

Australia: sistership or mothership to the NZ invertebrate fauna Opening remarks on testing biogeographic hypotheses

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Australia and New Zealand are spatial sisters that originate from the same geological mother- Gondwana. The tectonic history of the region has become increasingly well known since the widespread acceptance of continental drift in the 1970's. However, biogeography often shows signs of having not progressed far, despite the introduction of increasingly sophisticated tools, primarily in the realm of population genetics and molecular phylogenetics. One general problem is a tendency to assume, without good evidence, a correlation between isolation of land areas and isolation of biological populations. For Australia and New Zealand, continental breakup does provide one plausible mechanism for the sundering of extant lineages, however, demonstrating this to be the case is far from easy. NZ and Australian invertebrate faunas may be sister, through that old vicariance process, but equally, one could be the daughter of the other. It is challenging and possibly impossible to obtain the data necessary to distinguish these alternatives given that sampling is largely dependent on the living representatives of lineages. Extinction, range-change and long distance dispersal and establishment are known components of evolution that mean any simplistic and generalised biogeographic "solution" would be naive.

