EVALUATING THE HYDROLOGICAL RESTORATION OF THE PICAYUNE STRAND STATE FOREST USING AQUATIC MACROINVERTEBRATES AS BIOINDICATORS

Tiffany K. Gaglia [1], *David W. Ceilley*[2], *and Edwin M. Everham III*[1]

[1]Inland Ecology Research Group, Dept. of Ecology and Environmental Studies, Florida Gulf Coast University, Fort Myers, FL, USA

[2]Johnson Engineering, Inc, Fort Myers, FL, USA

[3]The Water School, Florida Gulf Coast University, Fort Myers, FL, USA

Reference Site FS-2, FSPSP Graminoid

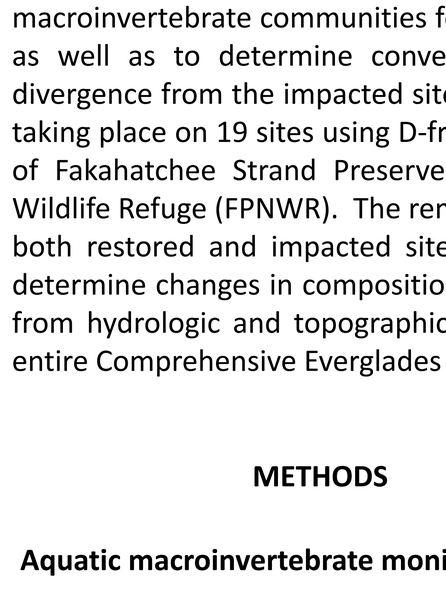
ABSTRACT

The Picayune Strand Restoration Project (PSRP) lies within the bounds of the former Southern Golden Gate Estates (SGGE), East of Naples, Florida, Collier County. SGGE was intended to be a residential community in the 1950s under the Gulf American Corporation: roads and channelization were implemented for the purpose of development. The objective of PSRP is to restore historic hydrology. Our project is to monitor the aquatic macroinvertebrate communities for species indicators of ecosystem compositional change, as well as to determine convergence between restored and reference sites with a divergence from the impacted sites. Aquatic macroinvertebrate data collection is currently taking place on 19 sites using D-frame dip nets. Eight reference sites are within the bounds of Fakahatchee Strand Preserve State Park (FSPSP) and the Florida Panther National Wildlife Refuge (FPNWR). The remaining 11 sites are distributed across the PSRP to include both restored and impacted sites. We will compare data among the sampling sites to determine changes in composition and dominance in aquatic fauna communities resulting from hydrologic and topographic restoration. The PSRP may provide insight toward the entire Comprehensive Everglades restoration Project (CERP).

METHODS

Aquatic macroinvertebrate monitoring

- 19 sample sites
- Three rounds of sampling, wet, draw down, and dry seasons
- Dip netting until no new individuals caught or asymptote is reached
- Identify to lowest possible taxonomic level in laboratory



Early instar *Lethocerous* under a microscope

Procambarus alleni at Reference site FS - 3, FSPSP

D-frame dip nets for aquatic macroinvertebrate sampling

BACKGROUND

- Picayune Strand Restoration Project
- 55,000-acre hydrologic restoration
- Restoration monitoring through identifying aquatic macroinvertebrate communities as bioindicators
- Reference sites in Florida Panther National Wildlife Refuge and Fakahatchee Strand Preserve State Park

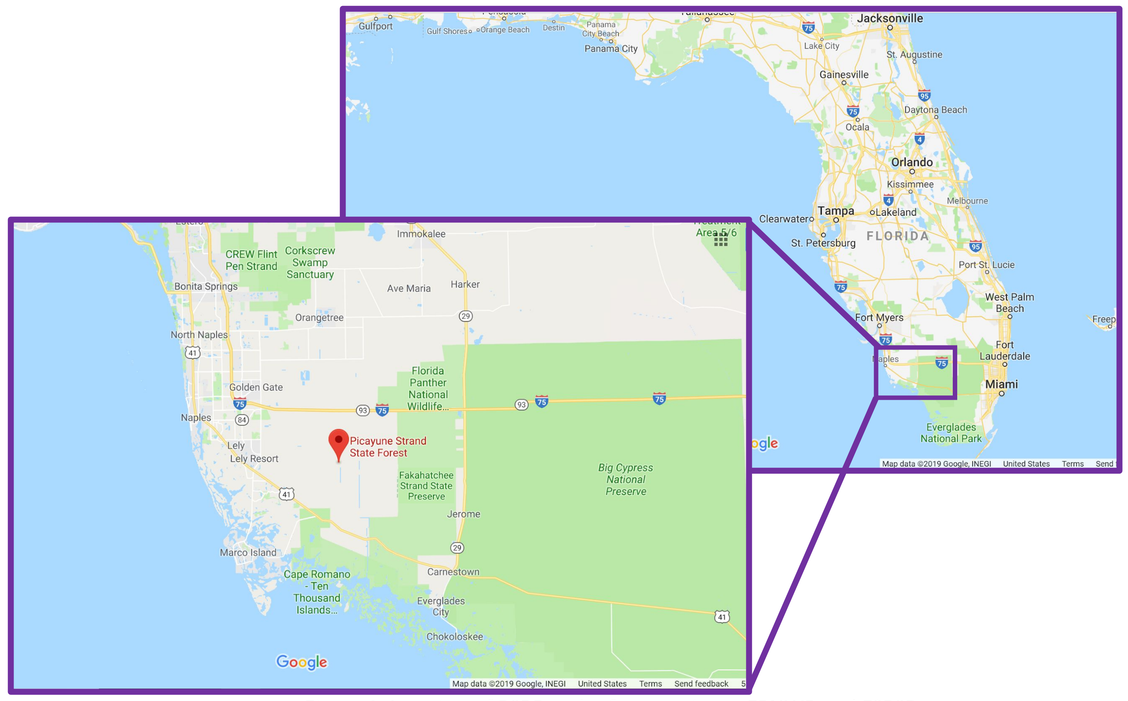


Figure 1: Location of PSRP and reference sites – FPNWR and FSPSP

PREVIOUS DATA

Comparison between the previous monitoring efforts

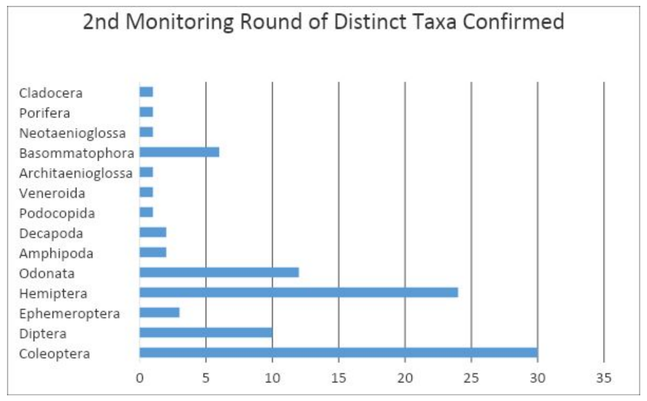


Table 1: 2nd round of post restoration monitoring data on the abundance and presence of indicator species.

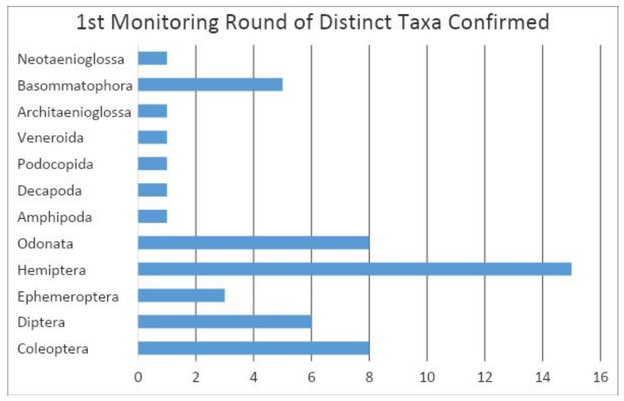


Table 2: 1st round of post restoration monitoring data on the abundance and presence of indicator species

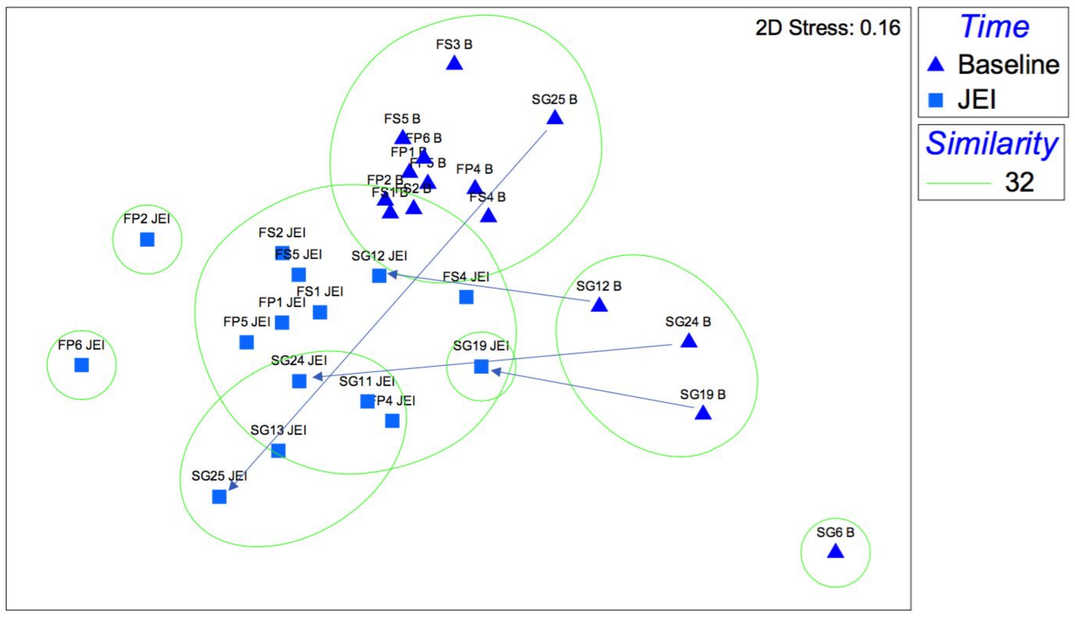


Figure 2. PCA; MDS of macroinvertebrate communities from Baseline and 2018-19 (2nd Year post-restoration) labeled by site, sampling event (B = baseline; JEI 2018-19 2nd Year post-restoration) with bubble overlay at 32% similarity representing major significant groupings from the SIMPROF test. Arrows illustrate movement in ordination space of selected restored sites from Baseline to 2nd Year post-restoration condition. SG6 and FS3 from the baseline sampling events are both pine (Pm and Ph respectively) sites that were not inundated during the 2018-19 sampling events.

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