

# The Plant Conservation in China

## 중국의 식물보전

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### I. Introduction of Chinese Wild Plants

China has a vast territory with complex climate, varied geomorphic types, a large river network, many lakes and long coastline. There are unbroken connections among tropical, subtropical, temperate, and boreal forests. This unbroken connection has led to the formation of rich plant associations rarely seen elsewhere in the world. Living members represent many genera of plants, which are known only from fossil records in North America and Europe (e.g., *Ginkgo*, *Metasequoia*, *Pseudolarix*, *Cercidiphyllum*). China also has the most diverse flora of any country in the North Temperate Zone. Such complicated natural conditions inevitably form diversified habitats and ecosystems.

#### 1. The vegetation forms diversity in China

The average coverage of the forested area of China is about 13%. Forest mainly has 212 formations indicated by the dominant species, co-dominant species or characteristic species in arbor layer.

#### 2. Species Diversity

##### 1) Megadiversity

The plateau and high mountains occupy over 50% of land in China.

During the late Tertiary, most regions had not been affected by glaciation, thus the fauna and flora is characterized by having many endemic and relic species. Therefore, it is considered internationally that China is one of the megadiversity countries in the world, where the number of species, as a whole, make up about one tenth of the total number of species of the world.

## 2) Endemism

There are many endemic genera and species in China. The number of endemic genera of Bryophytes, Pteridophytes, Gymnosperms and Angiosperms are 8, 5, 8 and 232 in China. It occupy 1.6%, 2.2%, 2.5% and 7.4% to all the Chinese known genera.

## 3) Status

There are 398 higher plant species were listed as the rare and endangered species in China Plant Red Data Book. Owing to heavy deforestation, the estimated proportion of endangered or vulnerable plant species in China is about 15-20%, i.e. about 4,000- 5,000 species of higher plants.

## 3. Genetic Diversity

China with its ancient civilization and a history of several millennia has a wide variety of different domestic crops. China is one of the original centers of crop plants in the world. Many important crops originated here, such as soybean, rice, barley, tea, apples, etc. Besides these, there are many wild-related species and ancestral forms of cultivated plants, such as wild soybean, wild barley and wild rice. The plant germplasm resources are valuable in modern plant cultivation and gene transfer biotechnology.

## II. Threats to plant diversity

### 1. Habitat Destruction

Many human activities e.g. logging, fuelwood collection, over grazing and forest fire caused the habitat destruction.

### 2. Over-exploitation

Many plants are increasingly threatened because of international trade, especially some high quality timber species, medicine species and other large market species.

### 3. Pollution

The freshwater in China is seriously polluted by industrial wastewater causing major decline of aquatic plants. Serious pollution occurs in the sea and near the seashore from oil spillage, air pollution, acid rain and pesticides should be considered as important factors of species decline.

### 4. Management problems

Some of the major problems in management include: inadequately defined boundaries; illegal hunting and forest felling; unrestricted and damaging tourism; construction and land reclamation, through constructing buildings and roads; Overpopulation pressures; lack of effective protected area management bodies, lack of scientific management, no clear management aims, lack of funds and training and poor relationships with local residents.

## III. Recent Progress in Plant Conservation

### 1. Survey and bioinventory

Since 1950's, the several research institute and universities

sponsored large-scaled surveys on Chinese flora. The surveys covered nearly the whole country including its lands and surrounding seas.

## 2. *In situ* Conservation

Since the first reserve (Guangdong Dinghushan Mountain Nature Reserve) was established in 1956, a network of reserves at national and local levels was developed. The newly Statistics from the State Environmental Protection Administration show that China has already had 1,227 nature reserves with a total area of 98,208,000 hectares, about 6% of China's territory.

## 3. *Ex Situ* Conservation

### 1) Botanical Gardens

There are 111 Botanical Gardens in the China. They preserve tens of thousands of plant species; probably as much as one third of the entire Chinese flowering plants and ferns are in their collections. The increasing rate of the loss of plant diversity and wild habitats all over the country has encouraged many Botanical Gardens to become important conservation centers of Chinese plant diversity. It is estimated that more than 13,000 species have been conserved in botanical gardens. It's more than 50% of China's flora.

### 2) Germplasm and Gene Banks

Currently, a national germplasm bank has been established to preserve crops and economic forest in China.

## 4. Improving the Legal Systems

In recent 20 years, especially after The UNCED in Rio, Brazil in 1992. China has paid attention to biodiversity legislative work. Though

the problems still exist in implementation, all the related law and regulations have and will take certain roles in the conservation.

#### IV. Suggestion and Recommendations

##### 1. General Recommendations for strategy and actions

The conservation and sustainable use of plant diversity are closely related to different aspects of social development. The loss of biodiversity is irreversible. It is essential to have a well-designed strategy and action plan in order to effectively carry out biodiversity conservation.

##### 2. Scientific Research

To establish a bioinventory information system at the national and local levels.

The development in diverse aspects of the research should be well coordinated among all the protected lands, Chinese Botanical gardens and arboreta

Key objects of plant, the research scope should be centered on some priority objects. E.g. endemic elements, monotype (oligotype) taxon, species with important economic potentials, threatened species and keystone species

Prior regions for research e.g. rich plant diversity amassment region, regions of plant diversity in most threatened and regions with unique and diverse ecosystems

Major contents of research e.g. effects of people' s action and environment changes, *in situ* conservation and *ex situ* conservation.