Effect of Freshwater Inflow on Mobile Epifauna in Rincon Bayou, TX

Andres Gonzalez

Dr. Paul Montagna

About Me

- Born and raised in Phoenix, Arizona
- Major in Environmental Science
- St. Mary's University, San Antonio ,TX
- Senior, Graduating May 2016
- Interested in Sustainable Urban Development
- Looking for a job, and applying to graduate school.

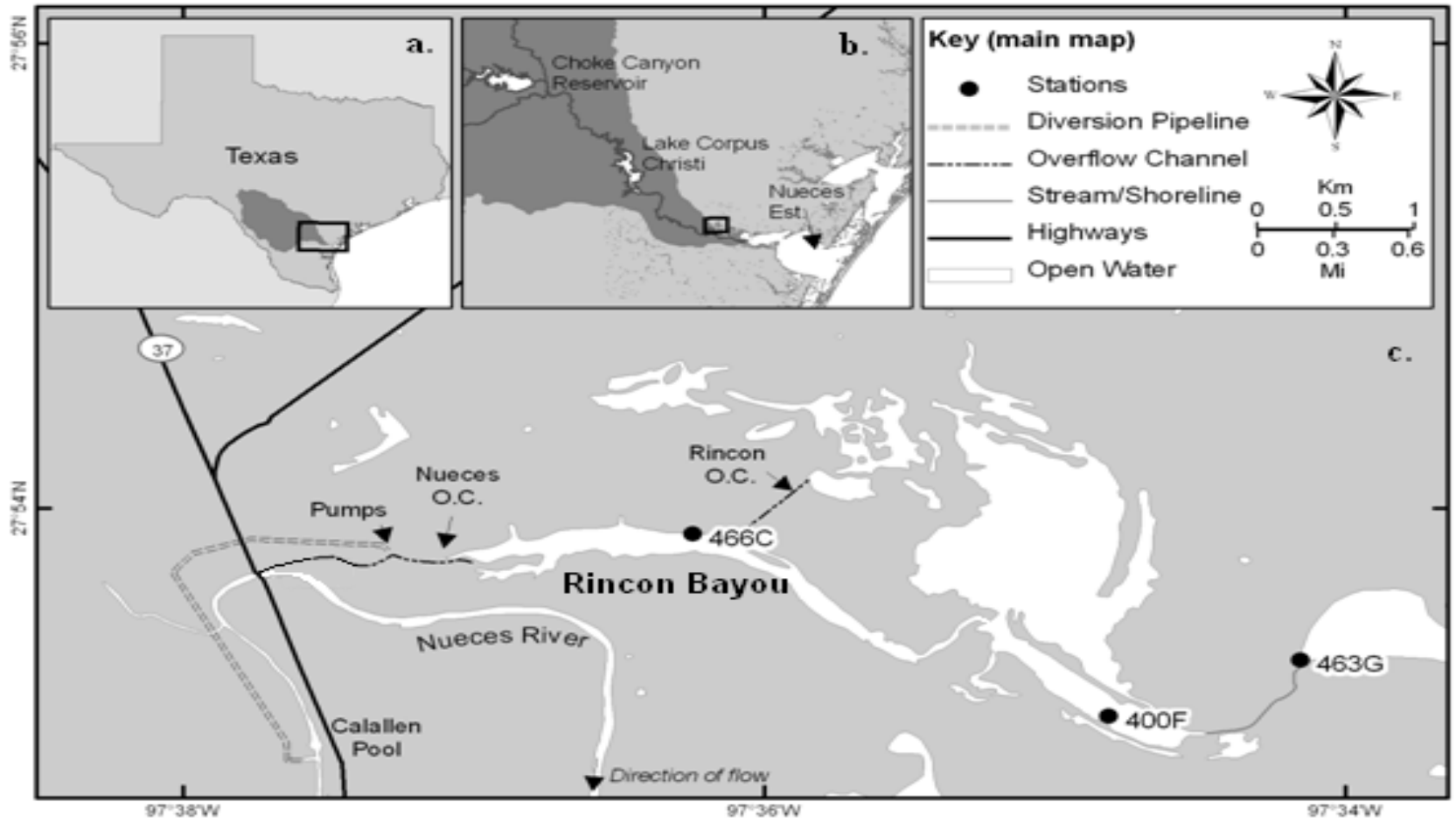
ST. MARY'S UNIVERSITY

Dr. Paul Montagna

Endowed Chair for Ecosystem Studies and Modeling

- Works to understand how freshwater inflow is affecting estuary ecosystems and organisms
- Member of many organizations, including the Texas Environmental Flows Science Advisory Committee
- Participated in more than 250 technical reports and publications.

Rincon Bayou, Near Corpus Christi, Texas



- Reduced freshwater inflow altered salinity and water quality of Rincon Bayou and Nueces Bay
- Hydrological restoration was performed to enhance flows to Rincon Bayou and the marsh

Field Work

- Seine net samples
- Push net samples
- Epibenthic zone
- Near edge of marsh

Lab Work

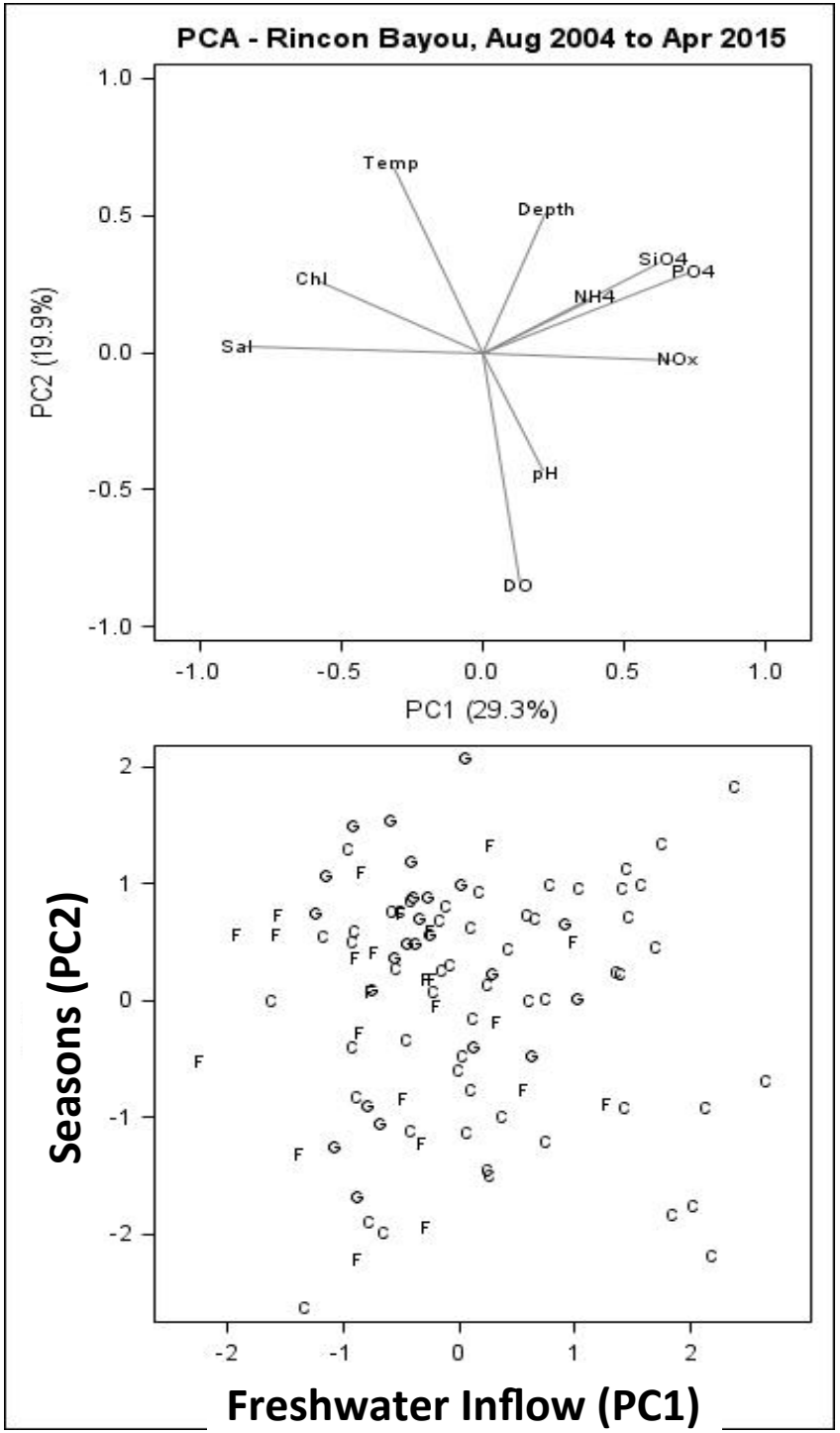
- Samples collected every two weeks
- Quantitative data
- Counts number of organisms per sample
- Identify species of each organism

- Organize samples

- Separate by species

- Placed in ethanol solution for archiving

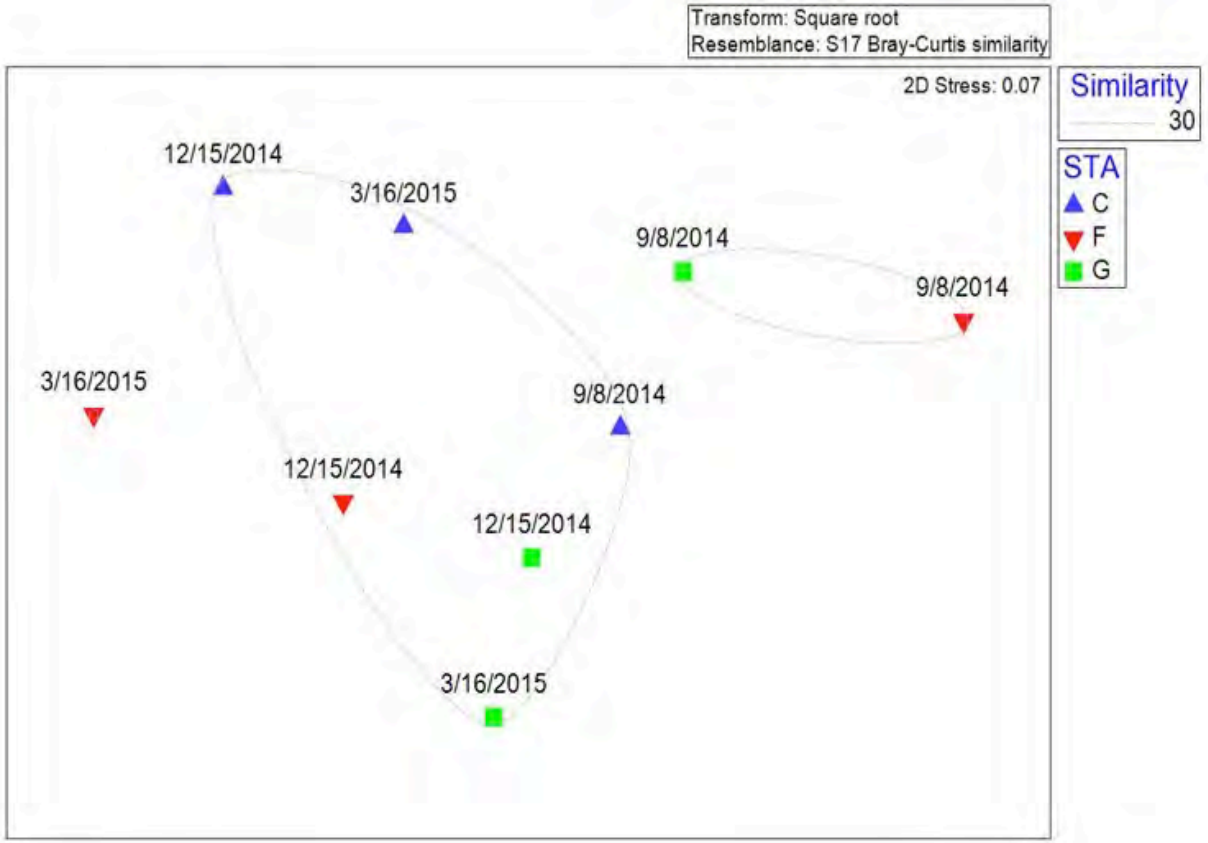
- Placed back into jars for future reference



Principal Component Analysis (PCA)

- PCA displays relationship among water quality variables
- Inverse relationship between salinity and nutrients on PC1 represents inflow effects
- Inverse relationship between Temperature and Dissolved Oxygen on PC2 represents seasonal effects
- Station C, closest to source more affected by inflow that F and G

Community Structure by MDS



- Non-metric Multidimensional Scaling (MDS) plot of sample similarity
- Circles indicate similarity of at least 30%
- Seasonality is driving community structure more than stations

Conclusions

- When water temperature is low, the dissolved oxygen is higher, which correlates to higher species abundance.
- Seasonality affects the amount of freshwater inflow, which in turn changes the amount and types of organisms present.
- Further study needed on biomass and size of organisms in samples.

Metadata

- Catch types
  - Seine vs. Push net
- Sample dates
  - From April 2010 to July 2015
- Sampling sites
  - Site C, F, and G
- Sonde

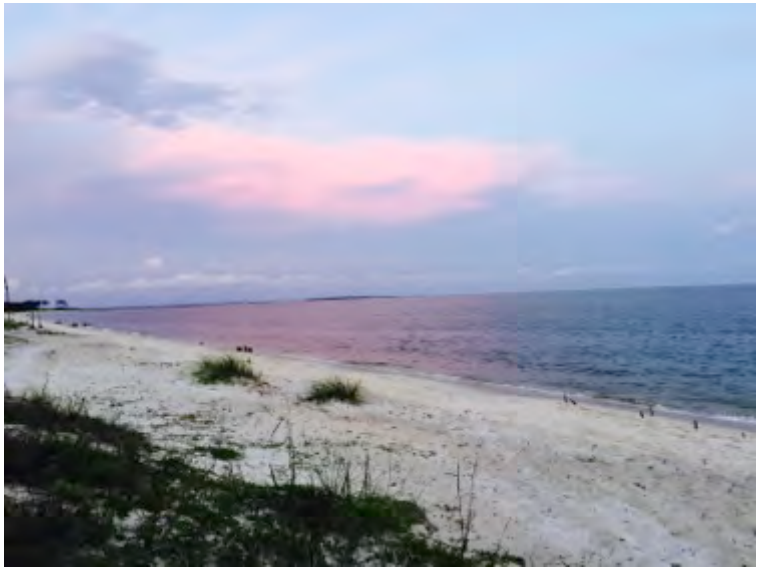
Things I Learned

- Marine ecology has a direct impact on human health and local economy.
- Minimum freshwater inflow standards should be in place for more estuaries.
- How to work in a professional lab environment, many different backgrounds.
- Workplace accountability
- Advice for Grad School, employment, life

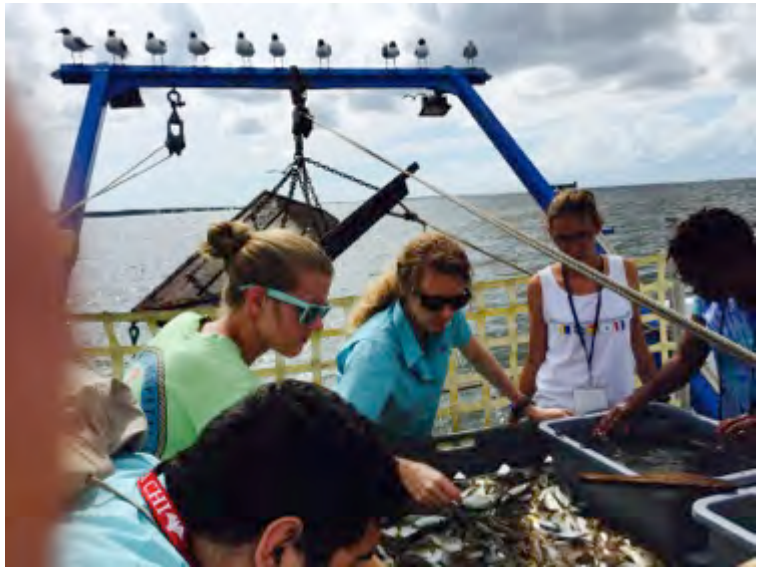
Challenges

- All data and the analysis in this presentation is preliminary
- Joined project at the beginning
  - Built the project and methods while gathering data
  - Bi-weekly lab project meetings yielded more questions and issues
- Field work can be dangerous and lead to accidents

NOAA NGI Internship Program



- Memories
- Life lessons
- Appreciation
- NOAA career
- Open doors



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