



Herbivory Exclusion Device Project



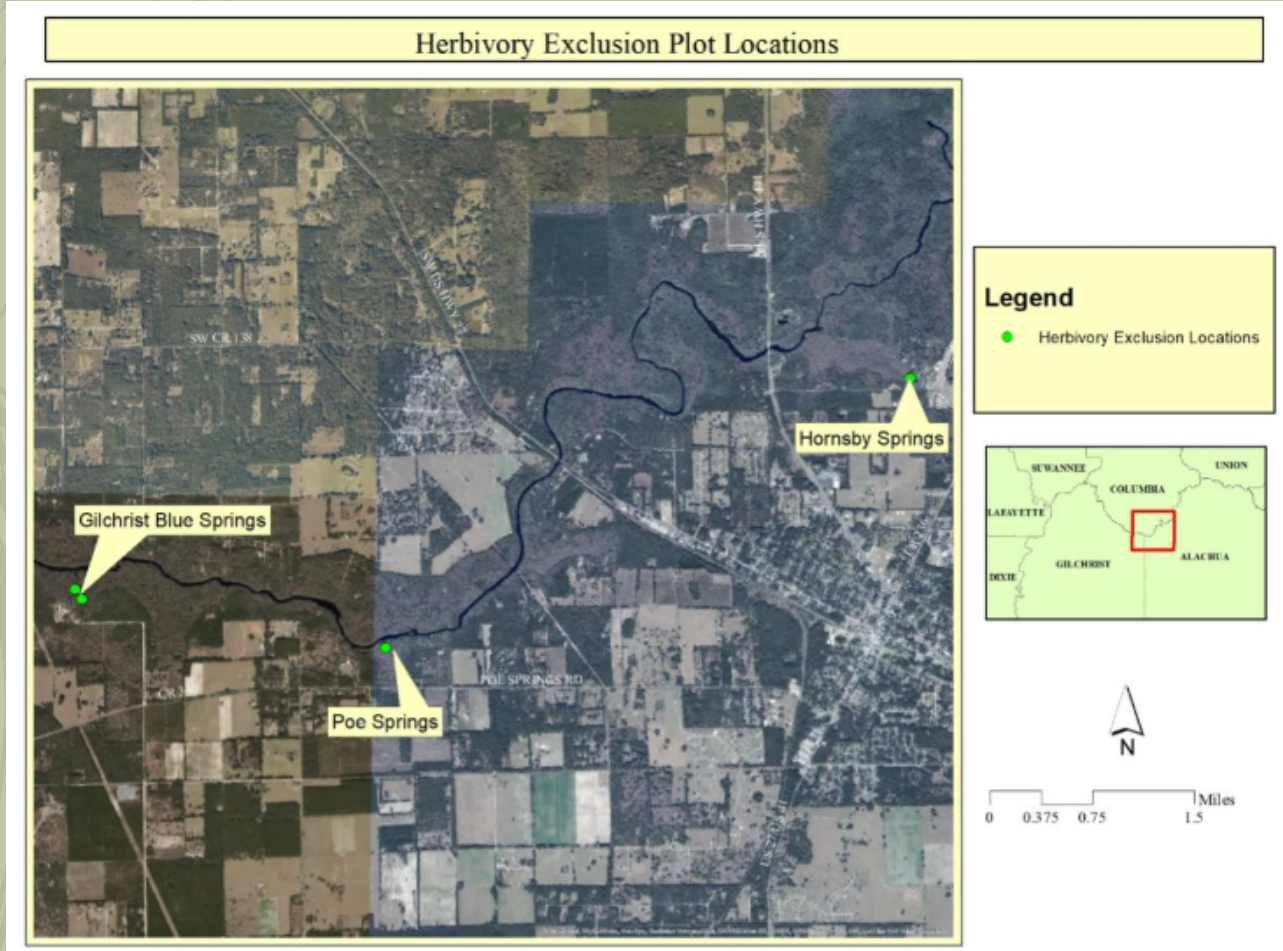
Purpose

The purpose of this project was to evaluate herbivory and recreational stress on native vegetation in select springs on the Santa Fe River. Alachua County designed a series of herbivory exclusion devices to test grazing pressures and recreational activities on the establishment and growth of strap-leaf sagittaria (*sagittaria kurziana*).

ACEPD also wanted to test the exclusion devices under differing dissolved oxygen levels. ACEPD is acutely interested in dissolved oxygen as the current spring's literature indicates that dissolved oxygen plays a key role in the composition of plant and algal coverage in springs.

Where Was the Study?

Exclusion devices were installed at three locations along the Santa Fe River: Hornsby Spring, Poe Spring, and Gilchrist Blue Spring. These springs represent a natural gradient of hydrologic conditions.



What Was Done?

At each test location ACEPD installed three treatments: 1) a fully enclosed cage only open to the bottom substrate, allowing plant growth but excluding large herbivores, 2) a partial enclosure open to the bottom substrate and open on one side to allow the passage of herbivores, and 3) a plot with no cage in place. Plants were collected and measured for growth over a 6-month period. During each site visit the health and establishment of vegetation was assessed by counting the number of plant stocks and measuring the longest of leaf blade per stock. Water quality measurements and canopy cover were also collected while onsite using a YSI Pro Series and a handheld densitometer.



What We Learned

ACEPD found that plants grew the most when dissolved oxygen levels were elevated at sites like Naked and Gilchrist Blue Springs. The grazing pressure from herbivores was clearly evident when observing the full enclosure plot versus the partial enclosure at Naked Springs (bottom right photo). Sites where dissolved oxygen was low did not exhibit pressure from hungry herbivores, likely due to the limitations of plant growth under these conditions. During this experiment dark tannic water from flooding on the Santa Fe River limited plant growth at high dissolved oxygen sites on Hornsby and Poe Springs. Recreational impacts were difficult to parse out from herbivory and water quality stressors.

Significance

The findings will help determine herbivory and recreational stressors on native plants and help researchers and managers understand the issues surrounding the loss of submerged aquatic vegetation. Understanding the link between recreational and herbivory impacts on native grass beds will have implications for both the ecological and economic value from recreational use of Florida's springs.

