

The Development of Lushan Botanical Garden

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Mt. Lushan, situated in northern Jiangxi Province on the south bank of the lower and middle reach of Changjiang River, is a historic mountain as well as a summer resort. It was listed as world cultural heritage and World Geologic Park. Its beautiful mountainous landscape attracts many tourists from home and abroad every year. Lushan Botanical Garden is located in the valley of Hanpokou, southeast of Mt. Lushan, occupying nearly 300 ha of land, at latitude 29°35'N, longitude 115°59'E, and 1,000–1,360 m above sea level. The Botanical Garden, a member of the IUCN, BGCI, is under the joint supervision of Jiangxi Province and the Chinese Academy of Sciences.

Brief history

Lushan Botanical Garden was founded in 1934 by Professor Hsen-hsu Hu, Professor Ren-chang Chin and Professor Feng-whwai Chen. It was originally called the Lushan Forest Botanical Garden. The Garden is the first of the modern scientific botanical gardens in mainland China. The three founders of the Garden are internationally well-known botanists.

Professor Hsen-hsu Hu (1894–1968), the initiator of the garden, was China's leading botanist and the director of Fan Memorial Institute of Biology in Beijing. He was the first of many Chinese students of botany who received their graduate training at Harvard. Under the instruction of Professor Elmer Drew Merrill, the director of Arnold Arboretum, he earned his master's degree in 1924 and a doctor degree of science in 1925 (Spongberg 1990). In 1948, collaborating with Professor W.C. Cheng, he identified a newly discovered conifer, the living fossil, as *Metasequoia glyptostroboides* Hu & Cheng (the dawn redwood). In late 1947, the seeds of the living fossil were forwarded from the Garden to the Arnold Arboretum and to Europe.

Professor Ren-chang Chin (1898–1986), the first director of the Garden from 1934 to 1946, published his famous scientific paper "On Natural Classification of the Family Polypodiaceae" in 1940. He is honoured with the title of 'the Father of Chinese Fern Studies'.

Professor Feng-whwai Chen (1900–1993), the second director from 1946, reconstructed the war-ruined Garden after the Japanese Invasion War. By his efforts, the Garden became the model and cradle of Chinese modern botanical gardens. He is honoured with the title of 'the Father of China's botanical gardens'.

The Garden is now a nationally important base for biodiversity conservation, environmental education and public awareness, as well as research into the sustainable uses of wild plant resources. The herbarium has 170,000 specimens, and the library is stocked with 60,000 books. There is a staff of 96, including 47 researchers and technicians. Seed exchange and academic contacts are made with 270 different institutions in 68 countries.

Mission statement

The aim is to collect and preserve the mountainous plants around the lower and middle reaches of Changjiang River, especially focussing on the rare and endangered plants, gymnosperms, rhododendron, fern, moss, and endemic plants, as well as plants with important value to science and the economy.

Conduct ex situ conservation biological study on the collected taxa, and research into the sustainable utilization of wild plant resources to serve the local economic development.

Strengthen the construction of environmental education base for the public awareness of biodiversity conservation, and the field study of botany.

Plant diversity conservation

Holding a living collection of some 3400 plant taxa, the Garden's sections include the Coniferous Garden, the Rhododendron Garden, Fern Garden, Rock Garden, Arboretum, Tea Plantation, Herbaceous flower section, Actinidia Garden, Medicinal Herb section, Acer Garden, East Asia and North America Disjunctive Distribution Plant Garden, Native Plant Garden, Iris Area, Greenhouse, shelter, and also the Natural Landscape Area which takes up three fifth of the total area of the Garden. Among these, the most unique gardens are the Coniferous Garden, Rhododendron Garden, Rock Garden, Arboretum and Fern Garden.

The Coniferous Garden, the biggest special garden in Asia, was first established in 1936, with an area of 1.5 hectare; 247 species among 40 genera of 11 families of gymnosperms are grown here, including 116 exotic species, the “living fossil” *Metasequoia glyptostroboides* and the Chinese endemic *Pseudolarix amabilis*. *Picea glauca*, *Pinus strobus*, *Pinus ponderosa* and *Pinus nigra* were firstly been introduced successfully here.

The *Rhododendron* Garden covers an area of 3.2 hectares, holding the biggest number of *Rhododendron* species in China. It consists of three parts – the Rhododendron Classification Garden, the Exotic Rhododendron Garden and Rhododendron Valley. More than 300 species of rhododendron (including taxa below species level) have been successfully introduced and acclimatized.

The Rock Garden, the first one in China with unique features, was built from 1935 to 1936, and occupies one hectare. More than 600 species of alpine plants are cultivated, among which many were introduced from the South-western mountain areas of China, the Himalayas and the European Alps, including perennial ornamentals and flowering bulbs.

The Arboretum started to be constructed in 1953, with an area of 1.3 hectares. Its function is to introduce and preserve broad-leaved trees and bushes growing in mountainous region around the middle and lower reaches of Changjiang River. So far, over 300 species of native and exotic, rare and endangered plants have been collected.

The natural condition of Mt. Lushan is suitable to the growth of ferns. In 1997, the Botanical Garden established a Fern Garden with an area of one hectare, which now has a total of 115 species of fern. It is the first special garden of its kind in China.

The collection and breeding of the rare and endangered plants have always been one of the main tasks of the Botanical Garden. So far, 96 species of this kind such as *Cathaya argyrophylla*, *Metasequoia*

glyptostroboides, *Glyptostrobus pensilis*, *Davidia involucrate*, and *Bretschneidera sinensis*, have been successfully collected, among which more than 20 species are grown.

The Medicinal Herb Garden cultivates more than 300 species of medicinal plants. The internationally famous “Lushan Mist Tea” is produced in the Tea Plantation.

Research and achievements

The Botanical Garden features in Taxonomy, gymnosperm, rhododendron, rare and endangering plants, fern, orchid, actinidia, chestnut, persimmon trees, plant conservation, phytochemistry, plant tissue culture and the development of ornamental plants like *Ardisia*. For over 70 years, it has implemented more than 180 research projects. 16 scientific achievements have been awarded at national or provincial level. 11 monographs have been published.

Major successes include the completion of Volumes 1 & 2 of the *Flora of Jiangxi Province*; participation in the compilation of several works such as *Chinese Flora*, *Chinese Sylva*, *Medical Plants Inventory of Jiangxi Province*, *Forests of Jiangxi* and *Ancient Trees of Jiangxi*; the breeding of *Actinidia chinensis* cv. 'lushan'; a study on the moths of Mount Lushan; especially the introduction and acclimatisation of gymnosperms. More than 10 species of conifers acclimatized in the garden such as *Abies firma*, *Cryptomeria fortunei*, *Cryptomeria Japonica*, *Chamaecyparis obtusa*, *C. pisifera*, and *Thuja occidentalis*, have been extended to 16 provinces around the catchments of Changjiang River, covering an area of 9,000 km².

The cultivar of *Ardisia mamillata* bred and selected in the botanical garden won one of four gold prizes of the chamber ornamentals in 99' Kuming World EXPO of Horticulture. Afterwards, it has become a big industry in Dayu County of Jiangxi Province.

Education and public awareness

The Botanical Garden is the National Education Bases for Science Popularization, for Teenagers, for Wild Plant Conservation, as well as the field study bases for over 10 universities and colleges. During the annual tourist season, environmental publicizing activities are conducted.

The Garden receives over 150,000 each year, including 20,000 foreign guests, Chinese students and professionals per year.

Conclusion

Lushan Botanic Garden is an irreplaceable sub-alpine botanic garden in a subtropical zone of high international esteem, leading in studies in biodiversity conservation and also contributing to the ‘greening’ of urban areas and helping the economic development of less-wealthy areas and communities.

References

Spongberg, S.A. (1990). *A Reunion of Trees, The Discovery of Exotic Plants and their Introduction into North American and European Landscapes*. Harvard University Press, Cambridge, MA. USA.