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Home > Science Magazine > 28 February 2014 > Sugden, 343 (6174): 950

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< Prev | Table of Contents | Next >

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EDITORS' CHOICE

ECOLOGY

Diversity Down Below

Andrew M. Sugden

Despite a surge of research efforts in recent years, the challenges faced by soil biologists remain daunting. Knowledge of even the basic elements of the biodiversity that is so visible above ground—in particular, species diversity and distribution—remains far more rudimentary where life below the soil surface is concerned. Soil fungi are a case in point. A key component of the soil ecosystem, its global species diversity, has tended to be estimated by various proxies. From a study of the fungi of boreal forest soils in Alaska, Taylor *et al.* suggest that previous estimates of fungal diversity, which hitherto hovered between 0.5 and 1.5 million, might need to be revised upward. Fungal DNA sequence data from their samples yielded just over 1000 discrete fungal taxa—many more than had been estimated from nonmolecular data. Within the soil, the fungal species communities were found to be highly structured and correlated with abiotic variables such as pH and soil horizon, and with the species composition of the understory plant community. The revealed fungus:plant ratio of 17:1, if reflected globally, would extrapolate to at least 6 million fungal species, suggesting in turn that 98% of fungi have yet to be described—a figure that remains to be corroborated by similarly detailed sampling across a range of other soil ecosystems.



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Ecol. Monogr. **84**, 3 (2014).

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Taylor, D. L., Hollingsworth, T. N., McFarland, J. W., Lennon, N. J., Nusbaum, C., & Ruess, R. W. (2013). A first comprehensive census of fungi in soil reveals both hyperdiversity and fine-scale niche partitioning. *Ecological Monographs*, 84(1), 3–20.

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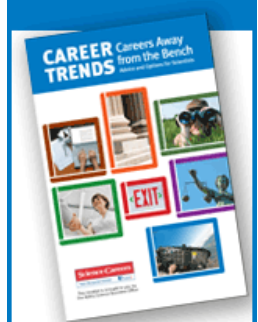
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