



## **Don't trust a plastid for taxonomic advice: Strong incongruence between nuclear and plastid ddRAD derived phylogenies of the southern holly-leaf grevilleas.**

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The southern holly-leaf grevilleas (Proteaceae) are an informal grouping of shrubs from southeastern Australia, several of which are of conservation concern. The generation of a resolved nuclear DNA phylogeny for the group has been problematic due to low interspecific sequence variation. We utilised ddRAD markers to infer phylogenetic relationships within the group and compared this to a new plastid-derived phylogeny. Both the nuclear and plastid DNA phylogenies displayed two major clades: *Grevillea ilicifolia* and closely related taxa forming the first and the 'core' holly-leaf grevilleas including *G. aquifolium* in the second. Within the *G. ilicifolia* clade, groupings showed little correlation with current taxonomy. Within the core group, the current taxonomy was largely supported by the nDNA data. Some genetic structure was found within *G. aquifolium* but appears associated with geography rather than growth form or ecology. The plastid phylogeny was largely incongruous with the nuclear data within the two main clades. Evidence of extensive plastid sharing found among taxa in the core group is suggestive of incomplete lineage sorting or introgression which may have promoted variation. We suggest that the taxonomy of the *G. ilicifolia* clade requires reassessment, whilst minor revision of the core holly grevillea clade may be warranted.

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