

## **Vital Sign: Aquatic invertebrates in wet prairies & marshes**

[shortened name: Wetland\_Aquatic\_Inverts]

### **Parks Where Vital Sign will be Implemented:**

BICY - SFCN conducts monitoring (NW corner only)  
BISC, EVER, VIIS – Deferred due to insufficient funds

**Justification/Issues being addressed:** Aquatic invertebrates in wet prairies & marshes ranked 32<sup>nd</sup> among the 44 SFCN vital signs. Aquatic invertebrate communities reflect water quality and hydrology (water depth, timing, duration, quantity) and are frequently used in indices (e.g., Macroinvertebrate Biological Integrity Index (MBI)) as early warning response indicators of change. These invertebrates are the prey base for fish, large macro-invertebrates (e.g., crayfish), herpetofauna, and wading birds in the Greater Everglades and Big Cypress ecosystems. Water diversions and altered water management practices have changed aquatic invertebrate community composition and abundance. CERP will rehabilitate system hydrology and water quality, which should affect aquatic invertebrate communities and consequently higher trophic levels.

### **General Monitoring Questions to be Addressed by the Vital Sign:**

- What are the status and trends in aquatic invertebrate community composition and structure especially in relation to hydrological patterns and water quality in the wet prairies and marshes?

### **Measures:**

Community composition, abundance (density and relative abundance), MBI

### **Basic Approach:**

This indicator will only be implemented in areas where SFCN is otherwise collecting fish and periphyton data, i.e. northwestern BICY. SFCN will develop the protocol “Freshwater fish, invertebrates, and periphyton” to describe monitoring in that area. A pilot study is needed to determine the range of variability in aquatic invertebrates (as well as periphyton) in the area and estimate appropriate sample sizes. SFCN technicians will separate out the aquatic invertebrates from the periphyton, identify the species where possible, and count them.

Some existing monitoring may be occurring as part of the freshwater fish monitoring in Everglades. If so, SFCN will see if summaries of reports can be added to the SFCN web page.

### **Principal Investigators/Key Contacts and NPS Lead:**

- Kevin Whelan, National Park Service, South Florida/Caribbean Inventory and Monitoring Network. Kevin\_R\_Whelan@nps.gov, 305-252-0347 [SFCN lead]
- Joel Trexler, Florida International University, (305) 348-1966 trexlerj@fiu.edu

- Robert Shufford, SFWMD, Everglades Division, (561) 681-2500 x4579, rshufor@sfwmd.gov
- Richard E. Jacobsen, USGS, EVER Field Station, 305-242-7313, rjacob@usgs.gov

**Development schedule, budget, and expected interim products:**

This vital sign will be developed and implemented in concert with the freshwater fish and large macro-invertebrates vital sign. The “Freshwater fish, invertebrates and periphyton” protocol design will occur in 2008-2010 in concert with the freshwater fish and macroinvertebrate monitoring with implementation in 2011 in Big Cypress and Biscayne National Parks only. About 75 samples per year are assumed in Big Cypress for planning purposes, although pilot studies have not been done to estimate sample sizes. Little additional field time is needed for invertebrate collection as it is done in concert with freshwater fish and periphyton monitoring. Assuming 2 hours per invertebrate sample for analysis and data entry, this indicator will take about 4 weeks of a technician’s time to analyze the samples. Costs include dissecting scopes, alcohol, sampling bottles & other miscellaneous scope equip (forceps, etc).

Expected SFCN staff time requirements once program is fully implemented in 5 years:

SFCN Staff	Full Time Equivalent (FTE)
Coordinator	
Marine Ecologist	
Fisheries Biologist	
Marine Biologist Technician (So FL)	
Marine Biologist Technician (VI)	
Community Ecologist	
Wildlife Technician (Wildlife)	0.04
Wildlife Technician (Vegetation)	0.03
Quantitative Ecologist	
Data Manager	
GIS/Data Tech	
Interns	
SFCN Total	0.07