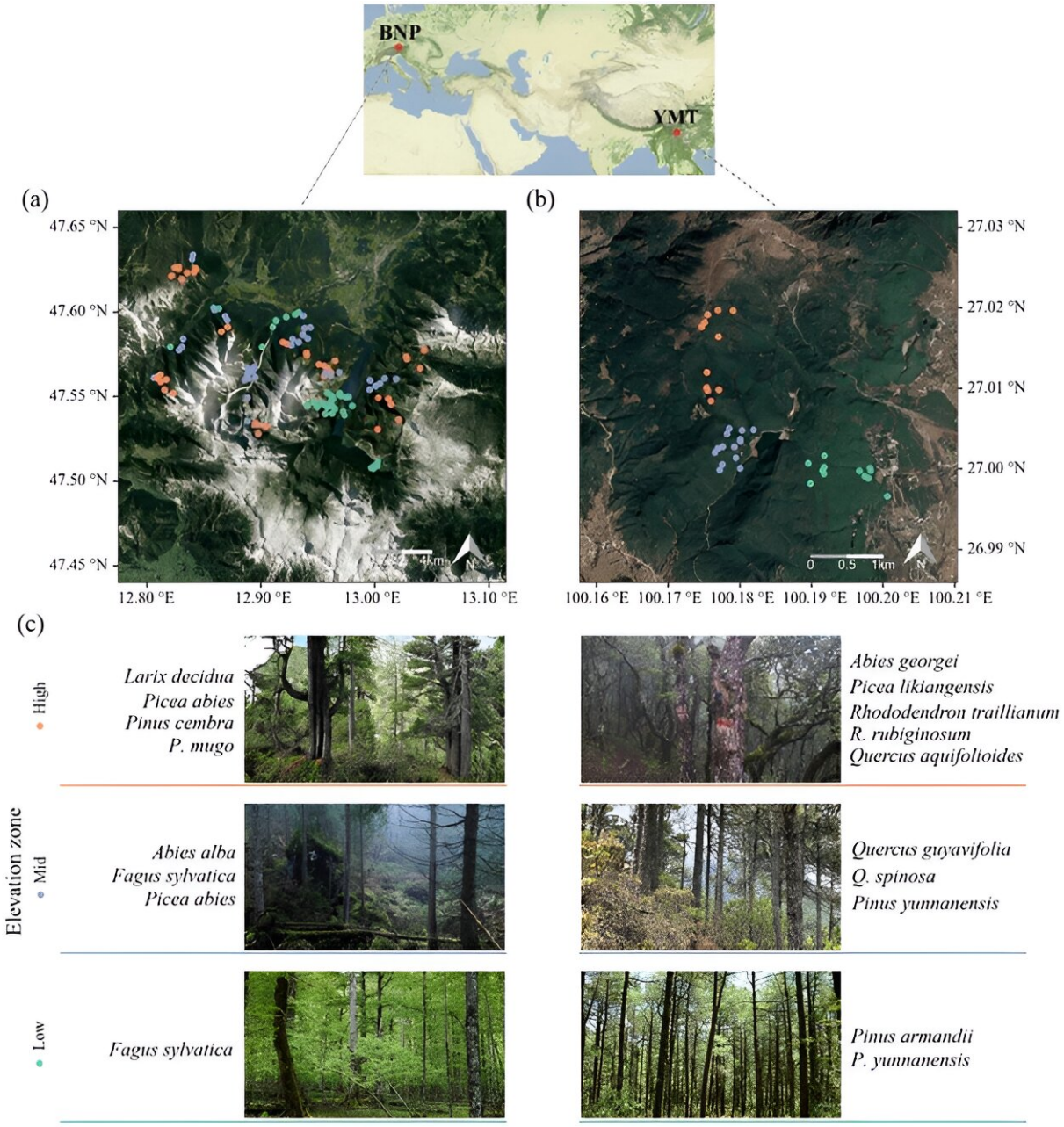
How biodiversity-productivity relationships change along elevation in forests

May 16 2024



(a–b) The distribution of forest plots along elevation in Berchtesgaden National Park (BNP) in southeast Germany and in Yulong Mountain (YMT) in southwest China. Credit: Jiayun Zou, et al.

A study published in the journal *Forest Ecosystems* has revealed that the

relationship between biodiversity and forest productivity is not as straightforward as previously thought.

The study conducted in mountain forests across Europe and Asia utilized extensive forest inventory data to explore how tree diversity correlates with forest productivity at different elevations. Surprisingly, the results showed no consistent pattern; biodiversity increased productivity in some areas but not in others.

"Contrary to our expectations, we did not find a consistent positive effect of biodiversity on productivity," said co-author Dr. Ya-Huang Luo from Kunming Institute of Botany, Chinese Academy of Sciences of the study. "Instead, the relationships were largely neutral in the temperate forests and even negative in the subtropical forests."

"Our research highlighted the role of specific tree traits, such as maximum plant height and wood density, in influencing relationship between biodiversity and productivity across different elevations," added co-lead author Prof. Sebastain Seibold from Dresden University of Technology, Germany.

"This suggests that trait-based approaches have the potential to enhance our understanding of the effects of biodiversity on ecosystem function."

According to lead author Jiayun Zou, the study's findings have significant implications for conservation and ecosystem management.

"Complex trade-offs between conserving biodiversity and promoting productivity do exist. This emphasizes the need for context-specific biodiversity conservation strategies and management practices," said Zou.

More information: Jiayun Zou et al, No generality in biodiversity-productivity relationships along elevation in temperate and subtropical forest landscapes, *Forest Ecosystems* (2024). DOI: 10.1016/j.fecs.2024.100187

Provided by KeAi Communications Co.