Position on the food web drives the host microbiome of soil-dwelling invertebrates

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Video Byte

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Abstract

Soil-dwelling animals play critical roles in terrestrial ecosystems. Despite the importance of these animals, little is known about their microbiomes. To address this, a recent study systematically characterized the microbiomes of ecologically important soil dwelling invertebrate groups across China. Each taxon of invertebrates had diverse microbiomes that contained 'unique' microbial taxa that were not found in surrounding soils. Both random effects and deterministic ones, like host selection, played a role in the microbial community assembly. The researchers also found several unidentified microbial taxa and evidence that this 'microbial dark matter' played potentially important ecological roles. When moving up the food web, the microbial diversity, the number of 'unique' taxa, and the ecological role of unknown taxa increased. These results suggest that soil invertebrates, particularly those high on the food chain, are important hosts of microbial biodiversity, and this source of biodiversity is rarely considered in conservation discussions. Given that other research has suggested soil-dwelling invertebrates are quietly facing extinction, protecting them would preserve not only the biodiversity of these animals but also the unique microbes that call them home.