COMPARING INFAUNA AMONG DIFFERENT SUBMERGED AND FLOATING PLANT SPECIES

By: Jose Velasquez

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

THE WATER INSTITUTE OF THE GULF™

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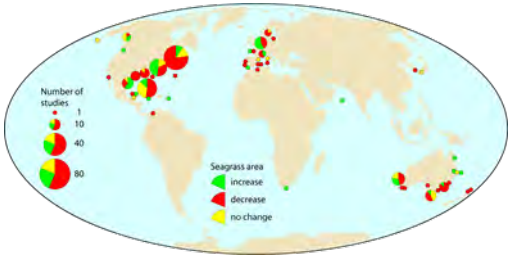
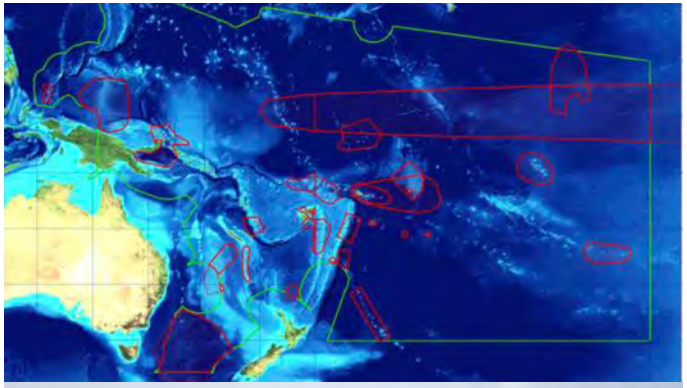
WHO IS JOSE VELASQUEZ?

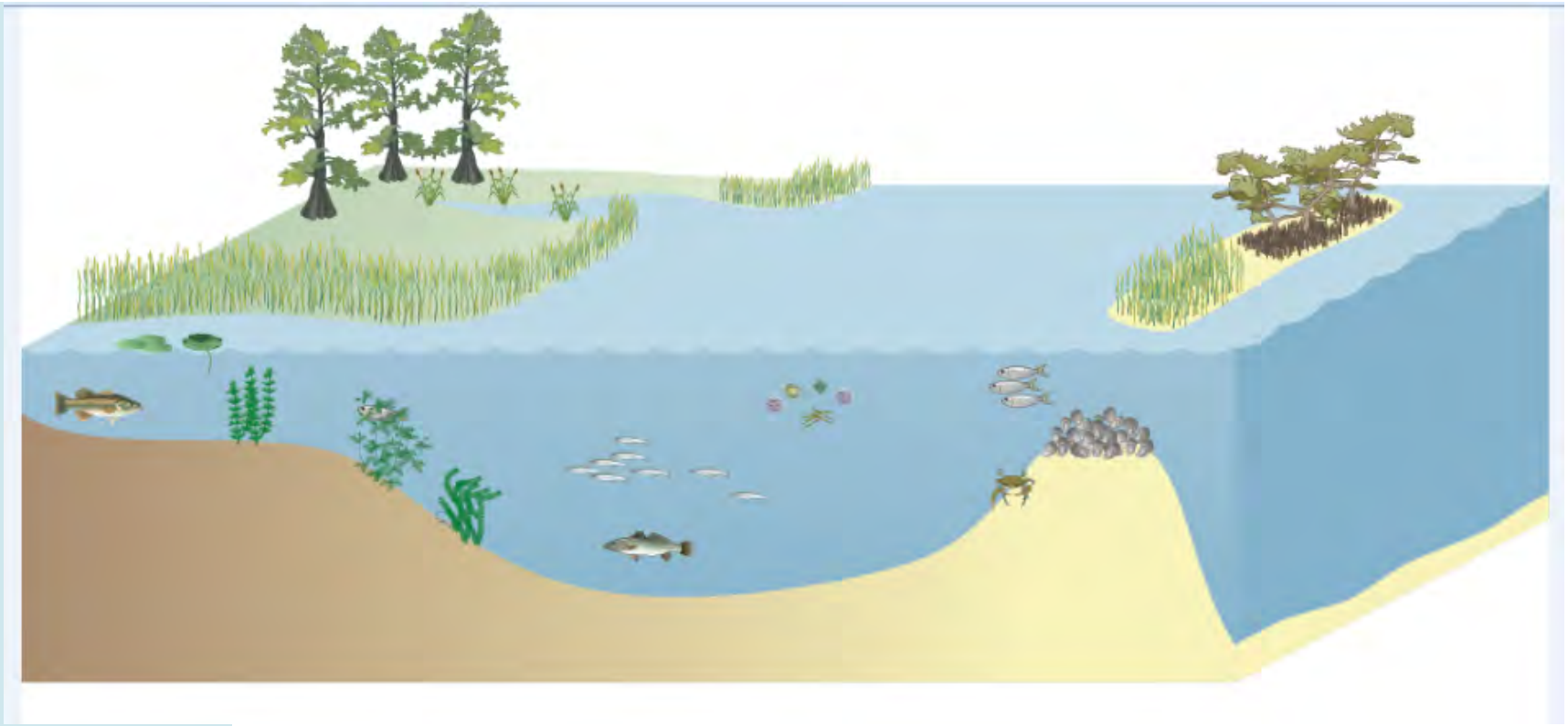
- 20 years old, originally from El Salvador, moved to Tampa, FL in 2002
- I'm studying Chemical Engineering at (USF) University of South Florida
- I love the environment and hope to one day work in saving/ conserving it

MY AWESOME MENTOR TIM CARRUTHERS

- Studied at the University of Western Australia, initially studying seagrass ecophysiology in coastal and estuarine ecosystem
- Worked at University of Maryland (UMCES) Seagrass ecophysiology, ecosystem processes and global/ regional trends
- Spent the past three years in the Pacific islands supporting countries with coastal management
- Currently Director of Coastal Ecology at the Water Institute of the Gulf







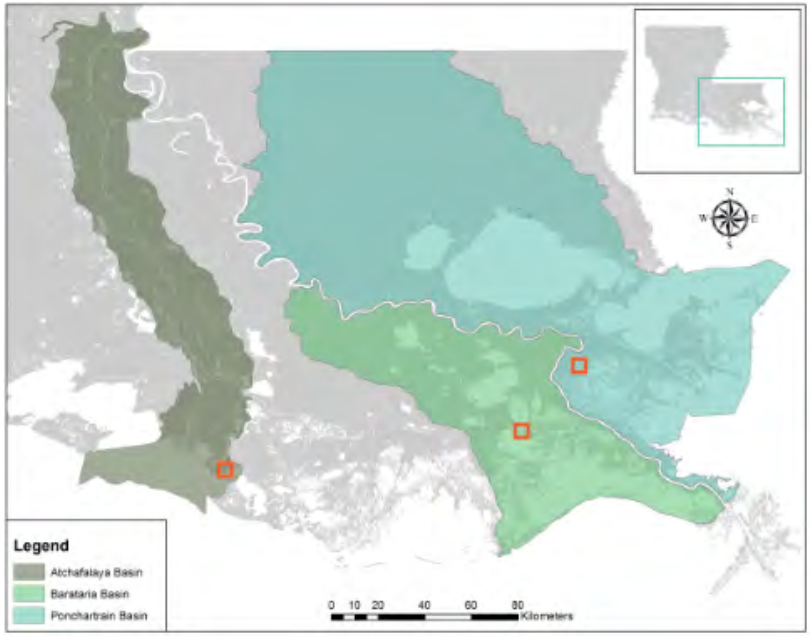
THE BASIS OF MY EXPERIMENT IS A SMALLER PART OF THE BIGGER PICTURE: EXAMINING THE EFFECT OF PLANT COMPLEXITY ON NEKTON ABUNDANCE

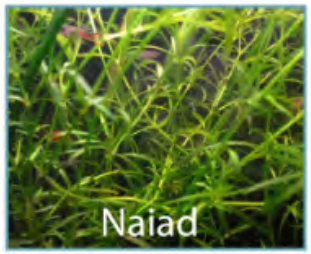
COMPARING THE EXPERIMENT

Title	Authors	Plant Species	Methods	Location	Results
Habitat Complexity and Invertebrate Species Richness and Abundance in Tropical Seagrass Meadows	Kenneth L. Heck JR and Gregory S. Westone	*Thalassia testudinum, Halimeda opuntia, Penicillus pyriformis, Syringodium filiforme, Cladophora fascicularia, Halimeda incrassate, Udotea flabellum.*	they will take samples of different sites, and will determine the net weight in grams of plant species, and abundance of invertebrae species collected	along the Caribbean coast of the Republic of Panama	diversity of plants has a weak to high species number and abundance of certain species yet the aboveground plant biomass was correlated with high invertebrate species number and abundance.
Habitat preferences of macro invertebrate fauna among sea grasses with varying structural forms	A. Gartner, F. Tuya, P.S. Lavery, K. McMahon	*Amphibolis griffithii, Posidonia sinuosa, Cymodocea nodosa*	The team gathered data from different sites, in which they measured the density of what was in certain areas that contained certain species.	Marmion Marine Park in Western Australia located within a semi-enclosed coastal lagoon. And Arinaga Canary Island	Amphibolis griffithii density of fauna colonizing was not so different than that of the controlled Artificial seagrass unit, other was far greater fauna
The influence of Quantitative and Qualitative Aspects of Habitat Complexity in Tropical Sea Grass Meadows	Hiromi Taniguchi, Shigeru Nakano and Mutsunori Tokeshi	natural macrophytes *Ranunculus* and *Sparganium* and two artificial macrophytes one complex and one simple	They measured the amount of invertebrates found in the areas with certain plants.	Baja California, Mexico	natural macrophytes did not seem to have much different results artificial macrophytes were a very different with the complex having much more invertebrates
Influences of habitat complexity on the diversity and abundance of epiphytic invertebrates on plants	Jason Toft, Charles Simenstad, Jeffery Cordell, and Lenny Grimaldo	*Eichhornia crassipes, Hydrocotyle umbellata*	found the amount of invertabrae around each type of aquatic life which differs due to Eichhornia crassipes being an intrusive species	San Joaquin Delta, California	There was more variety of species found in the area around the intrusive species

METHODS:BACKGROUND

- Samples were taken at 3 locations with varying salinity
- Samples were taken from areas dominated by different aquatic plants and bare sediment
- My experiment was to identify and quantify infauna
  - Infauna are food for nekton





METHODS: FIELD WORK

- Three replicate samples were collected from each treatment, at each location.
- 5 cm diameter by 10 cm depth

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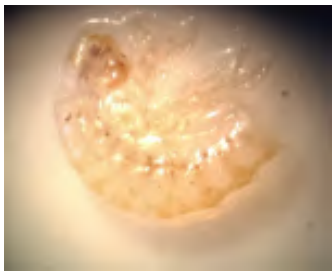
- 5 cm diameter by 10 cm depth
- Also If you cant tell that is an alligator.

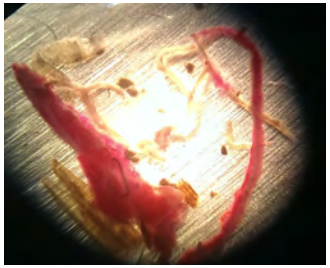
METHODS: LAB WORK

- Samples were washed over 0.8 mm sieve
- Samples were stained with Rose Bengal stain for at least 48 hours
- After the two day staining process I would then separate organisms from the rest of sample



Before staining

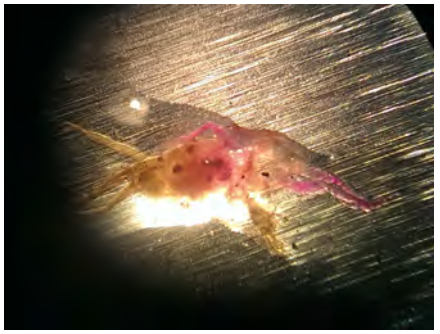
One day



Two days

METHODS: IDENTIFYING

- Infauna were identified to the lowest possible taxonomic level [use samples]
- Resources used included journal, books, and web based taxonomic keys.

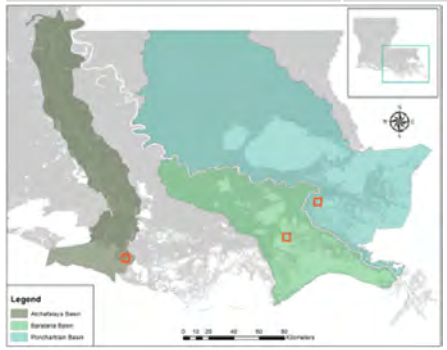


Identified as a Gammaridea a sub-order of the Amphipoda order

Identified to the species of *Neritina usnea* of the Gastropoda class

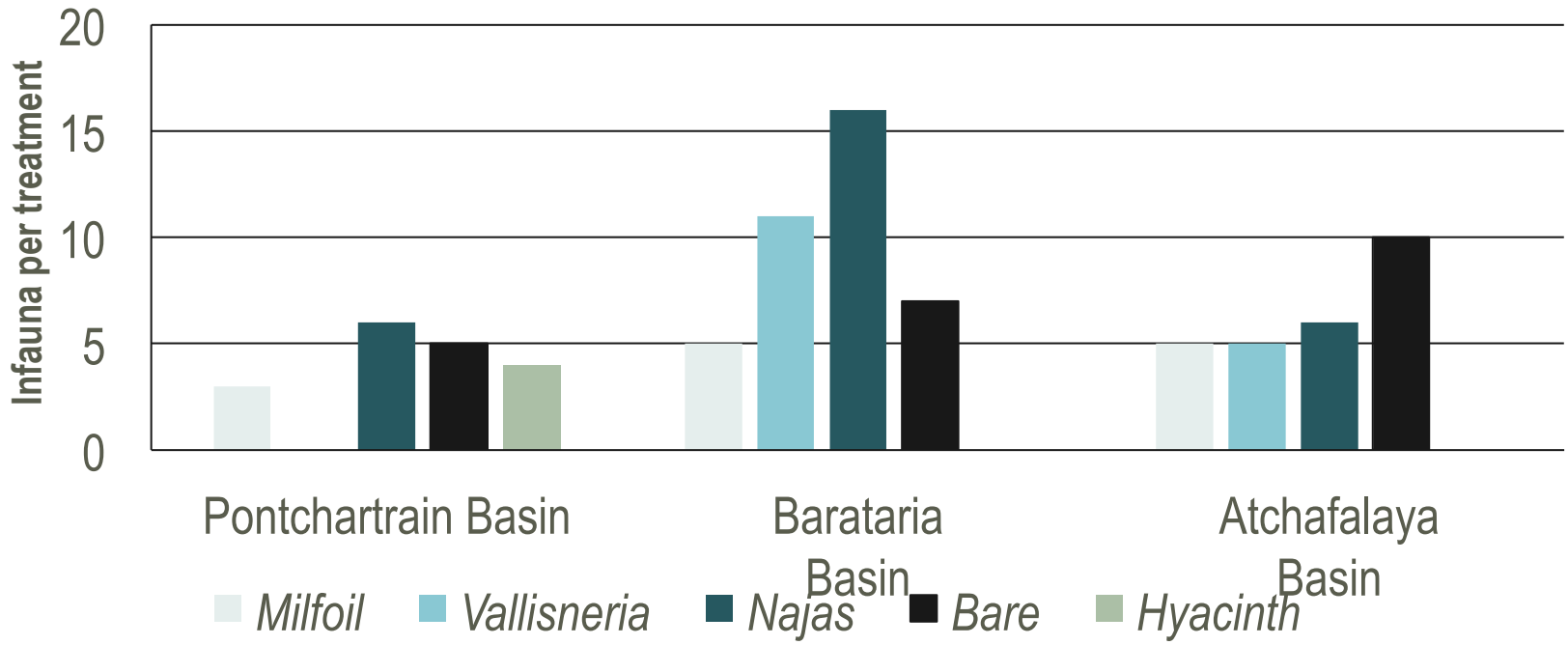
RESULTS: THE COMPOSITION OF THE TESTED AREAS

Area	Salinity (ppt)	Water Temperature (C○)	Dissolved Oxygen (DO) (mg/L)	Average Water Depth (cm)
Atchafalaya Basin (AB)	0.13	26.3	10.62	57
Barataria Basin (BB)	0.45	29.1	7.53	44
Pontchartrain Basin (PB)	0.66	27.5	7.15	39



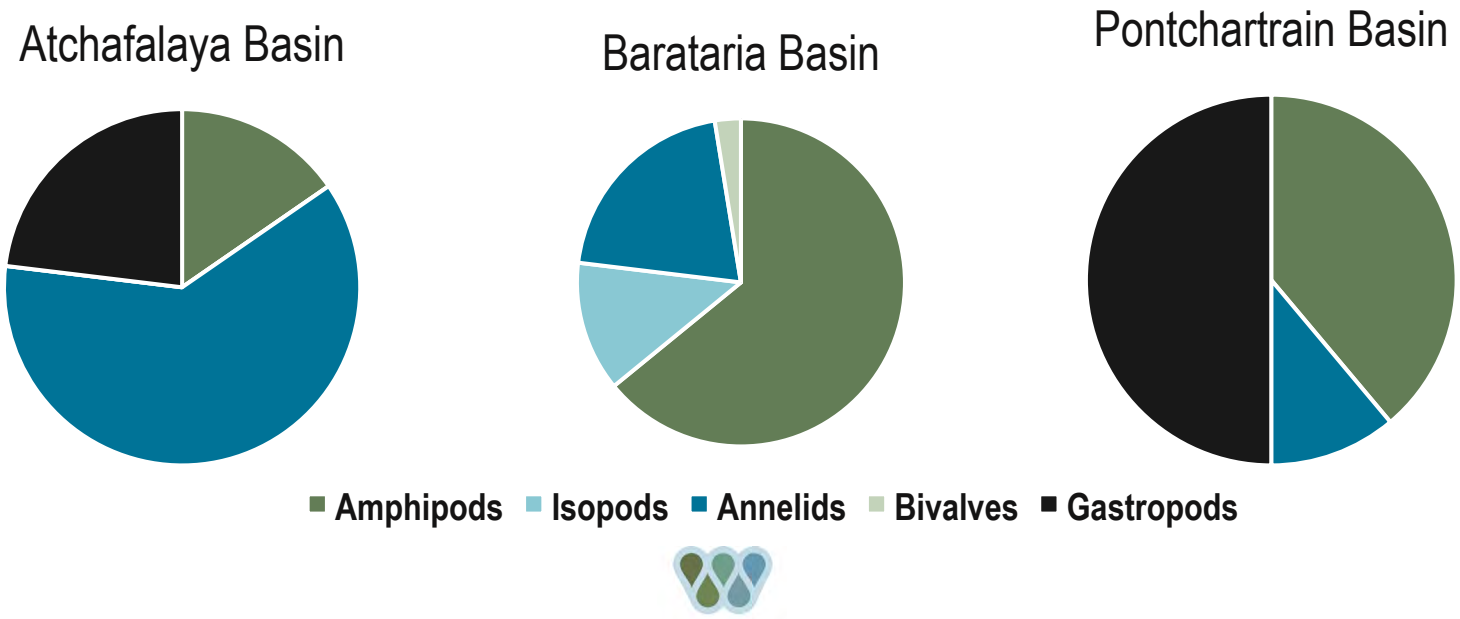
RESULTS: NUMBER OF INFAUNA

- *Najas* had the most infauna overall
- Barataria had the most infauna
- Bare samples had similar number of infauna to the plant species



RESULTS: TYPES OF ORGANISMS

- Gastropods were not found in Barataria
- Bivalves and Isopods were only found in Barataria
- The dominant type of infauna was different in each location



CONCLUSION

- Barataria Basin had the highest infaunal diversity, and the most infauna.
  - Potential drivers of the pattern could be the differences in sediment and detritus.
- No clear trend on the effect of plant species on infauna diversity or abundance
- The similar abundance of infauna in bare sediment to vegetated treatments was surprising, but may be explained by the large amount of detritus in the sediment

WHAT I LEARNED

Challenges

- The material, I have not taken a class doing with any of this
- Working in a team, I'm not use to working in a team
- The field work, it was very tiresome and exhausting

Solution

- Reading, I really learned a lot reading many books/ websites
- Becoming more communicative and by being more aware of others
- Drink a lot of water stay hydrated, and enjoy the shade whenever possible.

VALUE OF NOAA/NGI INTERNSHIP

- This internship has been amazing opportunity and learning experience for me. I learned how important it is for there to be organizations such as the Water Institute of the Gulf to be present, and the importance organizations such as NOAA being able to fund projects by these organizations so we can stand a chance to better understand our environment. Also the people at the Northern Gulf Institute for caring for this specific area which our whole country depends on.
- One word to describe this internship's value: PRICELESS

ACKNOWLEDGEMENTS

- My mentor: Tim Carruthers
- My co-mentor: Kelly Darnell
- Leland Moss
- Melissa Baustian
- Tina Miller-Way
- Shila Daswani
- The Northern Gulf Institute
- NOAA
- Caitlin Pinsonat & Shannon Matzke for putting up with me in the lab

LASTLY I WANT TO ALSO THANK POOR BOY LLOYD'S

- My advice to any of you is to go to Poor Boy Lloyd's next time you are in the Baton Rouge are.

Made from real

Alligator

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THANK YOU

TO THE WATER INSTITUTE FOR HAVING ME THIS SUMMER, AND TO ITS AMAZING RESEARCHERS.

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