St. Johns River Water Management District

BIOLOGY WORK GROUP UPDATE

CRISPS Annual Meeting
9 September 2016

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Science Objectives

- Improve the scientific foundation for management of nitrate loadings to spring ecosystems
- Evaluate whether nitrate reduction alone will be sufficient to restore the balance between attached algae and aquatic vegetation in spring ecosystems
- Assess the relative influences and manageability of the various drivers controlling the balance between algae and aquatic vegetation

Biology Approach

- Synoptic Study. Field study of multiple springs; quantitative biological sampling and compare with existing flow and water quality data
- CRISPS Study (UF). Field and lab investigations of food webs, trophic dynamics, grazing rates, etc.
- Work with P-chem and H&H Work Groups to develop relationships, models, etc.

Synoptic Biological Survey of Springs

- Assess current ecological conditions in a wide variety of springs
- Assess the effects of water quality and physical drivers (current, light) on spring ecology (comparative approach; correlation, m-v tools, etc.)
- Establish a baseline data set to compare with future monitoring efforts

Sample Collection and Analysis in 14 Springs

Typically 2 sites:
- Upstream nr headspring
- Downstream in spring run proper

Project Components

- Field measurements of water quality and physical conditions
- Quantitative measurements of submerged aquatic vegetation (SAV) and algae cover and abundance and SAV morphometrics
- Quantitative collection and analysis of benthic macroinvertebrate populations

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Field Sampling

Project Schedule

	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016
Finalize Work Plan					
Sample Collection					
Sample Processing					
Database and Reporting					

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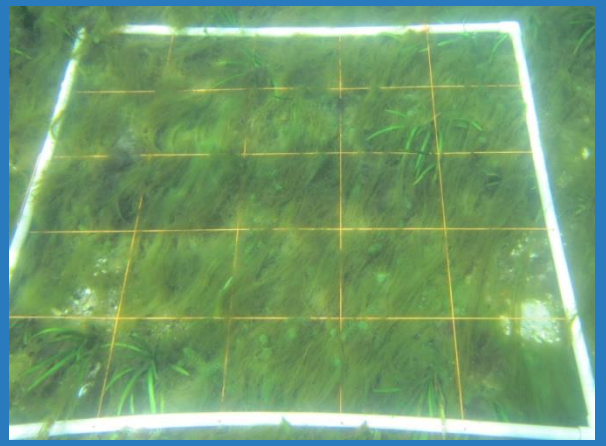
Preliminary Results

SAV Species	Mean Biomass (DW, g/m²)	% Total Samples
Sagittaria kurziana	289	53
Vallisneria americana	260	24
Hydrilla verticillata	15	12
Najas guadalupensis	21	5
Potamogeton pectinatus	259	2

Note: *Chara sp., Ceratophyllum demersum, and Potamogeton illinoensis* each found in only one sample



Preliminary Results

- **Mean Macroinvertebrate Community Metrics**

Metric	Macroalgae	SAV
# Total Taxa, S	13.1 ± 6.43	23 ± 7.89
# of Individuals, N	1274 ± 2162	1610 ± 2121
Pielou's Evenness Index, J'	0.52 ± 0.24	0.65 ± 0.12
Shannon's Diversity, H'(loge)	1.29 ± 0.72	2.00 ± 0.50
Margalef's Diversity Index, d	2.16 ± 1.15	3.4 ± 1.20
Simpson's Diversity Index, 1-Lambda'	0.53 ± 0.27	0.75 ± 0.14

Thank you

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