

Effects of phosphorus and light on algal communities in lowland neotropical streams, Costa Rica

R.J. Bixby¹, A. Ramírez², and C.M. Pringle¹. ¹Institute of Ecology, University of Georgia, Athens, Georgia, 30602, ²University of Puerto Rico, San Juan, Puerto Rico, 00936

Previous research in streams draining lowland rainforests of La Selva Biological Station, Costa Rica, has shown that algal standing crop accrual in light gaps is significantly less in solute-poor (SRP <10 ug l⁻¹) versus solute-rich (SRP >100 ug l⁻¹) streams that receive inputs of geothermally modified groundwater. Results from algal surveys in light gaps presented here also indicate that distinct species differences exist between these streams with large *Surirella* taxa and a previously undescribed *Cymbellopsis* species dominating high solute streams. In this study, we also examined algal communities in shaded stream segments, which are more representative of natural conditions in lowland rainforests. To isolate potential effects of phosphorus from other stream solutes, algal growth and community shifts were investigated in the context of a whole-stream phosphorus enrichment experiment. Replicate tiles were incubated in shaded sites above and below a phosphoric acid dripper in a solute-poor stream. No significant differences in chlorophyll a (0.6-1.7 mg m⁻²), biomass (AFDM 13-21 g m⁻²) or community composition were found after 35 days. Results indicate that primary producers are not affected by P in densely shaded streams. Canopy cover appears to be critical in determining algal response to geothermally introduced solutes in these neotropical streams.