

Periphyton & Epiphyton

Summary Findings

Many of the sites coded as “altered” (red) are near the peripheral canals surrounding the wetlands, or in drainages downstream of canal inputs (see map).

In WCA-1, canals deliver above-ambient concentrations of both nutrients and calcium carbonate, causing changes in periphyton quality, including increased Total Phosphorus (TP) from nutrient enrichment and reduced organic content from calcium carbonate inputs.

In WCA-2A, long-term delivery of above-ambient Phosphorus (P) in canal inputs has caused enrichment cascades throughout most of the system. This is most severe in the northeast portion of this wetland, where monospecific cattail stands predominate, precluding periphyton sampling.

Enrichment in central WCA-3A, noted in 2005 and 2006, was less pronounced in 2007, while signals of enrichment were noted near the peripheral canals.

Shark River and Taylor Sloughs have remained relatively free of enrichment or hydrologic modifications in the sampled areas, although enrichment has been noted downstream of the S-12 structures on the Tamiami Trail (Shark Slough) and near the S-332 structures and C-111 canal (Taylor Slough).

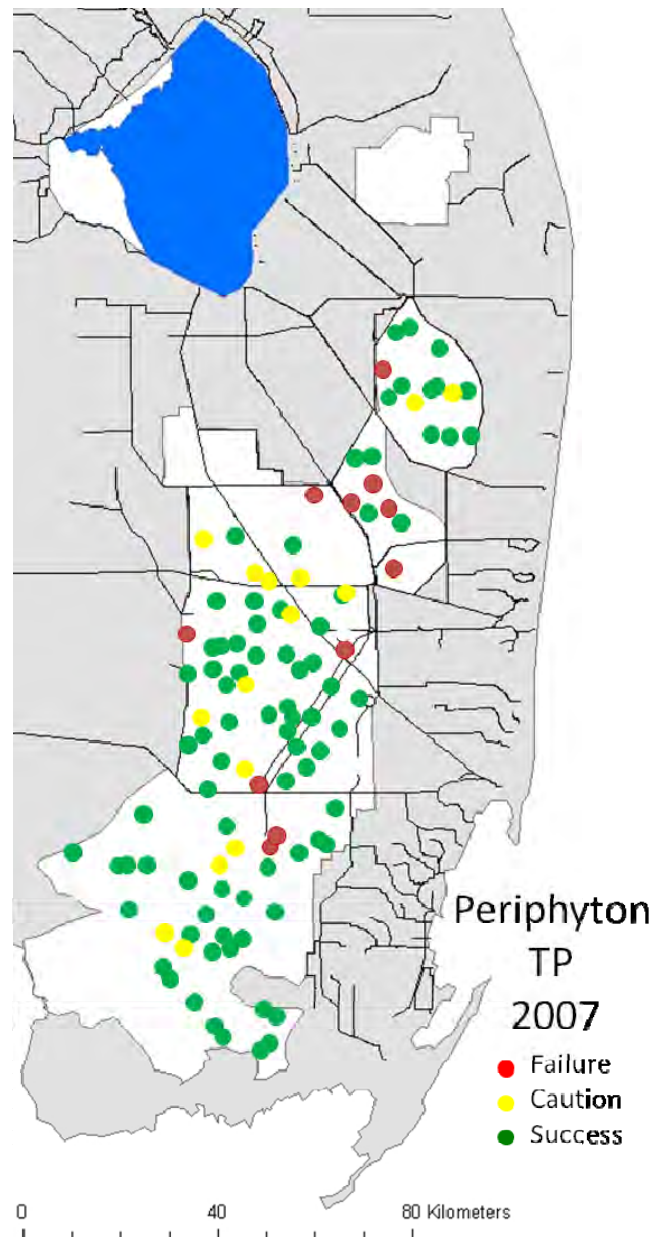
Key Findings

1. A total of 11% of sites had “altered” periphyton TP levels. This was lower than observed in 2006 (26%) and 2005 (25%) due primarily to a reduction in the number of altered sites in WCA-3A. This reduction may be due to depleted canal flows into WCA-3A during this relatively dry year.
2. A total of 14% of sites were coded yellow for periphyton TP, and were located in similar locations to those detected in 2005 and 2006, primarily downstream of canal inputs.
3. A total of 55% and 39% of sites were coded yellow or higher for biomass and species composition.

The map shows the location of long-term monitoring sites and reflects annual assessments for the Total Phosphorus (quality) performance measure. The table on the right reflects the average spotlight score within each region for biomass, quality, and composition.

tion (not shown), primarily loss of biomass and native species in response to P enrichment.

4. Continued input of above-ambient P concentrations will both increase severity of enrichment effects near canals and cause these effects to continue to cascade downstream of inputs.
5. Increased input of water through restorative projects may increase periphyton development in areas formerly dry, but if accompanied by above-ambient P concentrations, cascading P effects are expected.



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Zone/Performance Measure ^a	2005 STATUS	2006 STATUS	2007 STATUS	2-YEAR PROSPECTS	CURRENT STATUS ^b	2-YEAR PROSPECTS
WCA-1						
Biomass	Y	Y	Y	Y	Periphyton shows enrichment near canals and calcareous mat biomass has increased at some sites due to calcite input from canals.	If canal impacts remain low, status should remain same; increased inputs may cause further enrichment and calcification of mats.
Quality	Y	Y	Y	Y		
Composition	Y	Y	Y	Y		
WCA-2A						
Biomass	Y	Y	Y	Y	Periphyton TP and composition continue to reflect high P input to this wetland, particularly downstream of water flow structures.	If canal P inputs remain above ambient, more sites will be enriched, further damaging periphyton structures and biomass.
Quality	R	Y	R	Y		
Composition	Y	Y	Y	Y		
WCA-3A						
Biomass	Y	Y	Y	Y	This area has received some low-level P enrichment, particularly near canals. Evidence was less pronounced in this drier year.	If canal P inputs remain above the protective criterion, status will remain similar or perhaps worsen over time.
Quality	Y	Y	Y	Y		
Composition	Y	Y	Y	Y		
Shark River Slough (SRS)						
Biomass	Y	Y	Y	Y	Shark River Slough has received low-level P enrichment for decades, reflected in biomass, quality, and composition, particularly downstream of the S-12 structures.	Increased flow through culverts and Tamiami Trail modifications may encourage periphyton in dry areas, but above-ambient P inputs will cause negative change.
Quality	Y	Y	Y	Y		
Composition	G	Y	Y	Y		
Taylor Slough (TS)						
Biomass	G	G	G	G	Taylor Slough has remained relatively unimpacted to the interior due to low levels of disturbance and low P inputs, except near the S-332 control structures.	Periphyton production may increase with increased water delivery to TS, but quality could be threatened if poor quality water continues to drain through the eastern boundary of ENP.
Quality	G	G	G	G		
Composition	G	G	G	G		

^aEach wetland basin is scored with a red, yellow, or green symbol for each indicator, based on the proportion of sites falling within these categories in assessment (yellow if > 25% of sites are coded yellow or red; red if > 50% of the sites are red). Biomass = ash-free dry mass (gmS2), quality = total phosphorus content (mg gS1), and community composition = diatom similarity (%).

^bData in the Current Status column for the periphyton indicator reflect data inclusive of calendar year 2007.