

The colourful evolution of New Zealand *Coprosma* (*Rubiaceae*) fruit: a molecular approach

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The genus *Coprosma* offers the unique opportunity to document the evolution of fleshy fruit traits within a phylogenetic group. One of the most speciose genera in New Zealand (c. 60 species), *Coprosma* exhibits a diverse array of fruit sizes, shapes and colours. Such a large variety of traits within one genus may reflect a number of dispersal syndromes, implying that fruit traits have diverged under selection from different guilds of frugivores, primarily birds and reptiles. Pigment analyses have found species differences in pigment composition, where several different anthocyanins are responsible for the red and blue colours observed in many species. In addition to their occurrence in red fruit, carotenoids are the predominant pigments in yellow and orange fruit. However, white fruit is lacking in both anthocyanins and carotenoids. Evolutionary relationships within *Coprosma* were inferred from sequence variation in the ITS and ETS regions of the nuclear ribosomal DNA. From this molecular phylogeny, fruit traits, notably colour, appear to have changed repeatedly as the genus has radiated in New Zealand. It is apparent that both allopolyploidy and reticulate evolution have occurred within *Coprosma*, and it is speculated that these have been potent mechanisms for generating change in fruit colour.

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Cladia retipora

Also known as 'lace lichen' or 'coral lichen'
One of the most beautiful wetland lichens.

