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WIND AND SMALL MAMMALS DISPERSE COMPLEMENTARY FUNGAL COMMUNITIES

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Study Description

Small mammals and wind both disperse fungal spores, but few studies have directly compared the fungal communities they disperse. We compared spores from wind and small mammal scat using microscopy and genetic sequencing and found that these two mechanisms disperse very different fungal communities. Nearly 85% of fungal taxa were unique to one of the two dispersal mechanisms. Mycorrhizal taxa were heavily dispersed by small mammals, whereas plant pathogens and decomposers were better represented in wind-dispersed fungal communities. Our work highlights the importance of robust mammalian communities to fungal biodiversity and forest health.

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Photo 1. We focused our study on three species of small mammals known to consume fungi on a regular basis. Eastern chipmunks (top left panel: *Tamias striatus*), southern red-backed voles (top right panel: *Myodes gapperi*), and woodland jumping mice (bottom left panel: *Napaeozapus insignis*) consumed slightly different fungal communities. All three were heavy consumers of mycorrhizal species, such as this bolete (bottom right panel) which contains a rodent paw print and has had much of the fertile surface consumed. Photo credit: Ben Borgmann-Winter (bottom right), Ryan Stephens (all other panels).



Photo 2. Example of a spore trap used to collect airborne fungal spores in this study. Photo credit: Ryan Stephens.



Photo 3. View from one of eight study sites at Second College Grant in Coos County, New Hampshire, USA. Study sites were centered on small harvest gaps to test the ability of wind and small mammals to import spores from intact forest back into disturbed forest. Forests at our study sites were dominated by sugar maple (*Acer rubrum*), American beech (*Fagus grandifolia*), and yellow birch (*Betula lenta*). Forest gaps were part of the New England Adaptive Silviculture for Climate Change experiment at this site. Photo credit: Ryan Stephens.

These photographs illustrate the article "Wind and small mammals are complementary fungal dispersers" by Benjamin W. Borgmann-Winter, Ryan B. Stephens, Mark A. Anthony, Serita D. Frey, Anthony W. D'Amato, and Rebecca J. Rowe published in *Ecology*. https://doi.org/10.1002/ecy.4039