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Canopy herbivory and soil processes in temperate and tropical forests

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Insect herbivores in forest canopies have the potential to influence soil processes by introducing materials from the treetops to the forest floor. Laboratory work has shown that the products of defoliation influence soil respiration and nutrient cycling. It is now important to assess whether natural defoliation under field conditions can also modify soil processes significantly.

Using one temperate and one tropical forest site (LTER sites: Coweeta Hydrological Laboratory, North Carolina, and Luquillo Experimental Forest, Puerto Rico), we will test two hypotheses: (1) herbivore-derived inputs from canopy to forest floor influence decomposition processes and (2) the timing of inputs and subsequent floor responses vary between temperate and tropical forests. This project will link canopy herbivory and soil processes in forest systems for the first time in one study. It will also address intrinsic differences between temperate and tropical forests, particularly their seasonality and biodiversity.

Keywords: Biodiversity, canopy herbivory, tropical rain forest, temperate forest, soil processes.