Riparian plant senescence and the effects on stream nutrients and benthic biology in Alaskan Arctic streams

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Researchers in the Arctic have noticed that there has been an increase of nutrients in streams during the extended fall season. It is hypothesized that the reason for this increase is due to a mismatch in senescence between riparian plants and soil microbes. Due to the changing of season length, light is decreasing but warmer weather is still persistent. Plants use a decrease in light as a cue to start senescence. Contrariwise microbes respond to warm temperatures and continue functioning and mineralizing nutrients. To investigate this, plant phenology and radiometer (UniSpec) data was collected once a week along each of the six transects for each of the three stream study reaches. Water chemistry was also sampled twice a week at the top and the bottom of each reach, and in-stream biology was sampled every two weeks in the form of rock scrubs and plant transects. Some of the phenological indicators and benthic biology closely corresponded with nutrient concentrations during the fall season. This information enables researchers to better understand the loading of nutrients into Arctic streams during the extended fall season and possible effects due to climate change in the future.