

## DIATOM COMMUNITY COMPOSITION CHANGES AS COPPER CONCENTRATION INCREASES AMONG FRESHWATER STREAMS IN THE METAL-RICH BASIN OF THE ELIZABETH MINE, VERMONT, USA.

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Diatom communities in small to moderately-sized rivers near the Elizabeth Mine, South Strafford, VT, were surveyed to assess the impacts of metal stress from an abandoned copper mine on microbial communities. Species composition was a more sensitive indicator of metal concentrations than was the total number of species (richness).

As bioaccumulated copper concentrations in periphyton increased, richness varied but did not differ with respect to the amount of copper until richness decreased dramatically at the two highest copper concentrations.

The species composition changed dramatically at the lowest copper concentrations from dominance of *Achnanthydium pyrenaicum* to *Cocconeis placentula* becoming an important component of the flora. Then at moderately-high Cu *Fragilaria capucina gracilis* and *Brachysira microcephala* were relatively important. At the highest Cu concentrations, *Achnanthydium minutissimum* was the overwhelming dominant species. *Achnanthydium minutissimum* comprised a relatively important component of the flora at all Cu concentrations but generally increased in relative abundance as Cu increased.

Diatom communities may be useful for assessing metal stress to aquatic systems.