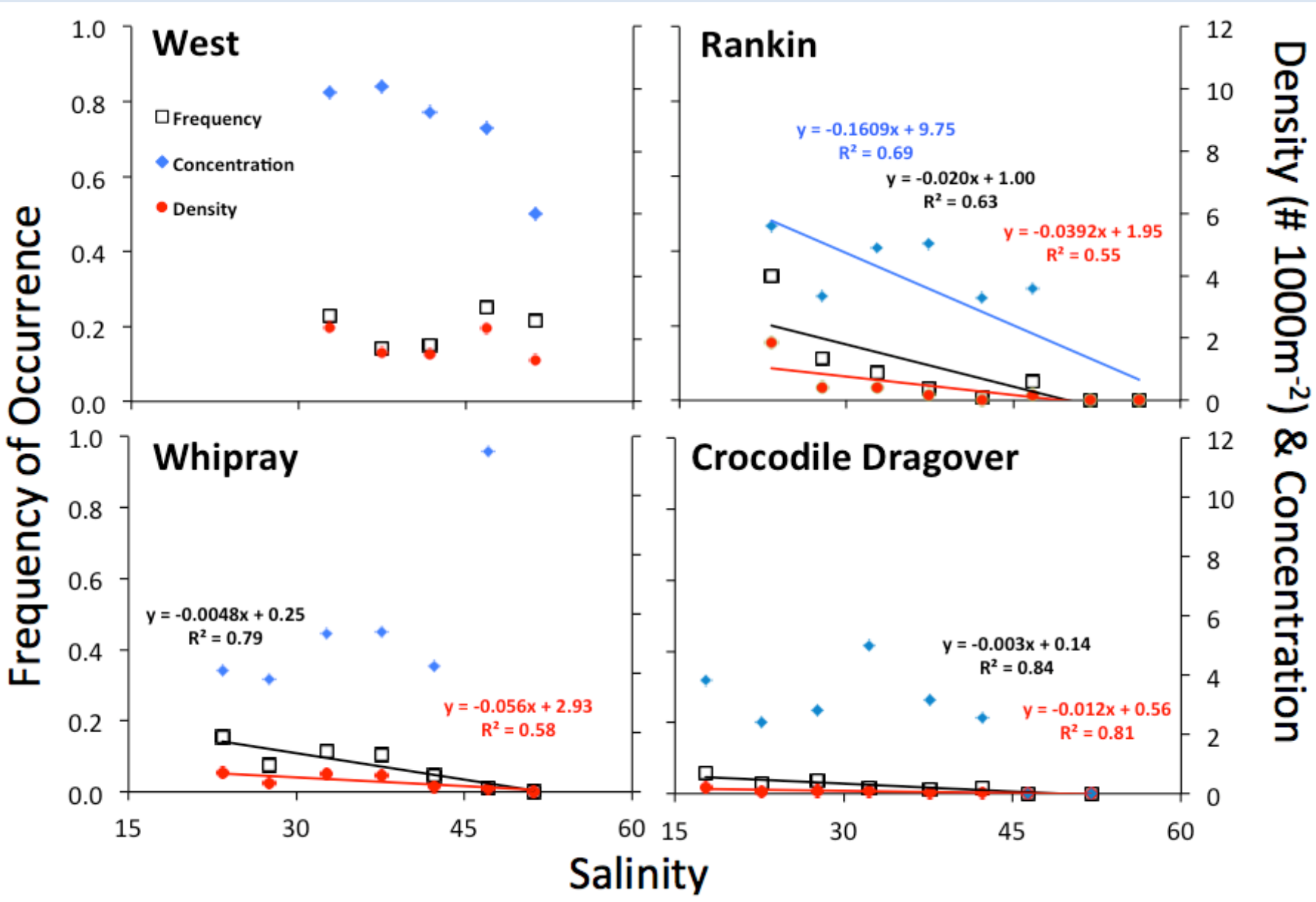


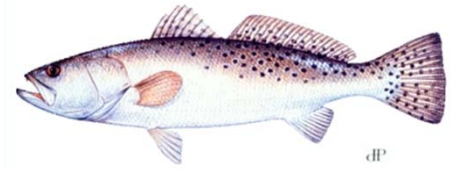




Salinity Effect







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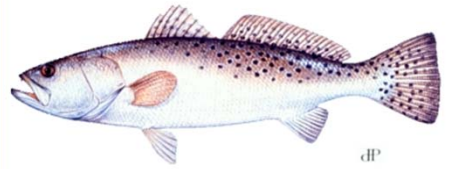
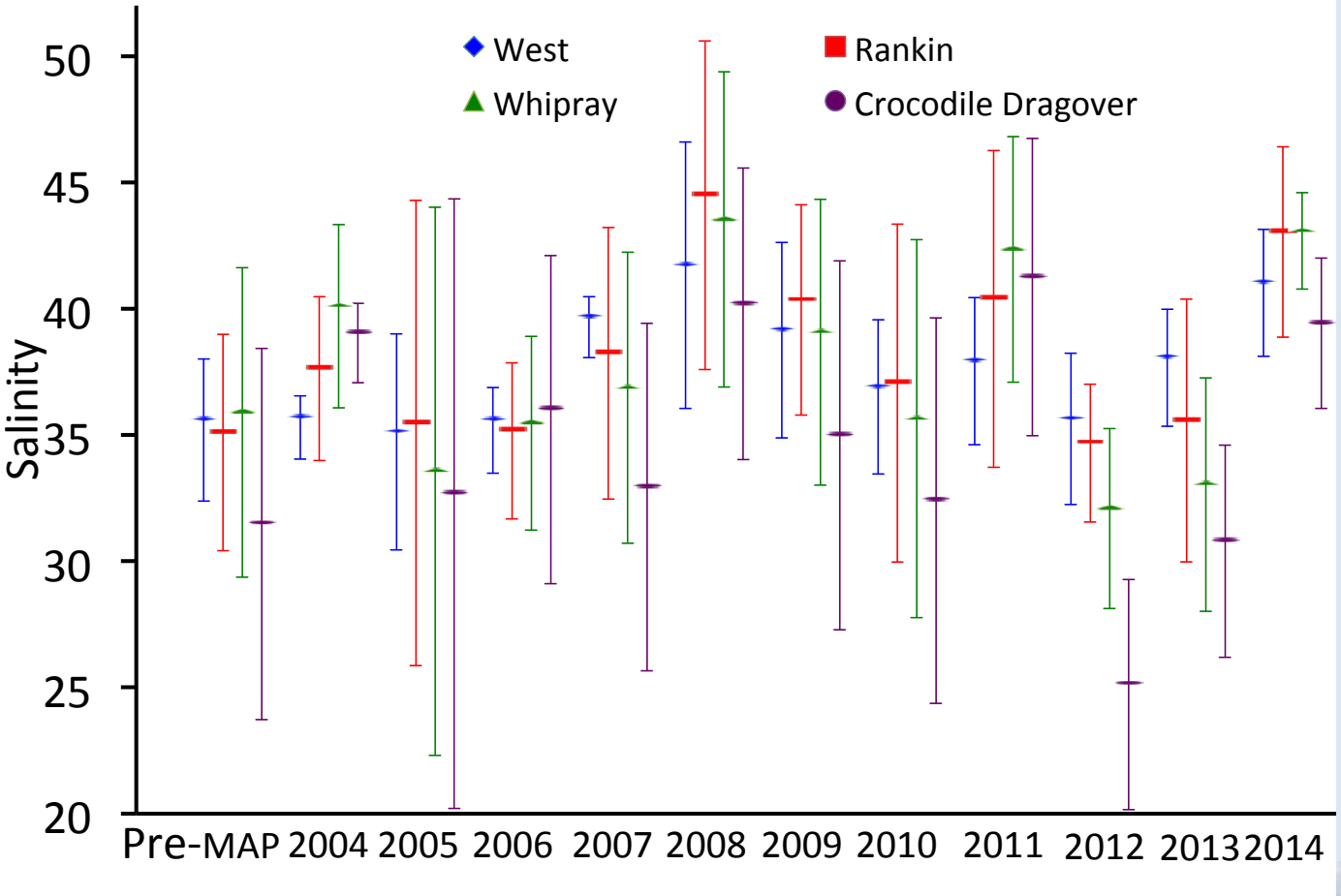
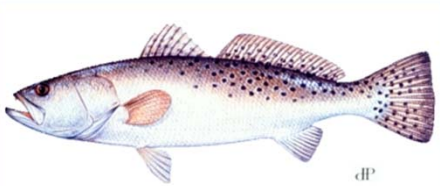
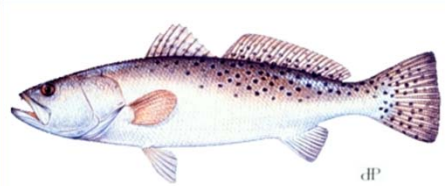


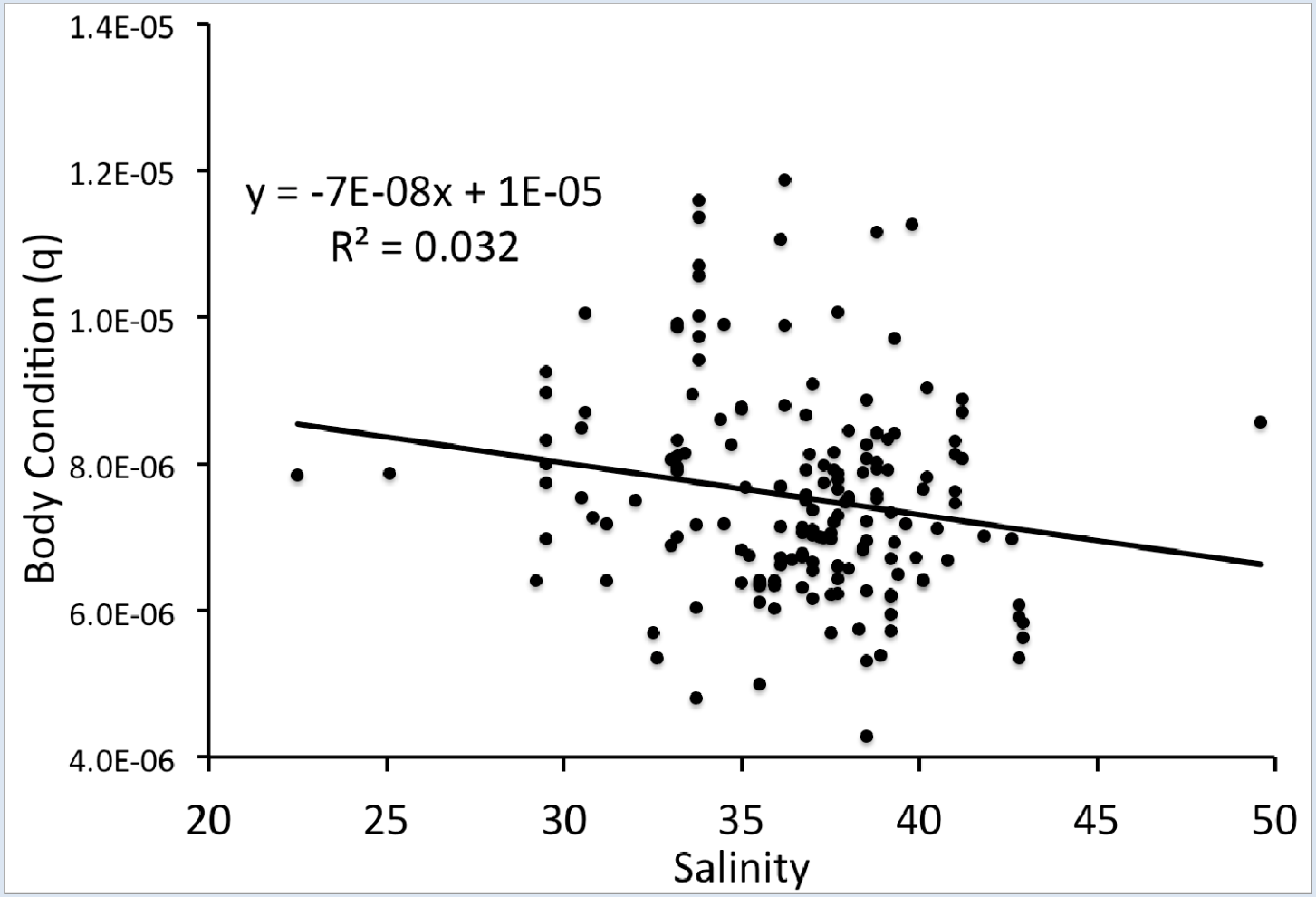


- Salinity in 2014 was significantly higher than every other year except 2008 (and in Whipray 2011) in every sub region of Florida Bay.
- Only two juvenile spotted seatrout (size 20 – 200mm) were collected in 2014.



Body Condition

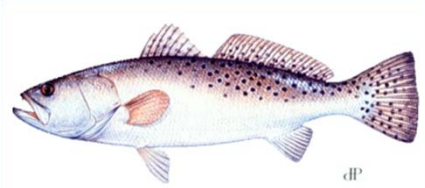




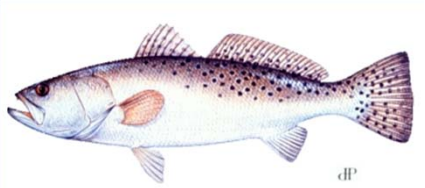
Laboratory studies (Wuenschel et al. 2004)

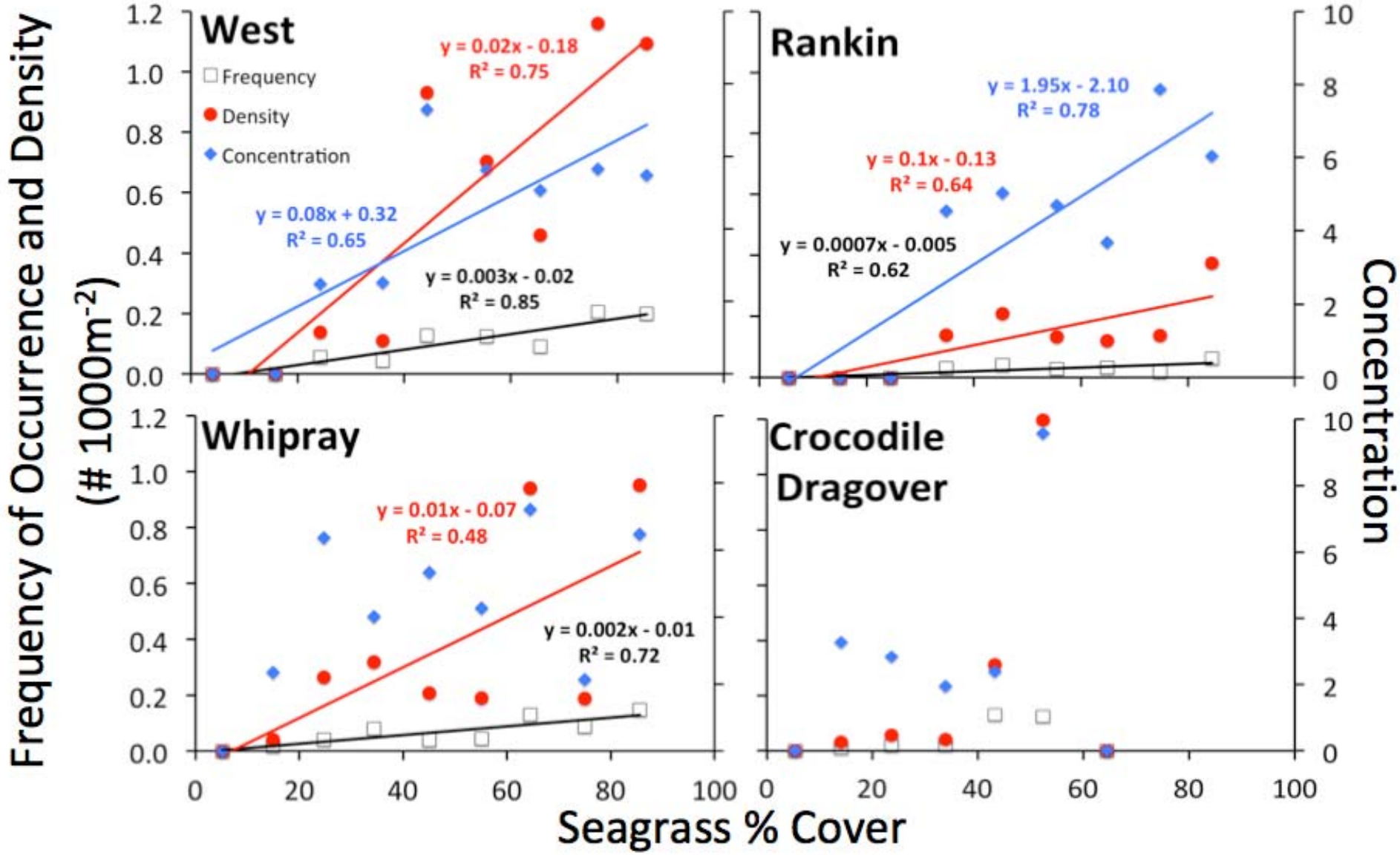
Spotted Seatrout larvae have increased mortality at salinities <5 or >50.

Respiration rates decrease at salinities >40 and temperatures ≥30°C

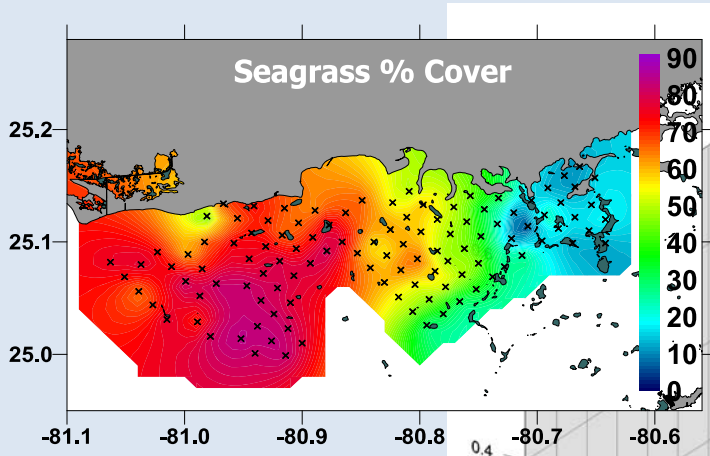


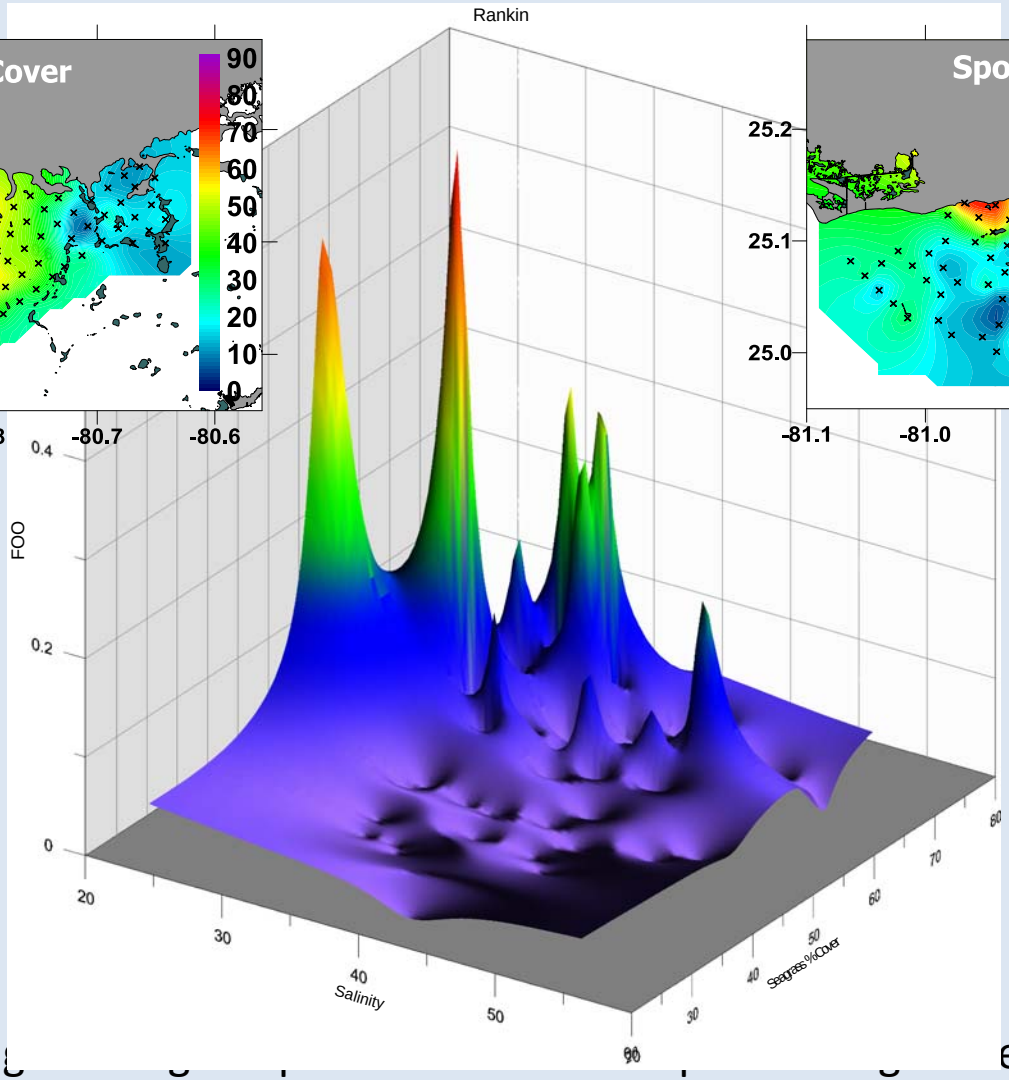
Seagrass Relationship

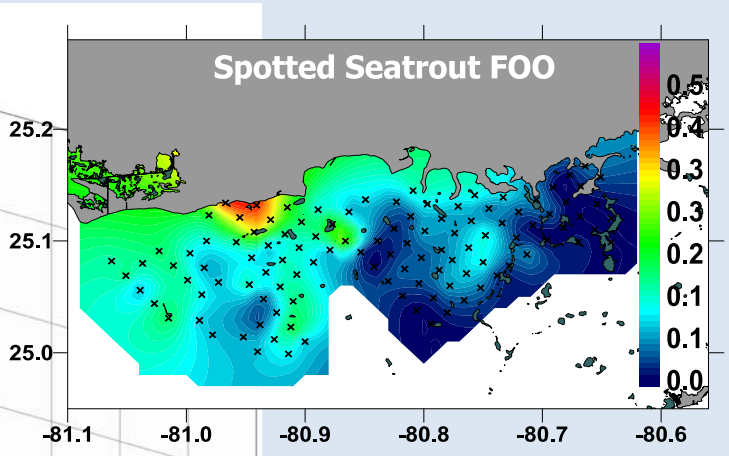




Seagrass Relationship





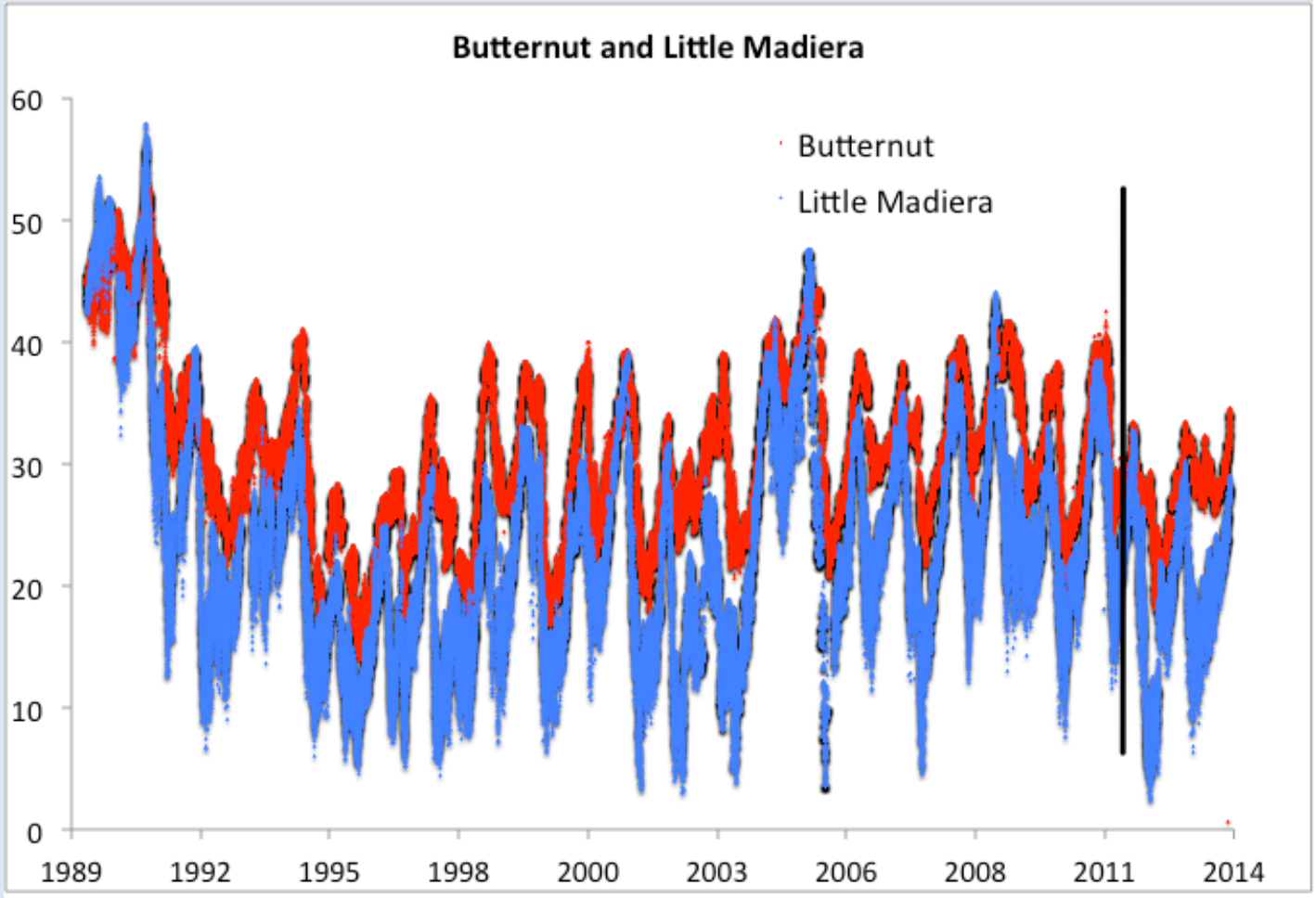


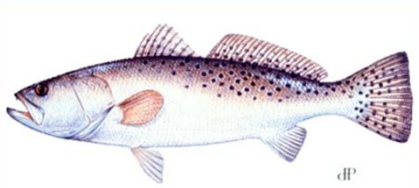
Lower salinities and hig eatrout Frequency of Occurrence.

Assessing Impacts

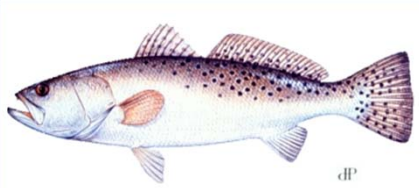
Little Madiera salinity lower by 1.50 to 1.76

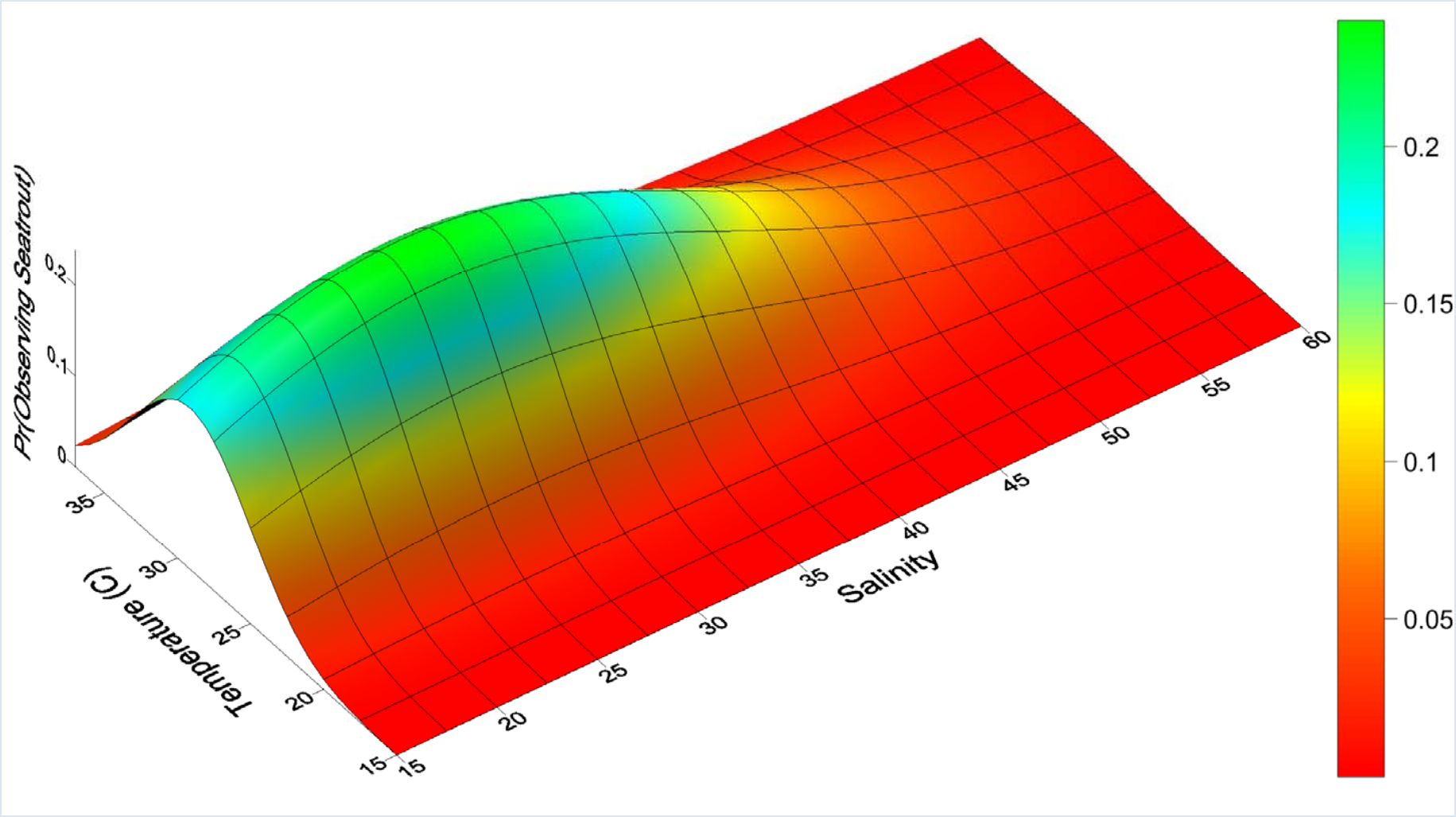
Preliminary analysis showed no significant difference in juvenile spotted seatrout

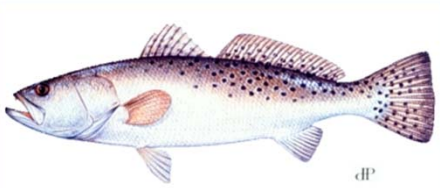




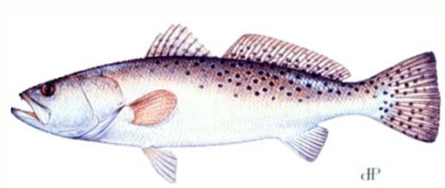
Sportfish Models

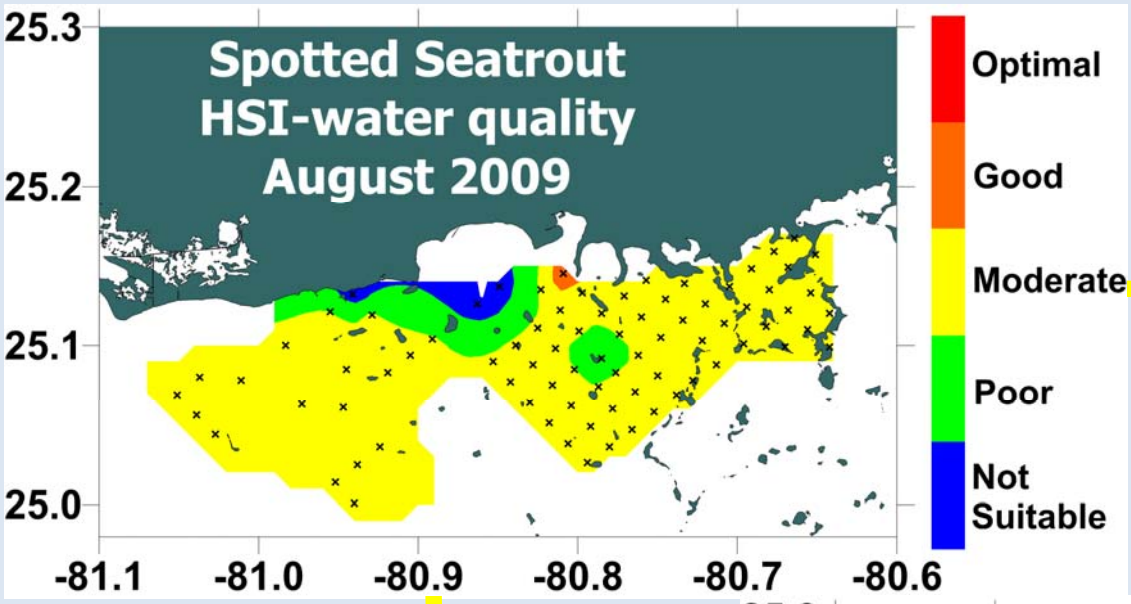


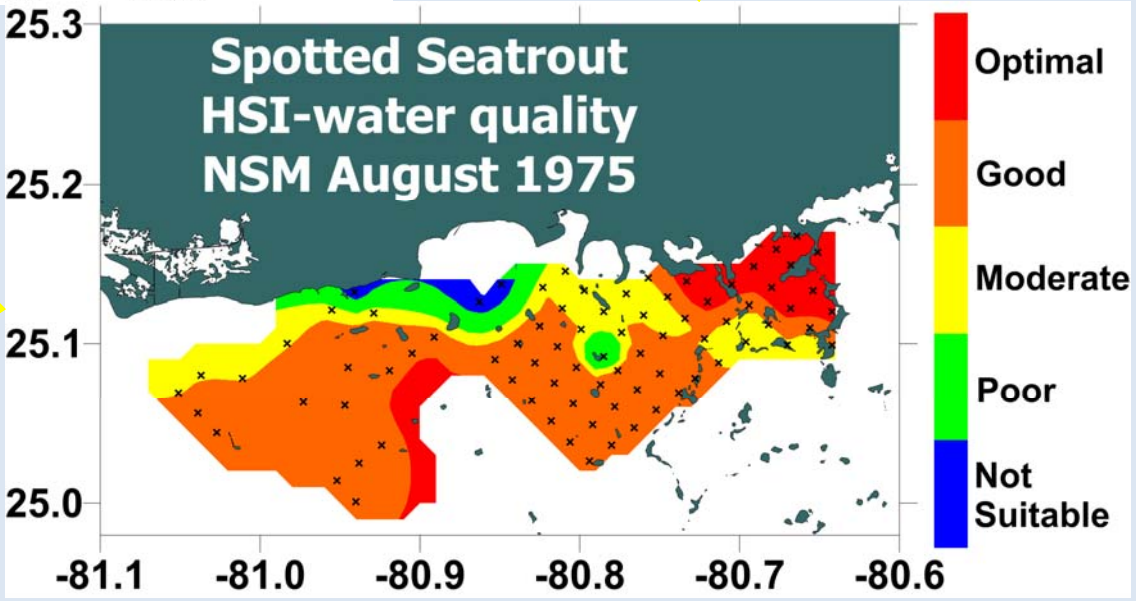


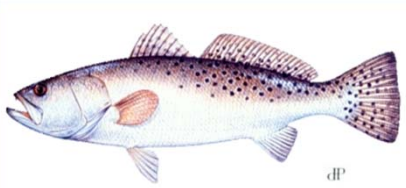


RESTORATION!!!!!

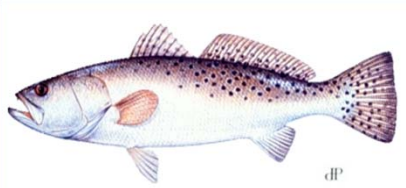


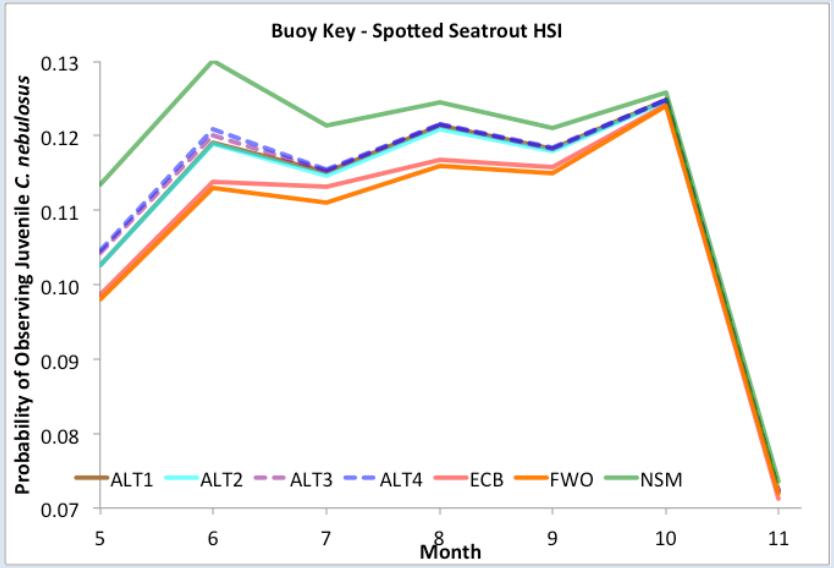


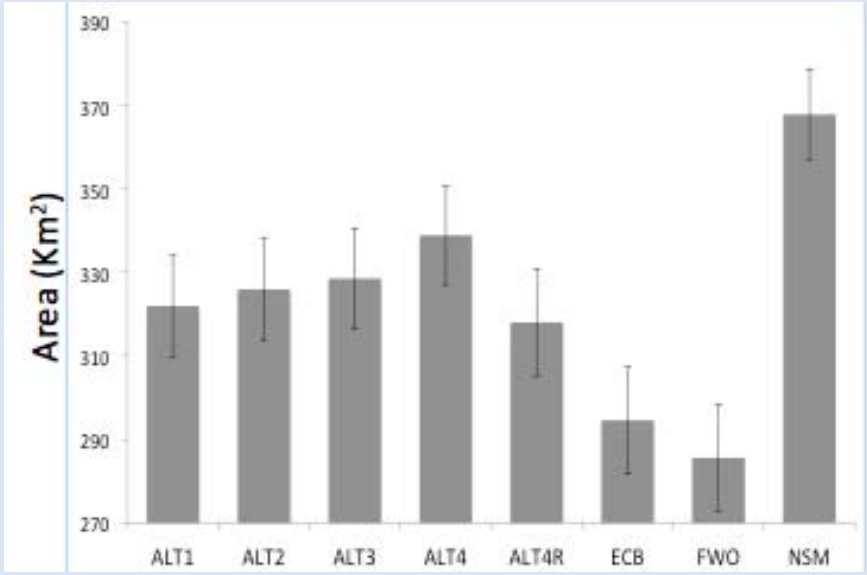


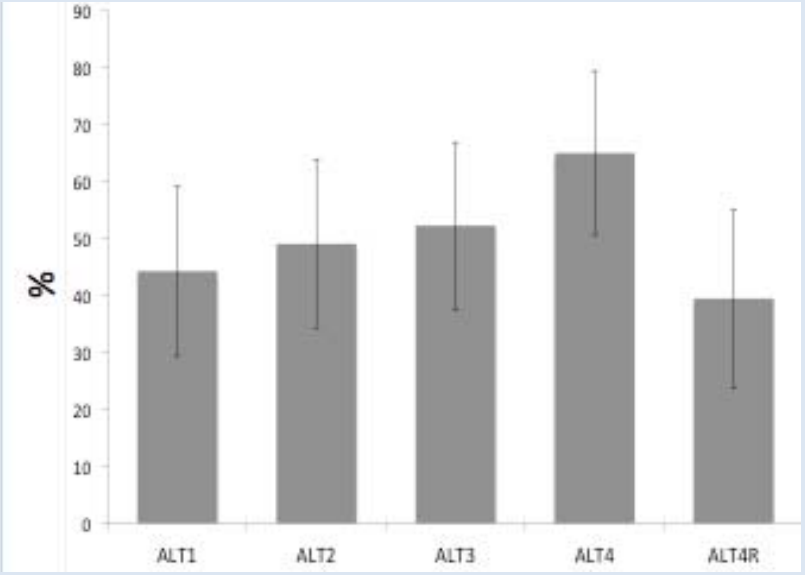


CEPP Evaluation





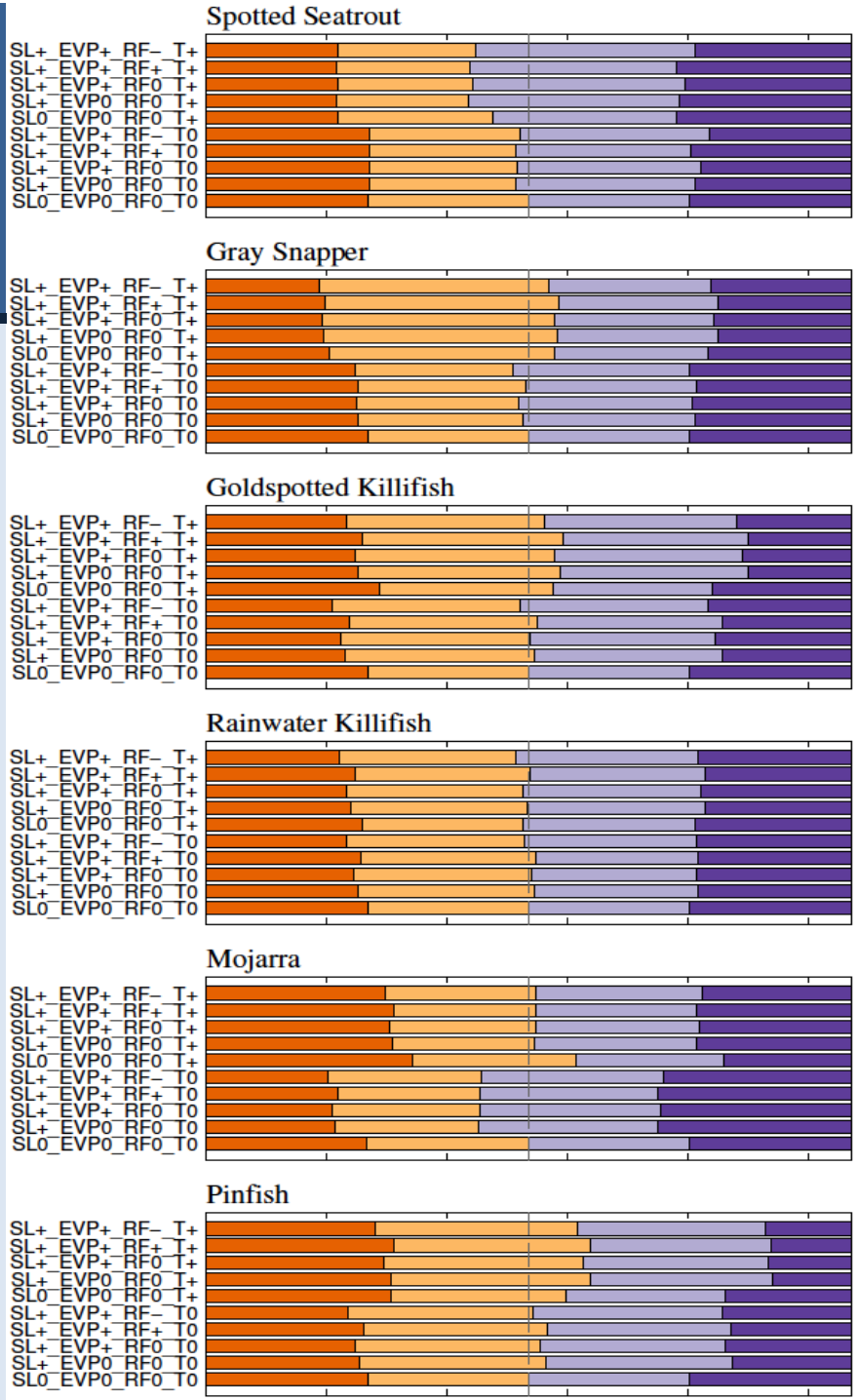


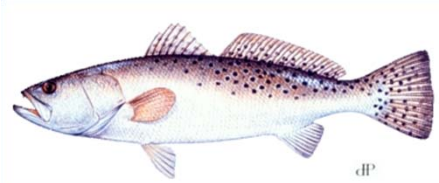


Climate Change Predictions

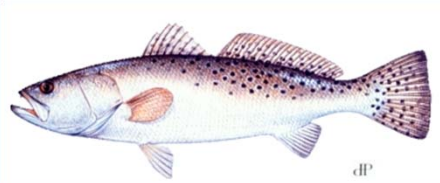
More purple = habitat improves with climate change

More Orange = habitat declines with climate change

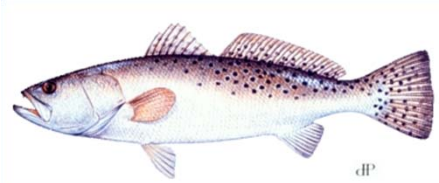




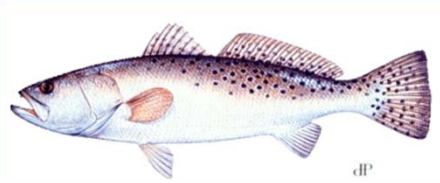
Next Steps



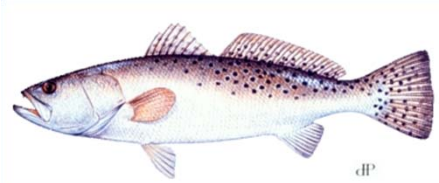
- Develop and get Performance Measure adopted by CERP in 2015
- Determine the full impacts of C-111 via BACIP
- Investigate interactive impact of climate change and CERP given 30yr time horizon
- Incorporate anticipated changes in seagrass distributions and water quality



Conclusion



- Results support both hypotheses related to juvenile sportfish and laboratory experiments on juvenile spotted seatrout
- Already being used to both assess CERP impacts and evaluate the effects of the next increment of CERP
  - It was also key to the ecosystem services valuation study conducted for CEPP
- Models have proven effective, but show confounding results that need to be rectified by more advanced ecosystem model(s)



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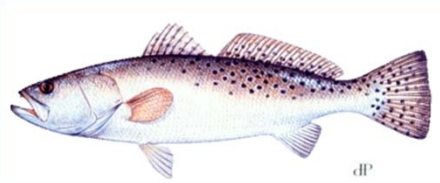
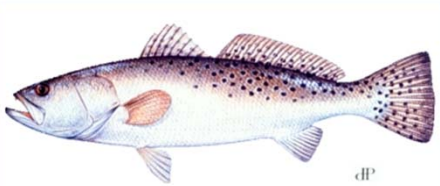
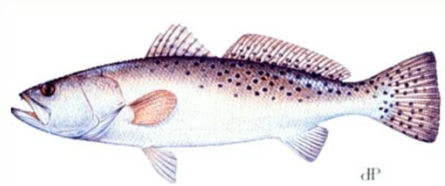


- Understand Adult distributional changes
  - Creel Data
  - Passive Acoustics
- Better understand Predator-Prey Relationships
- Build a ecosystem model for Florida Bay to look at unintended consequences and predator prey relationships



Acknowledgements



- Statistical & Modeling Assistance
  - Kelly Kearney, Lindsey Visser, Patrick Pitts, Betty Huss, Allyn Powell, Don Deis, Frank Marshall
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- Lab Assistance
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