

Wilson (1959), Brown (1960) and Taylor (1972) have separately commented on the northern biogeography of this ant. We agree that *A. australis* is probably an Australia-based species which has moved northwards into New Guinea. The data reviewed above suggest that, in Melanesia and northern Australia, *australis* has very strong predilection for relatively cool forests at high elevations, and that it might have moved into Melanesia from temperate Australia through the available montane 'islands' of suitable habitat in north Queensland. The ability of this species to use stepping-stone islands in trans-oceanic dispersal is well evidenced by its distribution in archipelagic eastern Melanesia, and in the islands east of Australia. This ability might have aided its northern dispersal.

Very few Australia-based ants inhabiting rain forest seem to have dispersed northwards into montane New Guinea. Other species or superspecies with known distribution patterns suggestive of such dispersal include *Rhytidoponera purpurea* (Emery), the *Cryptopone crassicornis* (Emery) complex [including *crassicornis* and the probably synonymous *C. rotundiceps* (Emery) of New Caledonia and north-eastern Australia (= *Ponera mjobergi* (Forel)], the *Chelaner rubriceps* (Mayr) species-group (including *C. edentatus* (Emery) in New Guinea) and the *Prolasius formicoides* (Forel) species-group, which is represented at high elevations in northern Australia and New Guinea.

Both Wilson (1958) and Brown (1960) have noted the apparent complementarity of distribution in New Guinea between *A. australis* and its 'closest ecological equivalent', the widespread South-East Asia-based amblyoponine, *Myopopone castanea* (Fr. Smith). This last species is a predominantly lowland insect found mostly at altitudes below 500 m, though I have taken it in sympatric association with *A. australis* at 800 m near Kokoda (see records listed above under *A. australis*). Wilson and Brown have implied that this complementarity is due mainly to competitive displacement of one of these species by the other at appropriate elevations. I believe the observed situation can best be explained as a resultant of the separate biogeographic histories of these ants. *Myopopone castanea* probably originated in tropical South-East Asia as a species essentially adapted to life in low-elevation, fully 'tropical' rain forests. Like many such species in New Guinea its range seems to be severely limited by the climatic effects correlated with increasing elevation. *Amblyopone australis*, on the other hand, has its distribution, in New Guinea and Cape York Peninsula, centred on cool, higher-elevation rain forests. It is evidently unable to tolerate the climatic conditions of more indubitably tropical forests at lower altitudes. This, I suggest, is in accord with its apparent status as a primarily Australian faunal element adapted to cool temperate habitats. It is notable that *australis* populations are best developed in the southern part of Australia, and that the species is capable even of tolerating winter snow cover in the Australian Alps, Tasmania and New Zealand (personal observations). In Australia, north of about latitude 22°S. at least, its distribution is restricted to scattered cool temperate areas of montane forest, occurring as 'islands' in a 'sea' of less suitable habitats. The New Guinea Highlands and the mountains of eastern Melanesia are simply outliers of this cool montane 'archipelago' to which *A. australis* has dispersed. I suggest then that these two organisms might have been 'programmed' for distributional complementarity long before their separate dispersal histories brought them together on New Guinea.