

MONITORING SUCCESS OF THE PICAYUNE STRAND RESTORATION PROJECT (PSRP)



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Ecotone in FSPSP

ABSTRACT

The Picayune Strand Restoration Project (PSRP) is located to the west of Fakahatchee Strand State Park Preserve in Collier County, Florida. This 55,000-acre restoration project is part of the Comprehensive Everglades Restoration Plan and was one of the Acceler-8 projects initiated in 2004. The PSRP is intended to restore the hydrology of a system that was impacted by roads and canals constructed for a Gulf American Corporation development project. In order to assess the success of the restoration, ecological monitoring efforts occur periodically in conjunction with continuous water level monitoring wells. As potential indicators of hydrologic restoration, anuran, fish, macroinvertebrate, and plant communities have been monitored. Anurans are sampled using PVC pipe refugia, fish are sampled using Breder traps and throw traps, macroinvertebrates are sampled by dip netting, and plants are monitored along transects. Reference sites at Florida Panther National Wildlife Refuge (FPNWR) and Fakahatchee Strand Preserve State Park (FSPSP) are also sampled in the same manner. Univariate analysis of biodiversity indices and multivariate analyses, within and across taxa, are used to compare biotic communities across the restoration and reference sites. These results will be utilized to compare the effectiveness of each measure of restoration success, and the overall progress of the project.

METHODS

Anuran monitoring

- PVC pipes of 3 sizes: ½", 1", 1½" as refugia
- 3 pipes on ground, 3 pipes in trees
- Remove, identify, measure length and mass
- Additional array to test different designs
- Sample monthly

Fish monitoring

- Breder traps set out for an hour
- Throw trapping
- Identify and measure length
- Sample three times a year

Aquatic macroinvertebrate monitoring

- Dip netting until no new individuals caught
- Archive representative sample
- Identify to lowest possible level in laboratory
- Sample three times a year

Plant monitoring

- 50 m established transect with belt running 2.5m either side
- Line-intercept sampling above transect tape
- 0.5 m quadrats every 10m
- Once every monitoring year



Squirrel Treefrog (*Hyla squirella*) in a 1½" tree pipe in FSPSP



Cypress strand in FPNWR

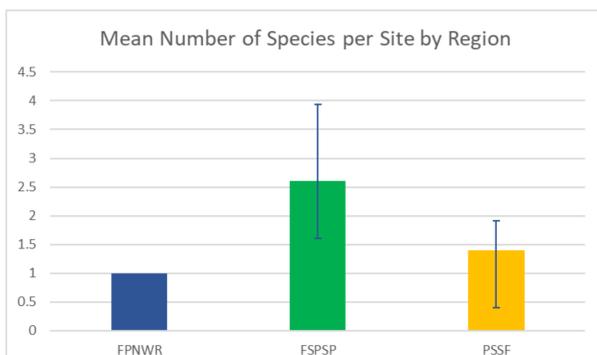


Figure 1: Comparison by region of mean number of anuran species found per site

BACKGROUND

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

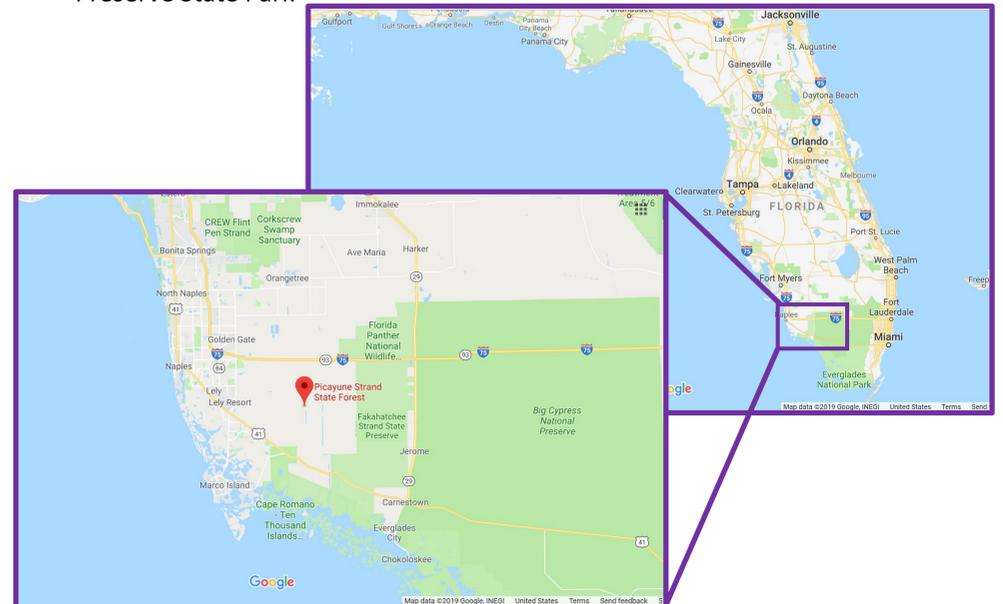


Figure 2: Location of PSRP and reference sites – FPNWR and FSPSP

PRELIMINARY DISCUSSION

- Exotic invasive Cuban Treefrogs (*Osteopilus septentrionalis*) are the majority (>80%) of species sampled at all sites, and anecdotal accounts report many exotic invasive Mayan cichlids (*Cichlasoma urophthalmus*) in fish communities, potentially impacting them as indicator species
- Mean number of species collected per site by region indicates a statistically significant difference only between FSPSP and FPNWR (the two reference sites)
- Preliminary information from surveys in PSSF indicates fish assemblages are entirely different between wetlands and man-made ponds in the filled canals
- Overall trends show variance in the number of anurans captured per month possibly due to individual rainfall events

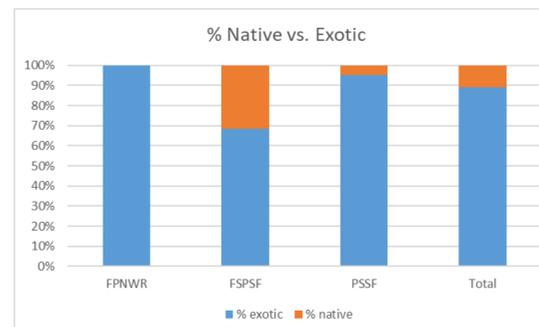


Figure 3: % native species versus % exotic species found by region



Green Treefrog (*Hyla cinerea*) in PSSF



Cuban Treefrog in a 1½" tree pipe in PSSF

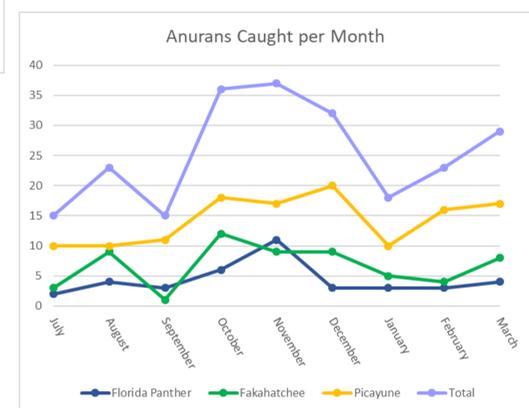


Figure 4: Total number of anurans captured by month per region

NEXT STEPS

Going forward with the project, the remaining anuran data needs to be collected to complete an entire year's cycle before further analysis. Once the data is complete, then analyses will include univariate analyses of biodiversity indices to look at the communities of the individual indicators, and multivariate analyses to compare the species within and across the restoration sites. In addition, analyses will be run to determine differences between the different indicators to learn how each is functioning and if there are differences.

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