

elevation peak in species-richness in tropics" suggested by Ward (2000).

The similarity between LNB and LSMP (NS=0.87) is higher than that between LNB and LWJ (NS=0.56) and between LSMP and LWJ (NS=0.50) (Fig. 54). This, together with the lower species richness in LWJ, highlights the unique and distinctive *Pheidole* fauna of W. Javanese lowland rainforest. This faunal dissimilarity probably reflects a decrease in the number of rainforest species in Java and the disjunctive occurrence of Indo-Chinese components (species adapted to seasonal forests), resulting from the Quaternary biogeographical background mentioned below.

Biogeographical background of the present-day Indo-Chinese and Indo-Malayan *Pheidole* faunas

A number of rough distributional patterns among the *Pheidole* species from Southeast Asia are recognised. The species for which available distributional or ecological data are limited are omitted from discussion. Due to the nearly complete absence of phylogenetic information on the species of this genus, the discussions that follow are limited in scope and somewhat speculative. However, recognised distributional patterns are to some extent explainable using recent analyses of the Quaternary environmental changes in this area (Brandon-Jones, 1998; Kaars & Dam, 1995; Whitten *et al.*, 1996). The patterns are as follows:

1) Wide-ranging in East and Southeast Asia, or pantropical, in association with human activities
(represented by *P. bugi*, *P. fervens* and *P. megacephala*)

These species are widely distributed in Southeast Asia or even pantropical, and inhabit open land to forest edges. Their distribution seems to have been partly affected by recent human activities, through their immigration into man-made habitats or transportation by human commerces.

2) Occurring on both sides of Wallace's Line (represented by *P. aglae* (Fig. 55) and *P. plagiaria* (Fig. 56))

P. aglae is distributed in the Indo-Malayan subregion and New Guinea, and inhabits well-developed forests (primary and well-recovered secondary forests) in lowlands and hill areas. *P. plagiaria* is widespread in the Indo-Chinese and Indo-Malayan subregions, and also known from Sulawesi (Viehmeyer, 1916b) and Batjan (Smith, 1860) near Molucca, within the Austro-Malayan subregion. It usually inhabits well-developed lowland forests in at least Borneo (see under bionomics of *P. plagiaria*). I have not yet recognised distinct signs of geographical variation in morphology over its range. "The subgenus *Pheidolacanthinus* (*sensu* Emery, 1921)" also occurs in both the Indo-Malayan and Indo-Australian subregions. I collected one undetermined species from W. New Guinea which undoubtedly has a close relationship with *P. quadricuspis* and its allies, the Indo-Malayan representative of "*Pheidolacanthinus*". Brown (1973) suggests rafting as a possible mean of long-distance overseas transport of tropical ants nesting in pre-formed plant cavities, such as hollow twigs, hollow nuts and leaf bases. According to Brandon-Jones (1998), rafts are likely to have been much more frequent during the post-glacial period of vegetational succession in Southeast Asia. At least distributional patterns across Wallace's Line were brought about by such dispersal because there were probably no direct land connections between the two sides during the Quaternary falls in the sea level.