

## Summary

Xishuangbanna of southwestern China is biogeographically located at a transitional zone from tropical Southeast (SE) Asia to subtropical East Asia, and is at the junction of the Indian and Burmese plates of Gondwana and the Eurasian plate of Laurasia. The region is a hotspot in biodiversity of the world. Based on physiognomic and ecological characteristics, floristic composition and habitats combined, the primary forest vegetation in the region can be organized into seven main vegetation types and thirty formations, including tropical rain forest, tropical seasonal moist forest, tropical monsoon forest and tropical lower montane evergreen broad-leaved forest. Due to conspicuous similarity on ecological and floristic characteristics, the tropical rain forest in Xishuangbanna is a type of tropical Asian rain forest. The monsoon forest is a tropical deciduous forest under the influence of a strong monsoon climate and is considered to be a transitional vegetation type between a tropical rain forest and savanna in physiognomy and distribution. The tropical montane evergreen broad-leaved forest is the main mountain vegetation type in the region, which is considered to be a distinct vegetation type from the northern margin of mainland southeastern Asia, controlled by a strong seasonal climate. The flora of the region consists of a recorded 4152 native seed plant species (including 38 subspecies and 294 varieties), belonging to 1242 genera in 188 families, among which about 80% are tropical genera and 30% are endemic to tropical Asia, suggesting a strong affinity to tropical Asian flora.

Three main factors relating loss of biodiversity in Xishuangbanna are: expansion of rubber plantations, forest fragmentation, and underplanting of forests with economic plants. The tropical forests with the most species richness in the region undoubtedly lost their tree species diversity after rubber plantations with single rubber tree species replaced them. With fragmentation of these forests, species diversity is usually reduced, and the smaller the fragment is, the greater the reduction. In addition, the more seriously disturbed the fragment, the more species richness diminished. Tree species with small populations are lost first in the process of fragmentation. There was a conspicuous shift in the relative representation of mature-forest and light-demanding species: the former decreased. Species loss was balanced by new migrants across life forms. Although species diversity was maintained to a certain extent and physiognomy (life forms) of these remnants did not change significantly, the floristic composition and

ecological species groups were conspicuously changed through time. This implies that the essential flora of the tropical rainforest could not be actually maintained in these remnants. The *Amomum* planting underneath the tropical forest was widely practiced as the rubber plantations in Xishuangbanna. This poses a serious threat to natural regeneration of forest, because it destroyed the sapling-seedling bank of the rain forest that caused the forest to lose its regeneration capability.

16 articles published in international journals are selected in the collected works. These articles studied the floristic composition, species diversity and physiognomy of the tropical forests, and their ecological and species changes with fragmentations, and biodiversity loss in Xishuangbanna. The aim of the collected works is to give references for scientific researches, biodiversity conservation and nature reserves managements.