

Reducing ‘sampling effect’ in biodiversity effect estimation

Xiuli Chu¹, Hua Yang², Yong Jiang³, Rongzhou Man⁴, and Chunjiang Liu⁵

¹Chinese Academy of Forestry

²Beijing Forestry University College of Forestry

³Guangxi Normal University

⁴Ontario Ministry of Natural Resources and Forestry

⁵Shanghai Jiao Tong University

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Abstract

Appropriate estimation of the effects of species interactions on ecosystem function is essential for understanding biodiversity effects and supporting development of environmental policies. Species undergo changes in competitive environment from monocultures to mixtures; highly productive species are generally more competitive and increase their performance and less productive species reduce their performance in mixtures, resulting in net increases of ecosystem function. This positive biodiversity effect, largely due to species differences in monoculture yield, does not involve complementary interactions (niche differentiation or facilitation) and therefore should not be included in biodiversity effect estimation. To reduce impacts of the ‘sampling effect’ and overestimation of biodiversity effects by additive biodiversity partitioning, we present a method to adjust species expected performance based on their monoculture performance and proportion in mixtures. Our method offers more appropriate estimations and interpretations of biodiversity effects for biodiversity experiments.

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