DISPERSAL OF *KORTHALSELLA* SEEDS

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As I examined literature on *Korthalsella* last year for an article about the distribution of members of this genus in Canterbury (Burrows, 1995) I noticed that Ohwi (1965) and Wagner *et al.* (1990) stated that the fruit dehisce explosively. Wagner *et al.* qualified the statement by "often". The fruit are small, single-seeded, fleshy berries; the correspondingly small seeds are ejected by being squirted out under pressure.

Reflecting on this point, if explosive dehiscence (and thus seed dispersal), occurs for all *Korthalsella* species, including those in New Zealand, at best the lateral dispersal distances that could be achieved would be a few centimetres. If this is the only way in which *Korthalsella* seeds ever are, or were dispersed, through time, then it places some strict constraints on the interpretation of the biogeography of the genus. If its seeds disperse such short distances how could the different species have spread their populations so widely (e.g. in New Zealand, or between China and Japan)? Even more incredibly, how could ancestral forms have reached the widely-separated locations where their descendants now live (Ethiopia - Madagascar - Indian Ocean Islands - India - South-east Asia - China - Taiwan - Japan - Indonesia - Australia - New Caledonia - New Zealand - Tahiti - Marquesas - Austral Is. - Hawaii - Henderson Island - Cuba)? In effect both extremely long periods of time and continuous populations of host plants would be needed.

This explanation for present distributions requires that *Korthalsella* must have occupied Gondwanaland before it began to break up 150 million years ago, in the late Jurassic period. However, there is a problem, because, as far as is known, remote oceanic island groups such as Tahiti, the Marquesas and Hawaii were not part of Gondwanaland. Nor was eastern Asia joined as part of Gondwanaland proper, although India eventually rammed into the original Asian land-mass.

A more plausible hypothesis to explain present distribution patterns is that, although *Korthalsella* seeds can be dispersed, explosively over short distances, some longer-distance dispersal by birds is also possible. For moderate distances of a few hundred, or a thousand metres, or so, this might be achieved by birds eating the fruit; seeds would be voided in a relatively short time. However, for really long distance dispersal (hundreds or thousands of kilometres) it would be necessary for seeds to adhere to the birds and be groomed off after a flight. We could envisage migratory birds, perched near ripe *Korthalsella* fruit, triggering

their explosion. Some seeds, in the sticky pericarp tissue could adhere to their plumage. The elements of chance involved make this a rather hair-raising way for a plant to disperse its seeds. Close observation of New Zealand *Korthalsella* species is needed to see just what happens when the fruit are ripe.

It is interesting that pygmy mistletoes of the genus *Arceuthobium* (also in family Viscaceae), which parasitize conifers in Mediterranean - Himalaya - China - Malaysia - Java - North America - Caribbean also have explosive fruit dehiscence (Munz, 1974). Presumably the same sort of conditions apply to them.

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