First plant conservation translocation in Armenia: restoring globally threatened wild pear populations

Armenia lies in one of the centres of wild pear diversity and domestication. The diversity within *Pyrus* L. in the country is remarkable: 12 of the 32 pear species occurring in Armenia are country endemics. They never form groves, but occur as single trees and in small groups at 1,000–2,200 m altitude, mainly in arid open woodlands, on roadsides and in oak forests. Small test groups of saplings of three threatened pear species were planted in 2022 within their natural range near the villages of Artavan and Vardahovit in Vayots Dzor province and Lanjar in Ararat province. The species are all categorized as threatened on the IUCN Red List and all are endemic to Armenia: the Critically Endangered *P. gergerana* Gladkova and Endangered *P. hajastana* Mulk. and *P. sosnovskyi* Fed. The results of this preliminary experiment were used in planning a larger plantation.

In November–December 2023, 360 saplings of *P. gergerana*, *P. hajastana* and the endemic and Endangered *P. daralagezi* Mulk. were planted in the wild near Arates, Vardahovit and Herher villages. The saplings were raised from seed in Artavan Conservation Nursery and Yerevan Botanical Garden. This population restoration was implemented by the Armenian Society of Biologists, an NGO, in collaboration with the Institute of Botany after A. Takhtajyan of the National Academy of Sciences of the Republic of Armenia, in a project supported by Fondation Franklinia in 2020–2023 (project number 2020–16). It followed the first in situ study of the threatened endemic pears of Armenia carried out in 2016–2018 with funding from Fauna & Flora and The Global Trees Campaign.

This is the first plant conservation translocation in Armenia. The project contributed to both in situ and ex situ conservation of these threatened pear species. Some of the collected seeds were stored in the seed bank of the Department of Conservation of Genetic Resources of Armenian Flora of the Institute of Botany, and 50 saplings of the threatened pear species were added to the living plant collection of the Yerevan Botanical Garden.

Wild pear habitat near the village of Artavan, Armenia. Photo: Anna Asatryan.

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Seeds of collaboration for the Indian Botanical Gardens Network

Research on India's wealth of plant diversity has a long tradition, dating from the late 18th century when the Botanical Survey of India was founded. However, the creation of a national botanical gardens network as a country-wide mechanism to share expertise and coordinate action has been faltering, in part because of limited human and financial resources. Botanic Gardens Conservation International (BGCI) has been supporting plant conservation and botanical gardens in India since its establishment in 1987. Of 119 Indian botanical gardens listed in BGCI's GardenSearch database, 20 are active members of BGCI and five are engaged in practical conservation projects supported by BGCI. Acknowledging the need to conserve threatened plants, BGCI members in India convened at Auroville Botanical Gardens on 10–12 October 2023 to revitalize a national botanical gardens network.

The meeting, attended by representatives from all BGCI member institutions in India and other invited organizations, involved 35 attendees from 19 organizations. Notable participating organizations included Mahatma Gandhi Botanical Garden GKVK, Lalbagh Botanical Gardens, Jawaharlal Nehru Tropical Botanic Garden and Research Institute, MS Swaminathan Research Foundation, Naroji Godrej Centre for Plant Research, French Institute of Pondicherry, The University of Trans-Disciplinary Health Sciences and Technology, Bangalore International Airport Limited, Keystone Foundation and National Institute of Sow Rigpa. The principal aim of the meeting was to explore the potential and opportunities for establishing a network of botanical gardens in India, and to consider how the resources and skills of the gardens could lead to better conservation.

Participants outlined actions for networking, including listing and mapping all Indian botanical gardens, updating institutional details in BGCI's GardenSearch and PlantSearch databases, and establishing a mailing list. Strategies for future meetings, collaboration, sharing institutional plant lists, germplasm and technical resources, and developing staff skills, experience and knowledge were highlighted.

BGCI committed to mentoring and supporting the network's development, with an emphasis on resource mobilization once the working practices of the network are established. Members of the national network were encouraged to join BGCI's membership and accreditation schemes, to become part of the global botanic garden community. Future opportunities for the network include developing accredited courses, joint publications, staff exchange, sharing successful conservation and education approaches, and influencing policy through shared knowledge. The participants also highlighted other potential areas for collective engagement, emphasizing interactions with diverse stakeholders, the role of gardens in promoting understanding of native species and ecological habitats, and participation in ecological restoration initiatives. In the first instance, the network secretariat will be based at Auroville Botanical Gardens.

The inception of the Indian Botanical Gardens Network marks an important step towards collaboration, a cornerstone in the sustainable conservation of India's diverse plant life.

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Rewilding of black softshell turtles in Brahmaputra landscape, India

Turtle Survival Alliance Foundation India and Assam Forest Department, with financial support from the Disney Conservation Fund and Turtle Survival Alliance, rewilded hatchlings of the Critically Endangered black softshell turtle *Nilssonia nigricans* in the Brahmaputra River within Kaziranga Tiger Reserve, Assam, from late November 2023 to mid January 2024. The hatchlings were approximately 5 months old. They were head-started from 368 eggs sourced from 27 nests protected at Nagshankar temple, Biswanath district, Assam.

The black softshell turtle is threatened by overexploitation and fisheries bycatch. Endemic to Brahmaputra basin, the species was thought to be extinct in the wild and confined to Bostami shrine in Bangladesh until recent sightings in the Brahmaputra River drainage and records from a few temple ponds in north-east and east India.

Assam's temple ponds are known to hold a number of threatened turtle species. The ponds have recently gained prominence as semi-captive conservation facilities, and the Turtle Survival Alliance Foundation India project team has been helping two temple ponds with husbandry improvements, nest protection and rear and release programmes since 2018. Artificial incubation of the eggs of the black softshell turtle at optimum temperature and humidity conditions resulted in 64% hatching success in 2023. The newly emerged hatchlings were fed live fish fingerlings, maintained in a heated indoor environment and regularly moved into the sun for basking.

Pre-release habitat suitability surveys were conducted at eight potential sites in the Brahmaputra floodplains. Two sites were chosen that would allow released turtles to acclimatize over the winter before dispersing into the mainstream as the river floods during the monsoon. After primary health screening, a total of 150 black softshell turtle hatchlings were released on three occasions in the two locations. Approximately 35 hatchlings from 2023 have been retained in the semi-captive facility until they weigh 1 kg, to allow them to be fitted with acoustic telemetry devices prior to release. This will allow us to investigate their survival and dispersal after release.

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Rediscovery of the Critically Endangered *Plantago fengdouensis* in Sichuan, China

In April 2023, a group of *Plantago* plants with unusal leaf morphology was found on a cobblestone beach at 245–255 m altitude on an island in the Yangtze River in Jiang'an County, Yibin City, Sichuan Province. The species was identified as *Plantago fengdouensis* (Z.E. Chao & Yong Wang) Yong Wang & Z. Yu Li (Plantaginaceae), a National Class II Protected and Critically Endangered plant in China. This was the first record of *P. fengdouensis* in Sichuan.

Plantago fengdouensis is endemic to the Yangtze River Basin and was originally known only from three islands in the Yangtze River. In 2001, before the impoundment of the river to form the Three Gorges Reservoir, Wang Yong and Wu Jinqing of Wuhan Institute of Botany, Chinese Academy of Sciences, first discovered the species on the island of Fengwei Dam in the Yangtze River, Fengdu County, Chongqing, which is below the inundation line of the reservoir. In 2004, the type specimen was collected in Chongqing and preserved in the herbarium of Wuhan Botanical Garden (holotype HIB 0151258), and the species was named. But by 2006, there were less than 30 of the original 290 plants remaining. After the completion of the Three Gorges Dam Project in 2009, the wild habitat of the species was submerged, and the species was declared extinct in the wild. *Plantago fengdouensis*