Integration of the fossil record into Wallacean biogeography

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Wedged in between the Indo-Malayan and Australasian continental landmasses, Wallacea constitutes one of Earth's biodiversity hotspots, harbouring exceptional levels of species richness. Renowned for its unique biotic assemblages, it contains a remarkably high number of endemic species. While it is largely undisputed that the Wallacean biota is derived from the two large continental areas enclosing it, the details remain poorly understood. Two major reasons are the lack of well-supported phylogenies of Wallacean taxa and uncertainties related to the geological history of the region.

But exactly how 'endemic' is endemic in an area that has been a sliding geological and biological puzzle for much of its history? Wallacean faunal evolution, and thus the current distributions of taxa, has been dictated by the geological, tectonic and climatic history of the region. Taxa now limited to one island or group of islands may have been much more widespread in the past. On the other hand, current endemics may have colonized an island relatively recently. In addition, extinction of taxa may mask successful colonization events, and thus past dispersal routes, while artificially exaggerating the importance of other lineages. Integration of the fossil record can therefore add significant new insights into the dispersal and current distributions of taxa.