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# Investigation and conservation of lycophytes and ferns resources in China

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Lycophytes and ferns are the most evolved sporophytes, the most primitive vascular plants, and the key groups in the evolution of land plants. Due to global climate change, intensified human activities, and irrational exploitation of biological resources, the global ecological environment and biodiversity are seriously threatened. As a relic of natural history, lycophytes and ferns bear the brunt. After the destruction of the original habitat, lycophytes and ferns with less adaptability are often the first to become endangered, so they should be the first object of protection. *Ex situ* conservation is an awkward but effective method of species conservation and an important part of the global biodiversity conservation program. As a result, botanical gardens have become "Noah's Ark" for the preservation of many rare and endangered plant species. It is hopeful to achieve effective protection of national key protection lycophytes and ferns such as *Isoetes*, *Alsophila costularis*, *Cibotium barometz* and *Adiantum nelumboides* through plant resource assessment, information system construction, and research on conservation technology and sustainable utilization of resources. Meanwhile, it is also essential to arouse the public's awareness of ecological protection through special plant exhibitions, popular science activities, nature education, and other ways of promoting rare and endangered ferns. The project has completed the following tasks: (1) assessment of the current situation of plant resources of the national key protected ferns *Alsophila costularis* and *Cibotium barometz*; (2) analyse the genetic diversity, biological characteristics, and risk factors of *Cibotium*; (3) establishment of rapid breeding and cultivation technology system of *Isoetes*, *Alsophila costularis*, and *Adiantum nelumboides*; (4) creation of the seedling promotion of *Cibotium* and the technology system of sustainable utilization of *Cibotium*; (5) *in situ* and *ex situ* protection of *Alsophila costularis*, *Asplenium komarovii*, *Adiantum nelumboides*, etc.; (6) preservation of *Angiopteris latipinna*, *Angiopteris fokiensis*, *Cystopteris chinensis*, etc.