Abstract

Distribution of tropical rainforests in Southeastern Asia has changed over geological time scale, due to movement of tectonic plates and/or global climatic changes. Shorea parvifolia is one of the most common tropical lowland rain forest tree species in Southeastern Asia. To infer population structure and demographic history of S. parvifolia, as indicators of temporal changes in the distribution and extent of tropical rainforest in this region, we studied levels and patterns of nucleotide polymorphism in the following five nuclear gene regions: GapC, GBSSI, PgiC, SBE2, and SODH. Seven populations from peninsular Malaysia, Sumatra, and eastern Borneo were included in the analyses. STRUCTURE analysis revealed that the investigated populations are divided into two groups: Sumatra-Malay and Borneo. Furthermore, each group contained one admixed population. Under isolation with migration model, divergence of the two groups was estimated to occur between late Pliocene (2.6 MYA) and middle Pleistocene (0.7 MYA). The log-likelihood ratio tests of several demographic models strongly supported model with population expansion and low level of migration after divergence of the Sumatra-Malay and Borneo groups. The inferred demographic history of S. parvifolia suggested the presence of a scarcely forested land bridge on the Sunda Shelf during glacial periods in the Pleistocene and predominance of tropical lowland rainforest at least in Sumatra and eastern Borneo.

Source:
lowland rainforest tree species Shorea parvifolia (Dipterocarpaceae) from Southeastern Asia. Ecology and Evolution 2 (7): 1663-1675 (link to download the full paper)