**Community assembly of tropical Fagaceae-dominated forests in Thailand dates back at least to the late Paleogene**

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ABSTRACT

The late Oligocene to Early Miocene flora of the Ban Pa Kha Subbasin (Li Basin, northern Thailand) provides a record of montane dry tropical oak-pine forests. The rich ensemble of Fagaceae typical of these forests might have existed in the wider region of Southeast Asia since Eocene times and various fossil plant assemblages represented both lowland (Fagaceae, Dipterocarpaceae) and upland (Fagaceae, Pinaceae) tropical forests. These findings are in conflict with previous interpretations of vegetation development in northern Thailand. These studies stressed that stratigraphically older (possibly late Oligocene) spore and pollen assemblages in northern Thailand were markedly different from the modern tropical flora and had a distinct northern temperate character. A major change in climate would have caused a dramatic shift to tropical conditions since the Middle Miocene. Considering palaeobotanical data from adjacent regions in Southeast Asia, we suggest that differences in spore and pollen assemblages in intermontane basins in northern Thailand more likely represent different facies and lowland/upland settings. Assembly of these forest ecosystems typically comprising *Quercus* sections *Cyclobalanopsis*, *Ilex*, and *Quercus*, pollen of Castaneoideae with affinities to *Castanopsis* and *Lithocarpus*, and extinct fagaceous genera such as *Eotrigonobalanus*, most likely dates back to the Eocene. The absence of oaks of section *Cerris* in the spore and pollen assemblage of the Ban Kha Subbasin, despite this group being part of the modern vegetation, might reflect the late arrival (secondary radiation) of this chiefly temperate group in tropical Southeast Asia.

INTRODUCTION

The Fagaceae (oak family) comprises 10 extant genera and more than 1,000 tree