

## ORAL PRESENTATION

### THE EFFECTS OF DISTURBANCE AND NUTRIENT ADDITION ON A PERIPHYTON COMMUNITY DOMINATED BY *Didymosphenia geminata*

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The invasive diatom *Didymosphenia geminata* can successfully compete with native periphyton communities in cold-water, oligotrophic streams, often degrading the utility of trout streams. In Rapid Creek, SD, *D. geminata* occurs in discrete, high density patches while visually absent from other sections. Starting in 2007, nutrient additions (N and P) were continuously added to a section of Rapid Creek for another study. This allowed us to place a series of ceramic tiles in 4 distinct habitats; 1) native periphyton with no nutrient addition, 2) *D. geminata*-dominated periphyton with no nutrient addition, 3) native periphyton with nutrient addition, and 4) *D. geminata*-dominated periphyton with nutrient additions. Tiles from each habitat were also subjected to three disturbance patterns (low, medium, and high). All tiles were scraped, measured for chlorophyll a, and algal species composition determined. The experiment ran for 21 days in July, 2008. Low disturbance tiles had significantly ( $p = 0.001$ ) greater periphyton growth rates compared with medium and high disturbance tiles. Algal biomass determined from rocks suggest that the stream is nutrient limited. However results from the tiles indicate that short-term, periphyton, growth rates are greater without nutrient addition ( $p=0.001$ ). This may be due to shifts in the species composition and architecture of the periphyton mats, in which the community is changing from one dominated by araphids (*Diatoma* sp. and *Fragilaria* sp.) to one of primarily *Achnantheidium* sp. A pilot experiment comparing an existing periphyton communities to bare rock suggest that *D. geminata*, in Rapid Creek, is slow to colonize and prefers established periphyton communities ( $p = 0.001$ ) in order to attach. Implications for the management of *D. geminata* will be discussed.