

ORAL PRESENTATION

EXAMINING POTENTIAL CHANGES IN STREAM ALGAL COMMUNITIES IN THE SOUTHERN APPALACHIANS, PRE- AND POST-HEMLOCK DIE-OFF

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Eastern hemlock (*Tsuga canadensis*) function as an important foundation species throughout eastern North America. However, widespread death of hemlock over the last decade has occurred in the southern Appalachians as a result of the spread of an invasive hemipteran, hemlock woolly adelgid (*Adelges tsugae*). Hemlock was once abundant along streams and its death has likely caused significant changes to stream processes. Little is known about how the loss of hemlock affects stream algae. We hypothesize that diatom communities may be affected by enhanced light levels and decreasing pH following hemlock die-offs. In 2005-2006, prior to hemlock die-off, we collected baseline data on algal biomass (chlorophyll-*a* and ash free dry mass) in eight stream reaches throughout the Coweeta Hydrologic Lab/Forest in western North Carolina. We also analyzed diatom communities in those streams, identifying 89 species including several taxa endemic to the southern Appalachians (*Meridion alansmithii*, *Eunotia billii*, *Nupela lapidosa*). Densely shaded streams were characterized by low algal biomass dominated by adnate diatoms (*Eunotia* spp. and *Achnantheidium deflexum*). In 2017-2019, post hemlock die-off, we are re-sampling the eight study reaches to evaluate how diatom communities have changed. We hypothesize increased algal biomass, loss of endemic taxa, and an increase in upright-growing diatoms (*Gomphonema* spp. and *Synedra* spp.) (associated with higher light levels).