

GOODENIACEAE

by John Knight

The Family Goodeniaceae contains about 400 species, of which 377 have been recorded in Australia. Named after Rev. Samuel Goodenough, Archbishop of Carlisle in the 19th century, the Family should rightly be Goodenoughia, but the Botanists of the time thought Goodenoughia was not good enough, and thankfully shortened the name. It is interesting to note that the Reverend, along with others of his era, opposed the views of Linnaeus in classifying plants based on sexual characters. This was despite his prominent membership of the Linnaean Society, and his being surrounded by many eminent botanists and scientists.

A complete review of the Family was undertaken for the preparation of Volume 35 of the Flora of Australia, published by the Australian Government Printing Service in 1992. Whilst work of this magnitude is a collaborative effort by many, it draws heavily on over 30 years research by Dr Roger Carolin, who retired after 43 years as lecturer in botany and Curator of the John Ray Herbarium at the University of Sydney.

In the Flora of Australia treatment, there are 11 Genera in the Family, and Brunonia is treated as a separate monotypic Genus as in the classification of Cronquist. Despite this, Dr Carolin believed that Brunonia should be included in Goodeniaceae, as is the case with Vol.3 of the Flora of NSW (Editor Gwen Harden) which was published in the same year. Dr Carolin is cited also as the authority in the Flora of NSW for the entry on the Family Goodeniaceae.

The best known and widely grown Genera are *Scaevola* (71 species), *Dampiera* (66 species), *Goodenia* (178 species) and *Lechenaultia* (26 species). The other 7 Genera include *Anthotium* (3 spp), *Cooperhooia* (6 spp), *Velleia* (21 spp), *Verreauxia* (3 spp), and *Selliera* and *Pentaptilon* (monotypic Genera of 1 species each).

As a generalization, plants in the family are floriferous small herbaceous shrubs, and tend to colonize recently cleared or burnt areas. As such many are short lived, but most are relatively easy to propagate, so we should maybe treat them as annuals or biennials, and be thankful for their generous showy displays whilst they are at their best. In the garden, they should be grown in well drained soils with plenty of sunshine to encourage quick growth and plenty of flowers. Too much water can cause problems with rot, and my experience is that plants put out in autumn are then best left to their own. Spring planting is also successful, but plants need to be well settled before the onset of summer. Pruning is beneficial, and many can be lightly pruned often and the flowers used for indoor decoration. Many have a long vase life with no special treatment. Propagation can be successful throughout the warmer months, say late August to May, using strong young growth without too much flowering. Note though that some species which produce long flowering stems do not root using flowering wood, but are successful using new vegetative shoots. Hard pruning of vigorous plants produces ideal propagation material, but unthrifty plants rarely respond well to this treatment. The lesson; prune often and keep the plants young and strong.

As shown by the open flat petal structure, the majority if not all the taxa are insect pollinated, and the petal wings are mostly yellow, seen as white under UV, or shades of blue, which under UV also is much more intense than we see, therefore signalling to insects a strong attraction. There are of course exceptions, such as the variety of colour displayed by the *Lechenaultia* group.



Goodenia heterophylla, showing the flat petal arrangement typical of the family



Reverse view showing the petals (silvery colour) and the strongly blue wings of *Lechenaultia biloba*

The petals of all species have tactile guides to direct wanted pollinators and deter those who would simply steal nectar. These features are readily observed with a good 10x hand lens, an indispensable aid which all gardeners should carry at all times, and take the time to stop and investigate the intricacies of our wonderful Australian flowers. You will be amazed at what you can learn by such close observation.

So what feature identifies GOODENIACEAE ?

They are widely variable in their morphological make up, that is leaf shape, stems, roots and seed. Even the flowers are dissimilar.

However with your 10x lens at hand, you will see that they all feature a special way of handling their pollen presentation. Each stigma is topped by a hairy cup, called an indusium (*induere* to put on, and Greek *endysis* dress or garment)

This is the only flowering plant family to have such an arrangement, although many ferns also have indusia covering their spore.



Typical fan flower of *Scaevola aemula*, on left, showing the hairy indusium.

On the right, with some petals removed, you can see that the style, at first shorter than the stamens, has elongated and now presents as a receptive organ.



As the flower matures pollen is shed from the stamens into the cup, and the style then elongates to present the pollen to insects. Once the pollen is removed, the stigma becomes receptive to pollen from another flower. This prevents self pollination.

The system obviously works well, for I have recorded seedlings of *Scaevola*, *Dampiera* and *Goodenia* appearing in gardens where multiple plants are growing.

References

1. Flora of Australia, Vol.35, AGPS 1992
2. Flora of NSW, Vol 3 (Ed. Gwen Harden) NSW University Press 1992
3. Encyclopaedia of Australian Plants suitable for cultivation, Vol 4, Rodger Elliot and David Jones, Lothian 1986

