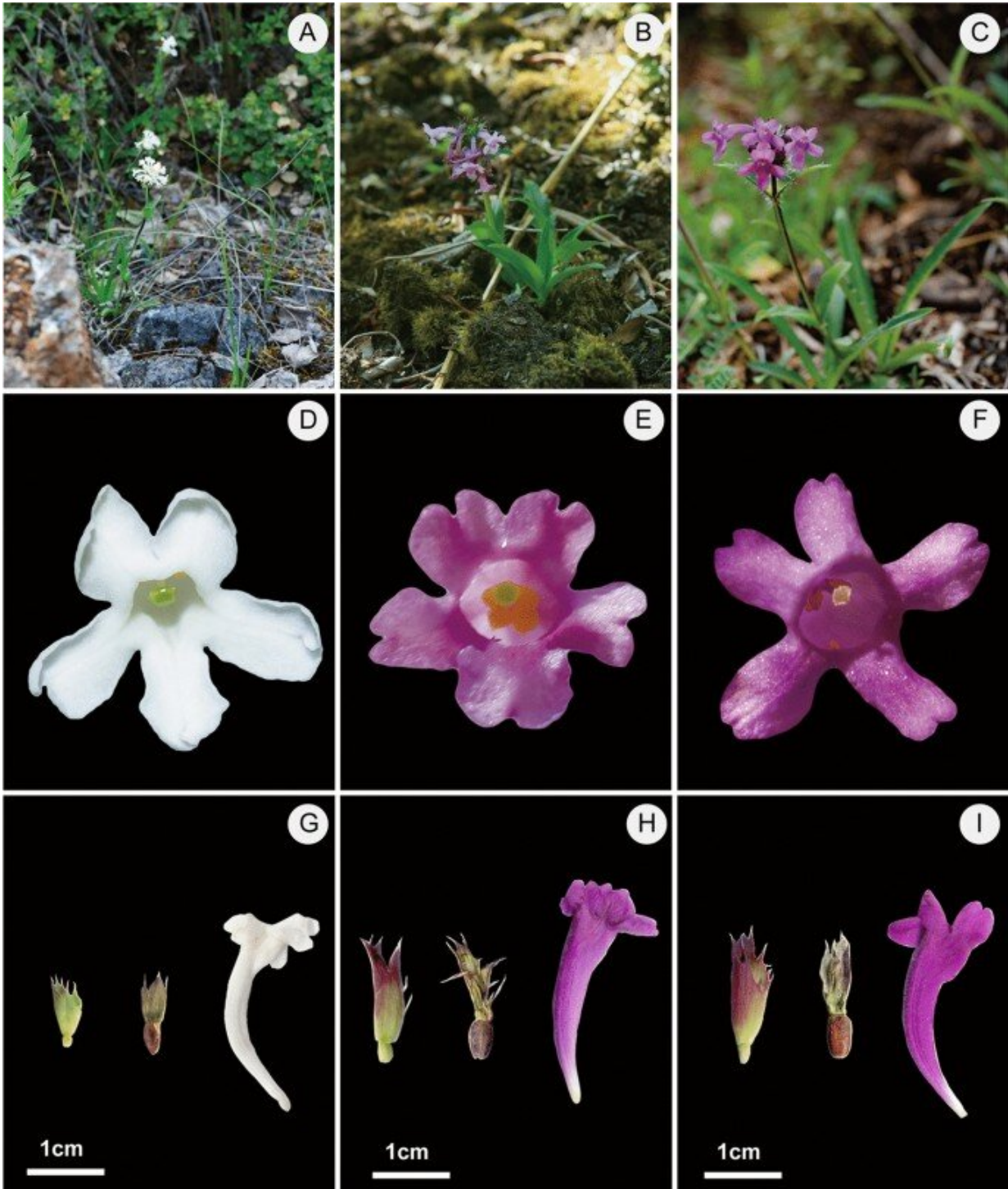


Some Alpine plants have north–south genetic structure along elevational gap between 30°N and 31°N

July 14 2021, by Zhang Nannan



Diagnostic morphological attributes of *Acanthocalyx*. A, D, G Habitat, and morphology of *A. alba*. B, E, H Habitat and morphology of *A. nepalensis*. C, F, I Habitat and morphology of *A. delavayi*. D, E, F Variations of the tubular corolla. Credit: MU Qiyong

Acanthocalyx is a small herbaceous genus in the Caprifoliaceae that is endemic to the high-altitude regions in the Himalaya–Hengduan Mountain (HHM) region. It is considered as an ideal group to study how geomorphological features of the HHM region affect the pattern of distribution and genetic differentiation of alpine plants, especially the influence of the north–south floristic boundary in the Hengduan Mountains.

In a study published in *Alpine Botany*, researchers from the Xishuangbanna Tropical Botanical Garden (XTBG) of the Chinese Academy of Sciences investigated the genetic structure of the herbaceous genus Acanthocalyx to demonstrate if major geographic or ecological barriers in the HHM region have influenced its phylogeographic patterns.

The researchers sampled a total of 392 individuals from 40 populations covering the geographical regions of Acanthocalyx, including *A. alba*, *A. nepalensis*, and *A. delavayi*. They then conducted DNA sequencing, [phylogenetic analyses](#), divergence time estimation, and environmental data analysis, etc.

They found that the distribution of genetic diversity of the Acanthocalyx in the HHM [region](#) is geographically structured. A [comparative analysis](#) showed that the average genetic diversity was higher for *A. nepalensis* than *A. alba*, indicating that the genetic diversity varies among species. *A. delavayi* could have evolved from a marginal population of *A. nepalensis* under the geographic isolation mechanism effect.

"Through comparative approach, we showed that some [alpine plants](#) in the HDM, such as *A. alba*, have a north–south [genetic structure](#) along the elevational gap between 30°N and 31°N, not the 29°N proposed in

previous studies," said XING Yaowu, principal investigator of the study.

Moreover, the speciation mode of *A. delavayi* revealed that the Southern HDM is a cradle for species evolution because of its lower average altitude, complex topography, and low impact from the Quaternary ice age.

More information: Qi-Yong Mu et al, Comparative phylogeography of *Acanthocalyx* (Caprifoliaceae) reveals distinct genetic structures in the Himalaya–Hengduan Mountains, *Alpine Botany* (2021). [DOI: 10.1007/s00035-021-00262-x](https://doi.org/10.1007/s00035-021-00262-x)

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