**Flow and Temperature As Drivers of Lake Superior Tributary Biota**

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The combination of climate and land use change threatens to significantly alter freshwater ecosystems, functions, and services in Minnesota’s Lake Superior North Shore region. These alterations represent significant risks and impacts to local communities, dependent on a tourism-based economy. This project seeks to develop models for understanding the future response of streams to climate and land use change to aid land and water use planning, stream management and restoration, and climate adaptation. We developed hydrologic and stream temperature models to characterize current conditions, and are exploring how North Shore streams may respond to future climate and land cover scenarios. From the models, we derived flow metrics and are exploring regional flow-ecology relationships to identify critical stream flow parameters for maintaining good habitat for native fish species such as brook trout. We also examined the interaction between flow and temperature as they relate to the distribution of fish and invertebrates in these streams. Flow metrics by themselves were poor predictors of stream fish assemblages; addition of temperature data was expected to improve model predictions but few valid models predicting stream temperature were obtained for Minnesota North Shore tributaries. Opportunities and strategies to enhance stream resilience through land and water management are also being identified in cooperation with local, regional, and state-level managers.