

# **New England Botanical Club – Minutes of the 1031<sup>st</sup> Meeting**

**7 December 2007**

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The 804<sup>th</sup> meeting of the New England Botanical Club, being the 1031<sup>st</sup> since its original organization, was held on Friday, December 7, 2007, in the lecture hall of the Fairchild Biochemistry Building at Harvard University, Divinity Avenue, Cambridge, MA. There were 54 members and guests in attendance. Among various announcements were the details concerning the June “away” field trip to the New Jersey Pine Barrens being led by George Newman. A number of members have already expressed interest in participating.

Dr. Peter Ashton of the Royal Botanic Gardens, Kew, England, U.K. & Arnold Arboretum, Harvard University, Cambridge, MA, gave the evening presentation, a talk entitled “Why are the Asian tropics so different?” In it he presented reflections and insights from his decades of work on tropical ecology, with numerous fascinating asides.

In a nutshell, the tropical Asian biota stands out from its American and African counterparts for reasons of geography, geology, and climate. In terms of geography, the Asian tropics are larger and more far flung than the other two tropical regions, and they include numerous islands as well as mainland areas. Historic and climatic factors have created several biogeographic frontiers of marked floristic change within the Asian tropics. Wallace’s Line is well known, but other major dividing lines run through India, Burma, and the lower Malay Peninsula.

Many parts of the Asian tropics belonged to the great supercontinent Gondwana in the early Jurassic. This continent was named after the Gondi people in central India, reflecting the contributions of Indian scientists to our understanding of the great southern continent. However, other parts of the Asian tropics were not part of Gondwana, and those originating from Gondwana separated and moved at different times. Some of the blocks have been tropical much longer than others, and the ages of the current soil surface vary dramatically. The oldest may be in the Sundaland block that includes parts of the Malay Peninsula, Java, Sumatra and Borneo. Some soils from this block may be at least 100 million years old, with weathering extending to depths of tens of meters. The blocks have been subject to very different environmental conditions during their history. The Indian subcontinent, for example, was subject to temperate conditions early in its history. More recently, periglacial winds produced dry conditions and large deposits of windblown sand on which tropical forests have become established only in the Holocene. Pollen profiles show that the Malay Peninsula had an impoverished flora during the Cretaceous, with a much richer flora developing by the Eocene.

The complex weather patterns of southern and eastern Asia produce a variety of climates in the tropical belt. The East Indies includes the largest area of the world without a dry season. Other areas have a very pronounced dry season with almost no rainfall even though the wet season receives up to ten or more meters of rainfall. A major climatic cycle is also evident, tied to ENSO (El Niño Southern Oscillation) and leading to drought every five years or so, and often, today, to wildfires. Many tropical Asian trees have their flowering tied to particular phases of ENSO.

No talk on Asian tropics would be complete without mention of the magnificent dipterocarps, a tree family that has received special attention from Dr. Ashton. These trees are tall, the record being 85 m, and many grow as canopy emergents. Many are valuable timber trees and some are endangered as a result of cutting and land conversion. They typically produce a massive floral display every few years, though their pollinators are thrips, tiny insects that are among the smallest of pollinators.

A further distinctive feature of the Asian tropics is the long history and nature of human activity in this landscape. The region boasts the oldest known fountain and elaborate gardens that predate Mohammed by several centuries. Rich Indonesian soils have supported continuous cropping with three plantings of rice per year for many centuries. Some indigenous cultures have treated forests as sacred and have conserved upland forests to protect water supplies. As a result, much primary forest has been retained to recent times.

All is not well with the region’s forests, however. Forest cutting is intense in many regions and clearing of forests for agriculture and plantation forestry continues. Protection efforts are underway, though in Borneo much of the protected land is relatively species-poor upland. Protection of biodiversity would be greatly enhanced by protection of even small areas of the species-rich lowlands. Protection of the enormous genetic library that is represented by tropical biodiversity must be a priority for scientists and policy-makers. Dr. Ashton’s hopes for a fitting place for humans in the landscape were captured in his last image of a Japanese village surrounded by mature forests, a coexistence that has been worked out even in one of the world’s most densely population countries.