

# Effects of harvesting, fire and climate change on forest floor mesofauna in the boreal mixedwood forest

Lead by: [Irma Diaz](#)

Theme: [Arthropod Diversity](#)

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## Participants

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## Background

Disturbances in the boreal forest can not only determine landscape features but they can also modify processes in the forest floor. The forest floor is made up of organic horizons where complex processes such as the decomposition of organic matter and nutrient cycling are occurring, with rates of decomposition depending on forest type, litter type and litter mixtures. The forest floor is also the habitat for the most diverse group of soil organisms, the mesofauna, which includes mites. Predator mites of the order Mesostigmata are small microarthropods of 100  $\mu$ m to 2 mm inhabiting the air-filled pore space of soil and the litter layer. In general, mites have a large number of links in the food web of the boreal forest because they feed on all trophic levels. However, the role of the mesostigmata mites in litter decomposition and their diversity in boreal forest types is not clear. Soil ecologists have previously reported that both C and N mineralization in coniferous forests are affected by the ecological characteristics of soil fauna and are not a function of trophic group or biomass.

## Objectives

The first part of my research is addressing disturbances in the boreal forest and the mesofauna of the forest floor, focusing on mesostigmata mites, with the following objectives: 1. To describe the diversity and ecology of mesostigmata predator mites in the forest floor of undisturbed stands (spruce, aspen and mixed). 2. To describe the diversity of mesostigmata predator mites in disturbed and undisturbed forest floor in each stand type, within selected subsets of harvesting and fire disturbances. 3. To explain the role of mesostigmata

predator mites in decomposition processes of organic matter and nitrogen mineralization in disturbed and undisturbed forest floor of the three stand types (spruce, aspen and mixed).

## **Key Results**

n/a