

## POSTER PRESENTATION

### STREAM DIATOM RESPONSES TO CONDUCTIVITY ARE AFFECTED BY MAJOR ION COMPOSITION

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Similar conductivities with different dominant ions might have dissimilar ecological effects. Our study examined if specific conductivities comprised of different ions associated with resource extraction affected stream periphyton assemblages. Sixteen artificial streams were dosed with two ion recipes intended to mimic sources and ranges of conductivity observed from field surveys. One recipe mimicked deep well brine (DWB) with chloride salts dominating and was dosed at five concentrations. The other reflected surface coal mine (SCM) leachate with bicarbonate and sulfate salts dominating and was dosed at four concentrations. Periphyton communities became more dissimilar to control treatments with increasing bicarbonate and sulfate than with increasing chloride concentrations. In SCM treatments, mean ash-free dry mass and chlorophyll *a* significantly increased ( $R^2 > 0.74$ ) with greater concentrations, whereas they had mostly similar values across DWB treatments. After 28 days of dosing, greater concentrations of ions were associated with increasingly dissimilar diatom assemblages when compared to those in controls for both SCM ( $R^2 > 0.60$ ) and DWB doses ( $R^2 > 0.52$ ). Mean similarity declined to ~20% in the highest SCM dose and remained above 85% in the highest DWB dose. In SCM treatments, *Synedra*, *Nitzschia*, *Melosira*, and *Navicula* abundances contributed to reduced similarity to control assemblages by increasing with greater concentrations. Results indicate that periphyton communities respond differently to multiple dominant ions comprising similar conductivities, and further understanding these effects are important to informing future practices and management efforts.