Moss species richness along elevational gradient in a temperate semi-humid monsoon climate mountain of China

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July 9, 2020

Abstract

The utility of elevational gradients as tools to test either ecological hypotheses and delineate elevation-associated environmental factors that explain the species diversity patterns is critical for moss species conservation. We examined the elevational patterns of species richness and evaluated the effects of spatial and environmental factors on moss species predicted a priori by alternative hypotheses, including mid-domain effect (MDE), habitat complexity, energy, and environment proposed to explain the variation of diversity. Last, we assessed the contribution of elevation toward explaining the heterogeneity among sampling sites. We observed the hump-shaped distribution pattern of species richness along elevational gradient. The MDE and the habitat complexity hypothesis were supported with MDE being the primary driver for richness patterns, whereas little support was found for the energy, and the environment. Moss species richness pattern in the mountain is driven by ecological and evolutionary effects, whereas evolutionary factors predominately shape the large heterogeneity through dispersal, extinction and speciation processes.

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