

Concealed patterns beneath life's variety

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Although the tropics appear to the casual observer to be busily buzzing and blooming with life's rich variety when compared with temperate and polar regions—a fact that scientists have thoroughly documented—the distribution of species in space and time actually varies around the globe in surprising and subtle ways. So explains Janne Soininen of the University of Helsinki in an article published in the June 2010 issue of *BioScience*.

Soininen explores a number of recent studies on the topic, synthesizing conclusions from thousands of observations. The studies focus on how the proportion of species that are present in both of two samples varies depending on the distance separating the sites where the samples were taken, or with the time separating two samplings of the species present at one place.

Many such studies indicate that, as expected, the species mix turns over more in the tropics than closer to the poles. But it turns out that this is true only for studies that look at small areas—roughly, a square kilometer or less—or at periods of less than about a year. Studies that look at very large areas, or at multi-year changes, often find the opposite effect: turnover of species is higher close to the poles than in the tropics.

Soininen suggests that changes in [climate](#) over large distances and over multi-year periods explain these paradoxical trends.

Moreover, the data Soininen surveys imply that species turnover does not change in a straightforward way over distance and time, perhaps because

of different interactions between the [species](#) that make up different ecosystems. Soininen suggests further studies to clarify these effects. Such work could shed light on the fundamental processes that assemble ecosystems.

Provided by American Institute of Biological Sciences

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