Introduction
Stream logjams are fixed accumulations of wood that can increase the heterogeneity of stream habitats by:
1. Creating hydraulic roughness.
2. Retaining organic matter such as leaves and sticks.
3. Inducing pool and riffle formation, thereby altering stream depth and velocity.
4. Accumulating fine sediments immediately above the logjam, exposing coarse bed immediately below.
5. Providing substrate for algal colonization, which serves as food for many macroinvertebrates.
By increasing habitat heterogeneity in this manner, we predicted that logjams would enhance habitat for aquatic macroinvertebrate and increase their numbers.

Hypothesis
Installing a “natural” stream logjam will increase macroinvertebrate richness and abundance above those found on the streambed.

Methods
Before-After-Control-Impact (BACI) experimental design:
1. Survey the initial condition of the control & impact site.
2. Apply treatment (logjam installation) to the impact site.
3. Allow time for the impact to occur.
4. Re-survey the control & impact sites.

Field Methods:
We used a BACI approach to examine the impact of an installed logjam on a small stream in northern Minnesota’s Superior National Forest. The control site was located 50 m upstream of the impact (logjam) site. We sampled the macroinvertebrate community at both sites prior to logjam installation, and then assembled the logjam at the impact site. The macroinvertebrate community was sampled again one year later.

Discussion
We found partial support for our hypothesis. Although taxonomic richness and abundance did not change for the macroinvertebrate community as a whole, it did for three important indicator taxa, the Ephemeroptera (mayflies), Plecoptera (stoneflies) and the Chironomidae (midges; Diptera). Mayfly and stonefly nymphs increased at the logjam whereas midge larvae decreased in number. We speculate that the logjam provided mayfly and stonefly nymphs with refuge from fish predators and also increased surface area for their colonization. Midge density, by contrast, may have decreased because the logjam concentrated predacious stoneflies that commonly feed on chironomids.

Our results lend support to the idea that logjams have an important role in structuring the biological as well as the physical environment of streams. Mayflies and stoneflies are used as indicators of stream health and ecosystem function, and consequently, installed logjams may provide resources managers a tool for enhancing habitat for these sensitive taxa.

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