

## **Contributions of ectomycorrhizae fungal mats to forest soil respiration.**

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### **Abstract:**

The effects of environmental change on forest C balance depend in large part on the responses of different types of soil organisms that contribute to soil respiration. Soil respiration amounts to as much as 70% of the carbon (C) that leaves temperate forests. Mycorrhizal fungi are ubiquitous, prominent features of soils in Pacific Northwest Forests, yet almost nothing is known about how much they respire in natural settings and what factors effect their respiration. The purpose of my research is to develop estimates of the respiration from ectomycorrhizal (EM) fungi in an old-growth forest stand, by making *in situ* measurements of dense aggregations of fungal hyphae, called ectomycorrhizal “mats”. Working in an old growth Douglas-fir forest in the Western Cascade Range of Oregon, I am comparing CO<sub>2</sub> efflux from EM mats to neighboring non-mat soils to quantify the CO<sub>2</sub> production associated with mat soils. I am also examining the effects of seasonal temperature and moisture variation on mat respiration, and comparing the magnitude of C flux from mat respiration to total C inputs and losses in a complete forest C budget.