Variation in sediment nutrient concentrations in an urbanmangrove ecosystem, Piñones, Puerto Rico Jennie L. Rivera Cruz, Florida International University Research Mentor: Danielle Ogurcak, Institute of Water & Environment (InWE) Results

Goal

- Determine the variation in sediment nutrients and soil properties downcore at two mangrove sites:
 - 1) **Site 1** closer to coast, dominated
 - by red mangrove, *Rhizophora mangle*
 - 2) Site 2 farther inland, dominated
 - by black mangrove, Avicennia germinans

Site Description

- Average air temperature: 23.9° C.
- This forest is on the northern side of the island, adjacent to the airport, built in the 1950's.
- Located in the Rio Loíza watershed

Site 1 (red mangrove)distance to coast 223meters. Salinity=40.4ppt.

Site 2 (black mangrove)distance to coast 409 meters. Salinity=21.9ppt.



Figure 1. Locations of core samples.





Research Methodology

- Collect mangrove peat in 50cm cores on the sites.
- Tests for loss on ignition (LOI) to estimate the percent of organic matter.
- The samples were analyzed for carbon, and nitrogen by a CHN analyzer.
- Colorimetric analysis was used for phosphorous analysis.
- Dry and weigh samples for dry bulk density (DBD).
- Lead 210 is being done at USF, J. Smoak laboratory.











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This material is based upon work supported by the National Science Foundation under Grant No. HRD-1547798. This NSF Grant was awarded to Florida International University as part of the Centers of Research Excellence in Science and Technology (CREST) Program. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

jrive319@fiu.edu

- Figure 2. Cores are being processed, samples are being prepared in subsamples and being homogenized(left images). Collecting cores at the mangrove forest (bottom right).

- consistent with low LOI and hi DBD.
- mangrove forest from upland.
- greater variability at depths 15-35cm.
- the site.

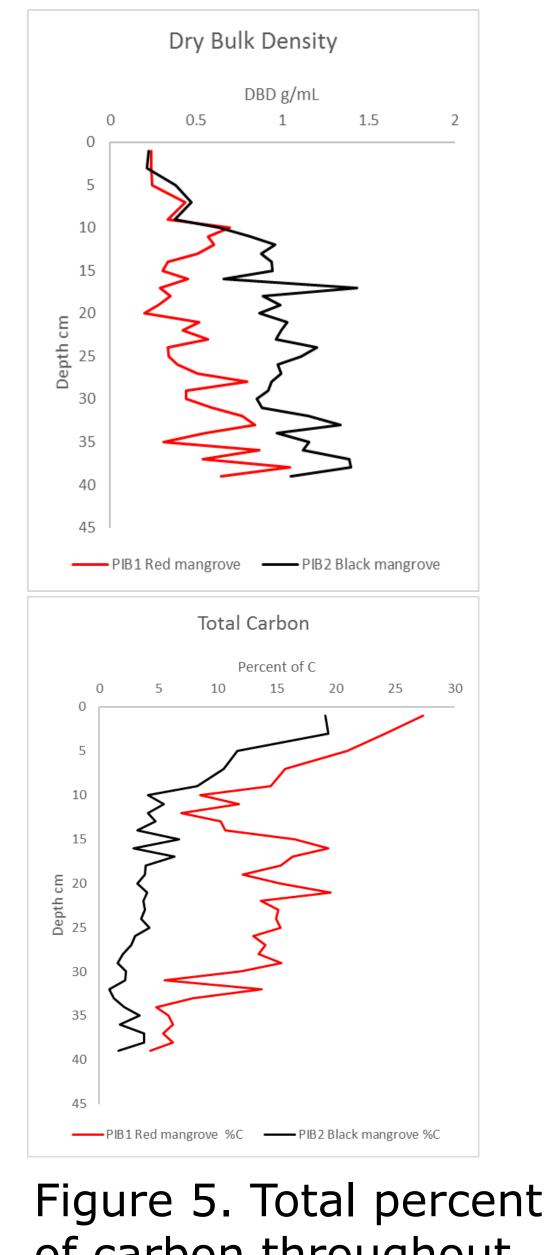


Figure 3. DBD throughout the depth of the core for PIB1 and PIB2 (left image). Figure 4. Percent of LOI throughout the depth of the cores(right image). Total Nitrogen



of carbon throughout the depth of the core.

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• Site 1 had high percent LOI throughout the core compared to Site 2, while both cores had high DBD. • Clay and mud observed throughout the cores is This suggests that sediments coming in to the • Site 1 had higher nutrient concentrations and • The results of high nutrient on **Site1** reflects the impact of urbanization, agriculture and land use on

—— PIB1 Red mangrove %N _____ PIB2 Black mangrove %N

Figure 6. Total percent of nitrogen throughout the depth of the core.

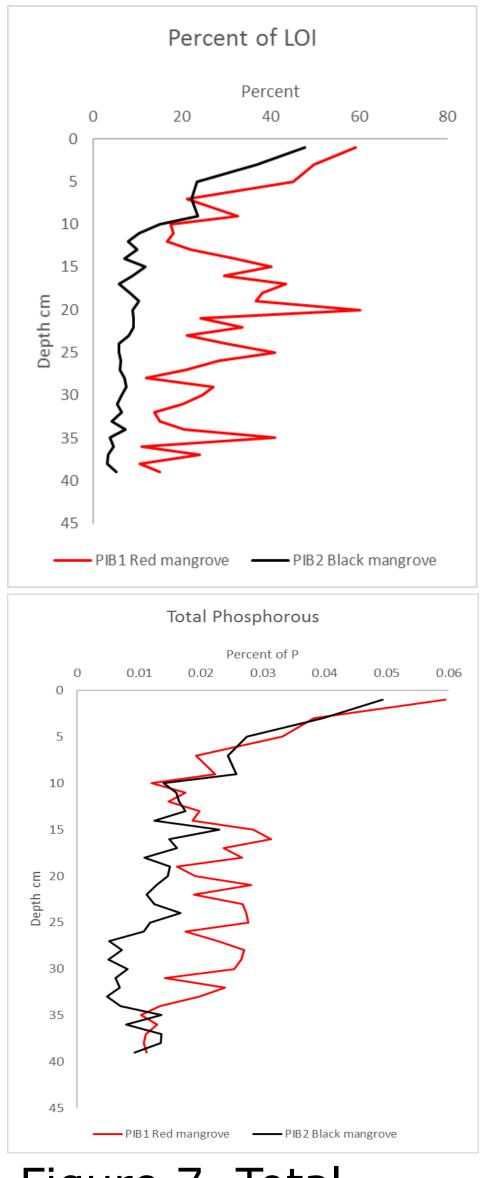


Figure 7. Total phosphorous throughout the depth of the cores.

