



BARREN JUNGLES, BEAUTIFUL DESERTS

Life's bounty, where you least expect to find it

Scientists have a skewed picture of Earth's biodiversity because they tend to ignore the microscopic life that is literally underfoot. "Nobody's ever just taken a bunch of soils and said, 'Let's see what we have,'" says Noah Fierer, a microbial ecologist at the University of Colorado. When he and his colleagues examined 98 soil samples, from the Arctic tundra to the Amazonian rain forest, they were floored by the results. The Amazonian rain forest is a bacterial desert, while the comparatively dry grasslands of the Great Basin in Nevada are lush with microbes. "The only thing that predicted bacterial diversity was soil acidity," Fierer says. Grasslands are near neutral, while rain forests are acidic—and bacteria hate acid.

Until recently, the molecular tools needed to identify bacterial diversity did not exist. And, as Fierer freely admits, tallying soil bacteria is unglamorous work. These factors may explain why scientists have been so slow to pursue the project, even though bacteria are key in recycling nutrients through the ecosystem. "It's not an overstatement to say that they're responsible for keeping things running on Earth," Fierer says.

Even now, the world of soil bacteria is still largely terra incognita. "We're just starting to scratch the surface," Fierer says. "We still don't know what they're doing down there," he says.

Anne Casselman