Expansion & reduction of estuarine fish species in a changing subtropical estuary

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BACKGROUND: Ongoing changes in habitats, climate, & water quality in the Indian River Lagoon (IRL) have influenced abundance & distribution of fishes.

METHODS

- Collected Sea Bream & Sheepshead from the IRL during FIM sampling with 183-m seines

- Recorded water parameters & habitat metrics at each sample site
- Relative abundances & hot spot analysis of catch per unit effort (CPUE) used to determine changes in population size & spatial extent over time

RESULTS

- Significant increase of Sea Bream with a northward expansion in recent years. (Fig. 1 & 2)
- Decrease in Sheepshead – lowest abundance on record in 2019. (Fig. 1)
- Mean temperature increased 0.9°C in Northern Indian River Lagoon
- Mean annual salinity increased 6.1ppt in Northern Indian River Lagoon
- Seagrass area decreased & relative dominance of *Caulerpa* increased (Fig. 3) – variation in Sea Bream abundance linked to seagrass:Caulerpa
- Recently documented hybridization may be influencing Sheepshead populations
- Further work needed to quantify potential trophic competition between congeners

Sea Bream populations in the IRL are increasing & expanding northward. Sheepshead populations are decreasing…

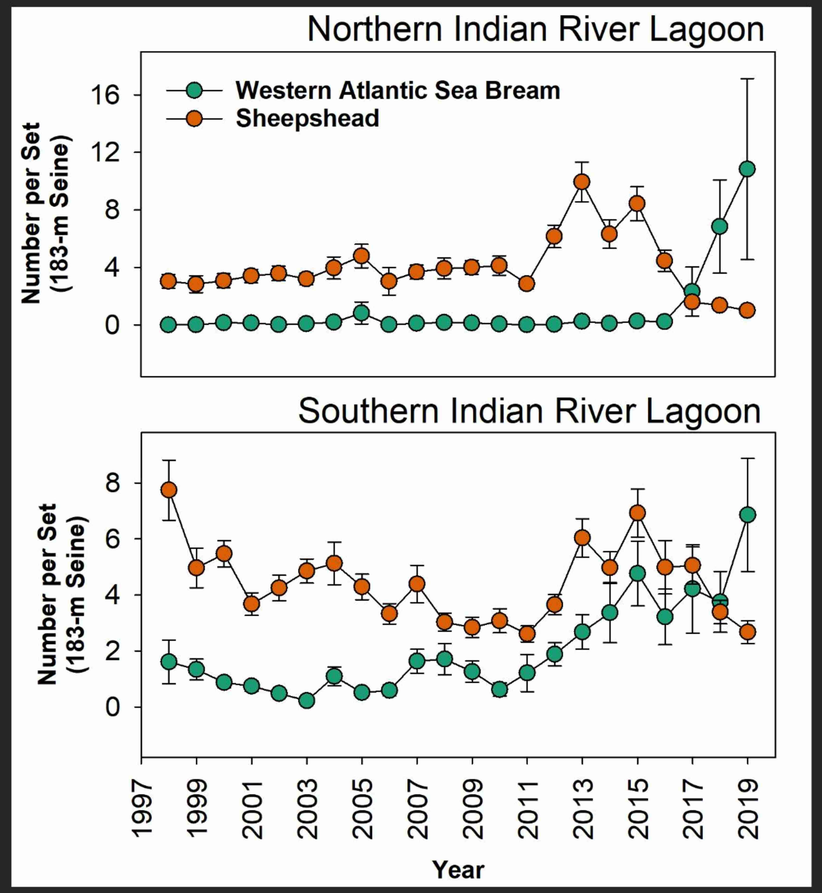
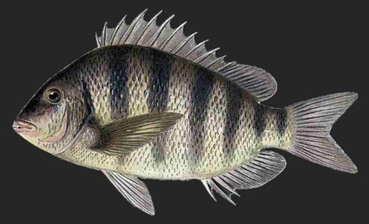


Fig. 1: Relative abundance of Sea Bream and Sheepshead in the **I**ndian **R**iver **L**agoon

Take a picture to **download** a Paper outlining recently discovered hybridization of these species in the IRL.



Sheepshead
(*Archosargus probatocephalus*)

Western Atlantic Sea Bream
(*Archosargus rhomboidalis*)

Sea Bream are expanding northward in the IRL…

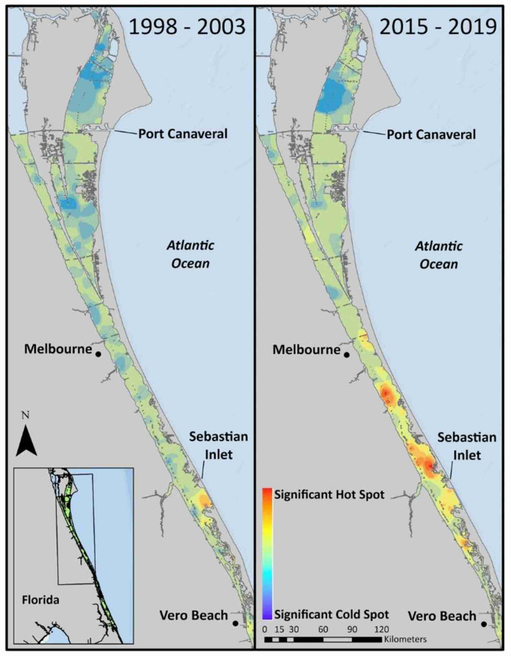


Fig. 2: Hot spot analysis illustrating areas of statistically high & low (Z-scores) Sea Bream CPUE

Seagrass:*Caulerpa* ratios have decreased over time…

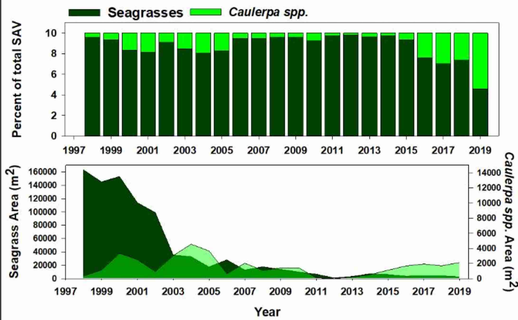


Fig. 3: Total area and relative dominance of **S**ubmerged **A**quatic **V**egetative species at sample sites

Florida Fish & Wildlife Conservation Commission
Fish & Wildlife Research Institute
Fisheries-Independent Monitoring program (FIM)