


Ecology of the National Key Protected Wild Plants in the Xinjiang Region, China

In April 2024, a survey of the national key protected wild plants in Xinjiang, China, was successfully completed. The project was initiated by the Xinjiang Uyghur Autonomous Region Forestry and Grassland Bureau to document the distribution and habitat of key national protected wild plants in Xinjiang for conservation management.

Researchers from the Xinjiang Institute of Ecology and Geography of the Chinese Academy of Sciences led this survey, with participation from other universities, research institutions and wildlife protection organizations in the Xinjiang region. The survey was conducted in 2022 and 2023, covering the entire territory of Xinjiang, with 52 project personnel. More than 300 specimens were collected and 2,000 photographs taken. The survey documented the ecology, distribution and conservation status of 82 species of plants, including 50 key national protected species and 32 species with narrow distributions. Of these, 73 species were previously included in the 2020 edition of the China Biodiversity Red List, with one species categorized as Critically Endangered, eight as Endangered, 20 as Vulnerable, 17 as Near Threatened and 27 as Least Concern.

Example findings of the project are as follows: Populations of *Saussurea involucrata*, endemic to the high-altitude areas of the Tian Shan Mountains, have high genetic diversity, and the Bayinbuluk area is a centre of differentiation for the species. There is only one known population of *Atraphaxis irtyschensis*, endemic to Xinjiang, of c. 4,000 mature plants, but it is not currently included in the national or Xinjiang regional lists of protected plants.

The project also established an evaluation system to assess reserves and the utilization value of wild plant resources, and proposed protection measures, including habitat protection, species restoration and control of illegal collection and trade. We expect that similar projects will be supported in the future, to document the distribution and quantity of wild plant resources and promote the planning of conservation measures.

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Finding *Staphylea shweliensis*, a long-lost Critically Endangered plant species of China

Staphylea shweliensis W.W. Smith, a tree species of the family Staphyleaceae, is endemic to the southern Hengduan Mountains in south-west China. It was categorized as Critically Endangered on the Red List of China's Higher Plants in 2020. This species had only been collected once, in 1917, by George Forrest and was described by William Wright Smith in 1921. According to the single type collection (George Forrest 15800) stored at the herbaria of the Royal Botanic Garden Edinburgh (E, holotype, barcode 00120662; E, isotype, barcode 00120663), this species is only known from the Shweli–Salween divide, an area of c. 400,000 ha in western Yunnan. Surveys close to the type locations and adjacent areas (the Qinghai–Tibet Plateau Expedition in 1982, Gaoligongshan Biodiversity Survey in 1998–2007, and Biluoxueshan Biodiversity Survey in 2010–2019) were not able to relocate the species.

With joint support from the Key Programme for Basic Research Project of Yunnan Province (Grant no. 202201AS070045), the National Key Research and Development Programme of China (Grant no. 2022YFF1302401), the Platform Programme for Basic Research Project of Yunnan Province (Grant no. 202205AM070008) and the Strategic Priority Research Programme of the Chinese Academy of Sciences (Grant no. XDA26020203), the Kunming Institute of Botany surveyed for *S. shweliensis* in the southern Hengduan Mountain range during March–May in 2024. Sixty-nine individuals in fruit were discovered in two sites in evergreen broad-leaved forests at 2,380 m altitude. The total area of occupancy of the species is c. 3 km², indicating it should be categorized as Critically Endangered on the IUCN Red List on the basis of criterion B2ab(i,ii,iii,v). Because of its restricted distribution, small population size and degradation of its habitat, the species should be included in the list of Plant Species with Extremely Small Populations in China. Our survey and information obtained from interviews with people local to the area indicated that the main threats to this species are its small population size, destruction by people and road construction (and hence habitat loss). Urgent measures need to be taken to protect this species.

The Kunming Institute of Botany is now carrying out studies on the population genetics of *S. shweliensis* and its genetic relationships with other Chinese *Staphylea* species. In collaboration with staff of nature reserves, we are also planning to collect seeds of *S. shweliensis* for propagation and future restoration. Using species distribution models, we plan to identify and explore other sites where the species could potentially grow.

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The status of the Endangered micro-endemic shrub *Abatia microphylla* in its type locality, Pedra do Imperador, Brazil

The shrub *Abatia microphylla* Taub. (family Salicaceae) is known only from the Brazilian Atlantic Forest in Rio de Janeiro state. *Abatia* is characterized by opposite leaves, a rare trait in the family shared only with the phylogenetically unrelated *Pseudoscolopia*, a monospecific African genus.

Online databases indicate that *Abatia microphylla* occurs in its type locality, Campo de Altitude in the Pedra do Imperador region, which is named after Emperor Dom Pedro II (the location is also known as Pedra do Cônego), and in Serra dos Órgãos National Park. However, after revision of the specimens from Serra dos Órgãos National Park we found they were previously misidentified and are actually *Abatia americana*. Thus *Abatia microphylla* is so far known only from Campo de Altitude, at c. 1,400 m elevation. This is also the type locality for other plant species endemic to the Atlantic Forest, such as *Wunderlichia insignis* Baill. Pedra do Imperador is an unprotected area close to urban areas. In two visits, in May 2023 and May 2024, we located only eight and six individuals, respectively, three of the former with flowers, and the latter all sterile. Voucher specimens are deposited in the herbarium of the Federal University of Espírito Santo, Vitória (herbarium code VIES).

The flora of Pedra do Imperador is threatened by anthropogenic impacts, including invasive species (*Pteridium arachnoideum* (Kaulf.) Maxon), horse farms, livestock,

installation of communication towers and irrigation ducts, plastic waste and non-natural fires. We found *A. microphylla* only at the edge of the main trail through Pedra do Imperador. In 2017, when the species was also believed to occur in Serra dos Órgãos National Park, it was categorized as Endangered on the Red List of Brazilian Flora. We plan to revisit Campo de Altitude in May 2025, to search for additional individuals and to reassess the species' conservation status. We hope to raise awareness among Brazilian politicians of the need to promote biodiversity conservation in high elevation areas, where plants are adapted to rocky soils, strong winds and low temperatures.

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Let us not forget the human dimensions of ecosystem restoration

Target 2 of the Kunming–Montreal Global Biodiversity Framework concerns ecosystem restoration. Prior to that, the Bonn Challenge on Forest Landscape Restoration, the AFR100, the New York Declaration on Forests, and the Paris Agreement, amongst others, have all called for the restoration of vast areas of forest.

Restoration is, however, a human endeavour that requires full engagement of people at all levels of decision-making and at all stages of the restoration process. In an April 2024 report supported by WWF, the Society for Ecological Restoration and the International Union of Forest Research Organizations (Mansourian et al., 2024, iufro.org/publications/joint-publications/article/2024/04/24/human-dimensions-of-forest-landscape-restoration), six social scientists and five conservation and forestry practitioners have come together to explore the human dimensions of forest landscape restoration.

Human dimensions of restoration are multi-layered. At their simplest, they are the activities that are necessary in the human system to enable restoration, such as negotiating long-term objectives, resolving conflicts or carrying out multi-stakeholder consultations. But there are also underlying reasons that determine why people restore or destroy forests, and there are many factors that influence why people may or may not support restoration. For example, landlords that live far away from their landholdings may not feel the same attachment to their land and forests as Indigenous rural communities and thus may be more inclined to transform them to other land uses, or confronted with powerful companies that contribute significant



Abatia microphylla, habit and inflorescence detail. Photos:
Álvaro Nepomuceno and Lucas Silva.