

Multi-dimensional approach is needed to protect woody plants in Xishuangbanna

June 10 2022, by Zhang Nannan



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Xishuangbanna, a tropical–subtropical forest transition, is a key biodiversity hotspot in Southwest of China. However, rapid expansion of rubber plantations in the region increasingly threatens local diversity and

there are gaps to be bridged between practical protection and national planning.

In a study published in *Biodiversity and Conservation*, using [species diversity](#) and phylogenetic metrics such as phylogenetic diversity (PD), standardized effect size of PD, net relatedness index, and evolutionary distinctiveness and global endangerment, researchers from the Xishuangbanna Tropical Botanical Garden (XTBG) of the Chinese Academy of Sciences identified spatial patterns for 158 threatened [tree species](#) in Xishuangbanna.

The researchers then compared the spatial patterns against complex climatic, topographic, and soil conditions to investigate correlations that may affect the long-term survival of threatened species in the region.

They found a tendency of phylogenetic clustering of threatened [woody plant species](#) across the tree of life of vascular plants in Xishuangbanna. Threatened [woody plants](#) were found to be distributed unevenly in townships. Most of the threatened woody plants in this transition area occur in tropical floristic associations and/or townships dominated by tropical vegetation.

Moreover, they found the most important abiotic features influencing species richness (minimum temperature in the coldest month, soil gravel content, and elevation) were also those essential for rubber growth in Xishuangbanna. The rapid expansion of rubber plantations indirectly affects the distribution patterns and survival/recovery chances.

"The current extent of the Xishuangbanna National Nature Reserve does not provide sufficient protection for the PD-based [evolutionary history](#) of threatened woody species, as conservation gaps exist between national reserve and priority areas for threatened woody species," said Li Jie of XTBG.

The researchers thus recommend using a multi-dimensional approach incorporating various diversity measures for decision-making and conservation planning to improve threatened woody plant protection in Xishuangbanna.

More information: Xiaoyan Zhang et al, Spatial phylogenetic patterns and conservation of threatened woody species in a transition zone of southwest China, *Biodiversity and Conservation* (2022). [DOI: 10.1007/s10531-022-02439-0](https://doi.org/10.1007/s10531-022-02439-0)

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