

## Case Study 2.2 Conservation of Marsh Wetland in Middle Mountain of Emeifeng Nature Reserve of Fujian Province

Emeifeng national-level nature reserve is located with Taining County, Sanming City, northwestern part of Fujian Province. It is located between 117°01'19"- 117°10'17" east longitude, and between 26°52'25"- 27°08'06" north latitude, which is an important section of biodiversity of the middle range of Wuyi Mountain. The nature reserve was established as a provincial nature reserve in June 2001, following the approval by the provincial government, and in May 2016 it was promoted to a national-level nature reserve following the approval by the State Council. The total area covered by the nature reserve is 10,299.59 hectares. Its core zone covers 3,500.04 hectares, accounting for 33.9% of the total area. The nature reserve has rich natural resources. Within the nature reserve, there are 11 vegetation types, 50 formations, 103 clusters; 239 families, 826 genera, 1938 species of vascular plants; 35 orders, 100 families, 371 species of vertebrates, and 13 orders, 40 families, 159 species of macrofungi. It has a large number of rare wild flora and fauna, of which 156 species of flora and fauna are protected by the province and above. The main protection targets are the extremely endangered aquatic plants-*Isoetes orientalis* and their habitats (marsh wetlands in the middle mountains), the global endangered white-eared night heron (*Gorsachius magnificus*) and rare pheasant birds and their habitats, and the unique native plant (*Fagus lucida*). The nature reserve is a type of nature reserve established to protect wildlife.



*Isoetes orientalis*



Marsh wetland in the middle mountain

Over the years, the nature reserve has cooperated with Xiamen University, Fujian University of Traditional Chinese Medicine, Fujian Agriculture and Forestry University, Nanchang University and Fudan University to carry out animal and plant resources surveys and protection management. It has discovered rare animals and plants, such as *Isoetes orientalis*, *Sedum tetractinum*, *Tongoloa stewardii*, *Cheirotonus jansonii*, and *Pucrasia macrolopha*, among which *Isoetes orientalis*, *Sedum tetractinum* and *Tongoloa stewardii* were recently recorded in Fujian; *Cheirotonus jansonii* and *Pucrasia macrolopha* belong to the national second-level protected wild animals, which are very rare.

Located at a valley of the middle mountain whose altitude is 1,500 m above sea level, the marsh wetland is the typical, largest wetland with the most complete structure in southern China. It covers area of 80 hectares. The unique micro-topography has given birth to unique and rare plants. Therefore, this becomes the best habitat of *Isoetes orientalis* -the most endangered national Grade I protected plant. The *Isoetes orientalis* has a population of more than 1,000, which is currently the

largest population in the world. Other communities are also found here including a large number of *Sagittaria wuyiensis*, *Nymphaea* spp., *Alnus trabeculosa* and *Sparganium* spp.. Together these communities constitute a complete system of marsh wetland in the middle mountain.

In order to protect this habitat, the following main measures were taken in 2012:

(1) Increasing publicity and prohibiting all human activities. Fences and iron gates are installed at the intersection of Qingyun Management Station to Donghaiyang, and the road leading to Donghaiyang is closed. It is forbidden for outsiders to enter the nature reserve to reduce disturbance caused by the activities of the surrounding villages and towns.

(2) Adjusting the water level of wetlands. Due to the climate warming and the decrease or unevenness of rainfall, the marsh wetland in Donghaiyang has been obviously degraded. In order to slow down the degradation of the wetland, artificial control measures have been taken to control the wetland water level.

(3) Strengthening the dynamic monitoring of communities. In cooperation with Xiamen University and Fujian University of Traditional Chinese Medicine, the nature reserve has been undertaking dynamic monitoring of the protection of *Isoetes orientalis* community and habitat, with the habitat fenced for *in-situ* conservation.

As a result of six years of survey and monitoring, the community and habitat of marsh wetland have become stable.



***In situ* conservation of *Isoetes orientalis***



**Dynamic monitoring of *Isoetes orientalis***