



Conservation genetics of Critically Endangered *Zieria* (Rutaceae): confirming existing species boundaries and identification of a species new to science.

Harvey K. Orel (The University of Melbourne); Todd G. B. McLay (The University of Melbourne, Royal Botanic Gardens Victoria and CSIRO); Lydia K. Guja (Australian National Botanic Gardens and CSIRO); Marco F. Duretto (Botanic Gardens of Sydney); Michael J. Bayly (The University of Melbourne).

Zieria is a genus of 63 described species of shrubs or small trees in the family Rutaceae that are almost all endemic to eastern Australia. Many species are rare and threatened, and these are usually restricted to small geographic ranges, often growing on or around rocky outcrops and mountain peaks along Australia's Great Dividing Range. *Zieria buxijugum*, *Z. formosa* and *Z. parrisiae* are three closely related, Critically Endangered species of questionable taxonomic validity that occur within six kilometres of each other on the south coast of New South Wales (NSW). Using ddRADseq data and sampling comprehensively from wild plants and *ex situ* living collections, we investigated genetic relationships and diversity of these species, along with two taxonomically stable congeners, *Z. granulata* and *Z. tuberculata*, and a possible undescribed taxon, *Z. aff. tuberculata*. Our results support the current taxonomic status of *Z. buxijugum*, *Z. formosa*, and *Z. parrisiae*. Genetic data and morphology support and inform the description of *Z. aff. tuberculata* as a distinct species, which is known from a single mountain in south-east NSW. This research highlights the value of genetic data for species delimitation and identification, and for understanding wild vs. *ex situ* genetic diversity.