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Nov 7th, 2:00 PM - 3:45 PM

Hydrologic and Physiochemical Connection of Sawyer Fen to Bluewater Creek

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Fen wetlands are predominantly ground-water fed systems providing refuge for endangered plant and animal species while contributing baseflow to nearby surface waters. Recent EPA rollbacks on clean water protections are going to have an effect on fens as they target headwater streams, Western rivers and nearby wetlands by emphasizing the hydrological disconnect wetlands have with other bodies of water. Previous studies show that fens are actually hydrologically connected to other surface waters through sub-surface flow and have physiochemical effects on nearby surface waters such as lakes, streams and rivers. Collaboration with the United States Forest Service has allowed us to focus this project on Sawyer Fen and Bluewater Creek located in the Zuni Mountains of the Cibola National Forest. This research project emphasizes the hydrologic and physiochemical relationship between fen wetlands and nearby surface waters through the utilization of multiple piezometers in measuring the vertical and horizontal hydraulic gradient and the chemical analysis of cations, anions and isotopes using Inductively Coupled Plasma Optical Emissions Spectroscopy (ICP OES), Ion Chromatography (IC) and laser ring-down cavity spectrophotometry. Physical parameters such as temperature (°C), pH, dissolved oxygen concentrations (mg/L and %), turbidity (NTU), and specific conductivity (µS/cm) will be taken with continuous measurements of our YSI EXO 3 Multiparameter Sonde in Bluewater Creek and spot measurements with a YSI meter in both Sawyer Fen and Bluewater Creek.