Aquatic Invertebrate Sampling

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Introduction

Aquatic Invertebrate Sampling began in July of 2009 at the GTM Research Reserve. Major goals for this project are quantifying and monitoring the ecological health of the marsh as restoration efforts take place. Much of the freshwater marsh on GTM's peninsula is currently in a drought state, and has been further impacted by tree growth. Removing the trees and burning the area is one restoration effort that may take place in the future. One restoration effort that has already taken place is the recent removal of the dirt berm on the yellow trail that used to bisect the marsh and interrupt the hydrologic flow. This will certainly have an impact on the health of the marsh, but due to the current drought, very little information on this impact has been collected this summer.

GTM Research Reserve's freshwater marsh, North of the yellow trail. Photo by Angie Golubovich

Method

Sampling sites are randomly selected from four different major areas within the marsh each month. Three sites are sampled in each area, for a total of twelve sample sites. At each site, the sampling method is to perform a measured sweep with a 500 micron mesh D-net (Turner, 1997). Three sweeps are performed at each site, approximately one meter apart. Invertebrates are searched out of the net for a maximum of two minutes after each sweep and collected in bottles, which are brought back to the lab for identification.

Removing invertebrates from the D-net. Photo by Angie Golubovich

Cybister fimbriolatus (larvae), a large Predacious Diving Beetle. Photo by Andrew Thornton

Results

Many new species were added to GTM's species list through this survey. Because of the long-term monitoring nature of this project, results are preliminary at this point. It will be several years before enough data is collected to begin to draw conclusions.

However, there are already several interesting anecdotal observations, which will hopefully become statistical significant as data continues to be gathered. Referring to the graph below, the biodiversity may be significantly different among various sections of the marsh, with increased diversity in herbaceous dominated wetlands and lower diversity in tree dominated wetlands. Also, the water level seems to be different from expected natural conditions, possibly due to the water level management by the bordering Guana River WMA.


Biodiversity and Total Invertebrates by Marsh

Legend: ■ Species Count ■ Total Count

Marsh	Species Count	Total Count
North Yellow	23	102
South Yellow	15	69
Slash Pine	11	46
Sweet Gum	17	74

Discussion

The aquatic invertebrate sampling project at GTM is a basic long-term biological monitoring project that will be used both to assess the initial health of the freshwater marsh as well as the impacts of restorative efforts. Ideally, post-restoration results will be of higher biodiversity and numbers of aquatic invertebrates, indicating an improved health of the marsh (Hayworth, 2000).

This is a project that will influence management actions in the future to hopefully lead to a healthier ecosystem. General users of the trails will benefit from the increased health of the natural system as a more prolific place for wildlife, and also by better control of unwanted insect pests such as mosquitoes (Culicidae), deer or yellow flies (Tabanidae), and possibly even no-see-ums (Ceratopagonidae), all of which tend to reduce in numbers as biodiversity increases (Neckles, 1990, Batzer, 1996).

Freshwater Marsh
Big Savanna Marsh
Guana River
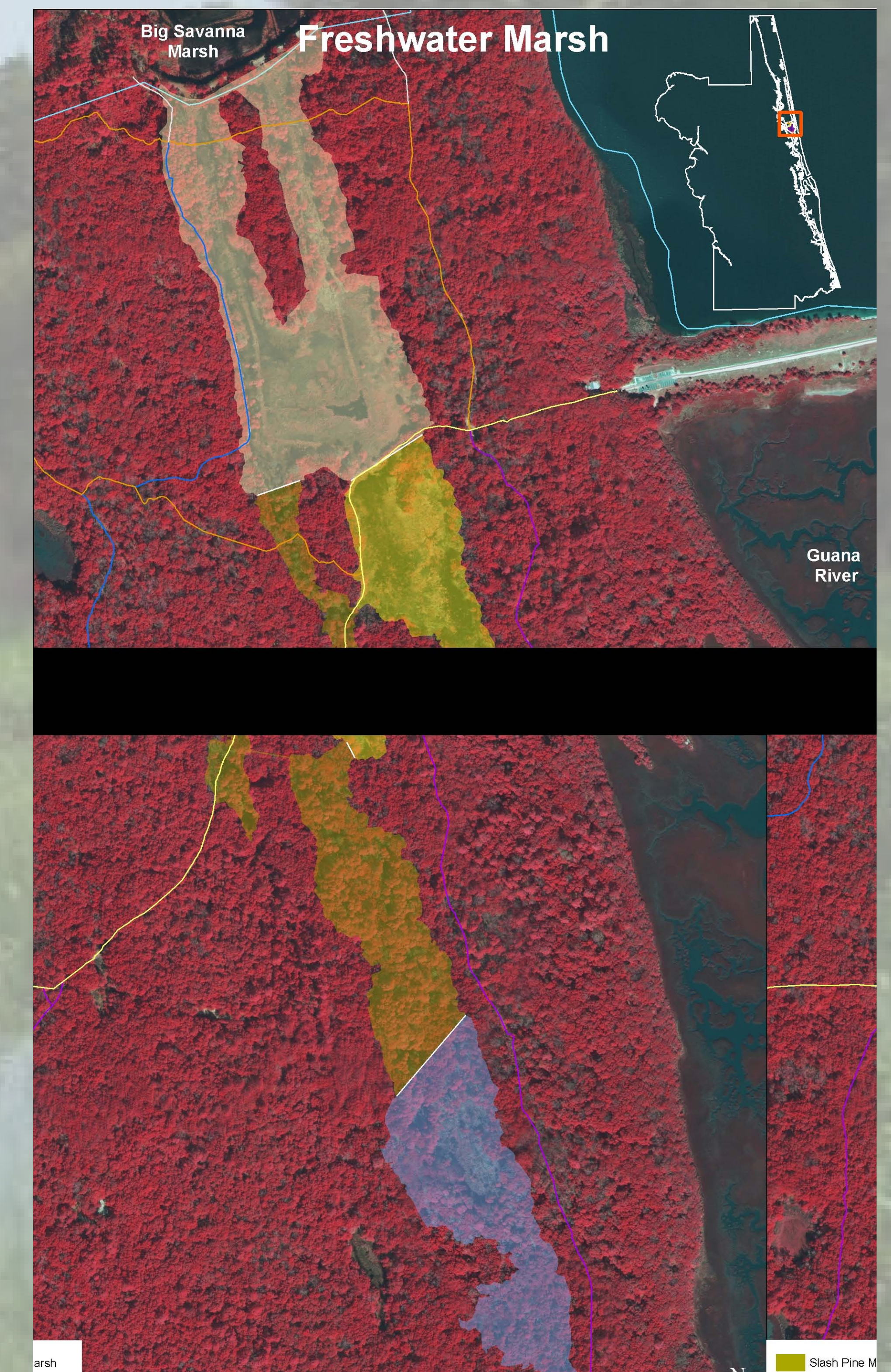
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