

# Assessing Salinity Variability and the Abundance of Fishes Along the Mangrove Shorelines of Biscayne Bay

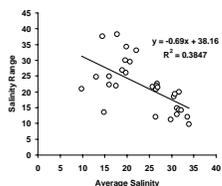
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Abundance Metrics Across Years  
by Segment

## Objectives

Ten years of visual census data collected along the mainland shorelines of Biscayne Bay was used to develop a salinity variability index. The shoreline was divided into 31 segments and an index of wet season salinity variability (salinity range across years) was developed for each of the segments. Wet season samples were sorted by latitude (across years) and a 21-sample "running range" of the salinity was calculated (10 samples before and 10 samples after). Each sample was assigned a range index value of low (<20 psu), medium (20-29 psu), and high (>30 psu) variability and samples were grouped into variability segments of approximately 20 samples based on the similarity of their index values. Dry season samples were assigned the same segments as the wet season.

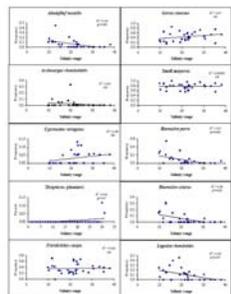


Average salinity vs salinity range

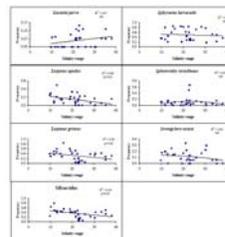
## Abundance Metrics

The average catch of the 17 most abundant species were calculated for each segment. We followed a data analysis procedure known as the Delta Approach. Three abundance metrics, frequency of occurrence, concentration (density when present, exclusive of zeros) and "delta-density" (occurrence x concentration) were calculated for each segment of shoreline. Wet season mainland shoreline abundance metrics were plotted against the wet season salinity variability index. A trend line (linear or parabolic) was assessed for each metric. Standard regression techniques were used to explore patterns in these abundance metrics along a salinity variability gradient.

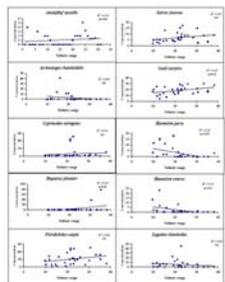
## Wet Season Density Metrics by Salinity Range



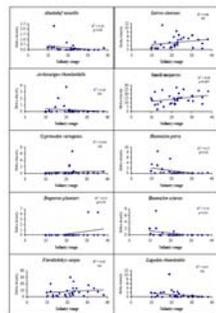
Frequency of occurrence



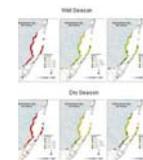
Concentration (density of positive catches)



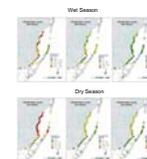
Delta density (occurrence x concentration)



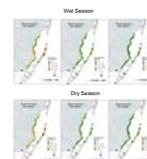
*Eucinostomus* spp.



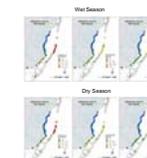
*Floridichthys carpio*



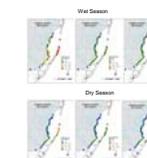
*Gerres cinereus*



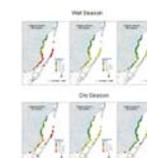
*Haemulon sciurus*



*Lutjanus apodus*



*Lutjanus griseus*



*Sphyræna barracuda*

