Is pollen morphology useful for defining monophyletic genera in the epacrids?

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The fleshy-fruited epacrids (tribe Styphelieae, Epacridoideae, Ericaceae) comprise more than 350 species. The group is highly diverse in southern Australia with several endemic genera and more than 50 undescribed species. They are regarded as an important component of the Australian flora, particularly in heaths. Styphelieae are atypical in Ericaceae with regards to their pollen structure. Even though the pollen grains are shed in tetrads as in the majority of the family, they present patterns of variable sterility from full normal tetrads to pseudomonads (three aborted cells), including triads and dyads, or more rarely, nullads. Although the ontogeny of the pollen types has been well studied, their origin and evolution in the tribe are unclear and assumptions of homology remain untested. The latest hypotheses require reinterpretation, as variable sterility may be underreported in the subfamily and the taxonomy within Styphelieae is under reconsideration. We conducted the first comprehensive pollen survey using SEM within the *Styphelia-Astroloma* clade of Styphelieae, with the aims of characterising the diversity of pollen morphology and its homology (assessed against molecular phylogenetic trees) as a basis for determining the taxonomic utility. Preliminary results show that pollen morphology is variable within the *Styphelia-Astroloma* clade and broadly congruent with the lineages revealed in molecular cladograms. Accordingly, pollen morphological characters are potentially useful to support the diagnosis of monophyletic genera. We discuss the evolution of external morphological characters in a phylogenetic framework and the implications for understanding the biology of the group.

Program and Abstracts

Australasian Systematic Botany Society Conference 2012

Local knowledge, global delivery

23–28 September, Perth, Western Australia

ASBS 2012
CONFERENCE PERTH