The Family Tremandraceae

by John Knight

At the November meeting I referred to the Genus *Thomasia* as having moved from Sterculiaceae to Malvaceae. Botanists are certainly finding out so much more information about how our plants evolved using DNA techniques. As growers of Australian plants, we have to rely on what we see, the morphological characters of plants, the look and feel of foliage, and the arrangement of flowers etc, in determining what a plant is thought to be.

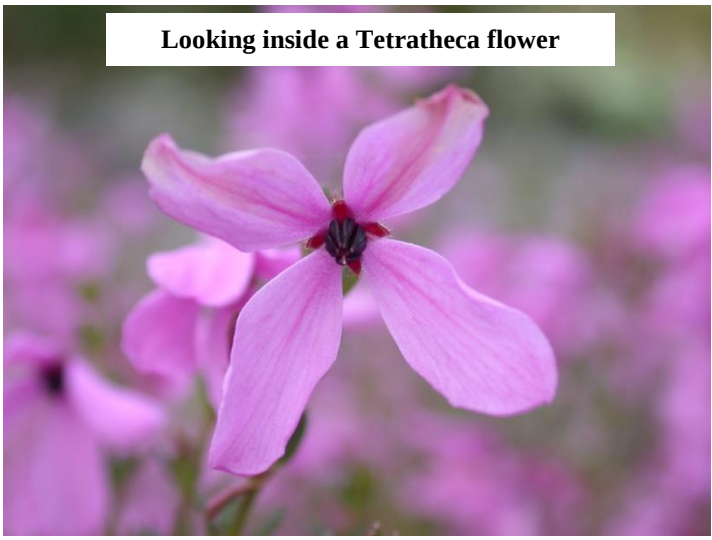
Scientists over the centuries have spent countless hours trying to work out the relationships of plants. The concept of Genus and species is attributed to Linnaeus, who adapted the known knowledge at his time, into an artificial system, using the arrangement and number of sexual characters of the flowers, such as the stamens and pistil (stigma, style and ovary). It was maybe assumed that the number of plant types was fixed and determined, but with the publication the Charles Darwin's "On the Origin of Species by Means of Natural Selection" in 1859, scientist began to challenge the thinking that species were fixed, immutable. Now came the new wave of thinkers, espousing evolutionary (and to many, revolutionary) theories, that plants evolved over time into the plants we know today, but with often quite different looking parentage.

We accept that, with the knowledge of fossil records, incomplete as they are, that many modern plants were around a long time ago, and are happy to accept the work of botanists in sorting all the available evidence to produce a theoretical pattern of evolution. So we must accept that our use of morphological characters in determining what plant is what, and where it fits in the maze of nature, is at an end. We as growers of plants will never be able to test the theories and evidence produced using a myriad of genetic markers to prove or disprove present and past hypotheses as to classifying plants. But we must also not put our head in the sand, so to speak, and refuse to accept that some plants will and have been moved between families, or worse still had their name changed to something totally unexpected.

Many of us will at some time or other have grown one or more members of the small endemic Family Tremandraceae, which included *Tremandra*, comprising 2 species found in south west WA, *Platytheca*, also of 2 species from south west WA, and *Tetratheca*, a genus of about 50 species, plus a few as yet un-named species. Tetrathecas can found from South east Queensland, through eastern New South Wales, Victoria, Tasmania and south eastern South Australia, but the greatest variety and numbers of species occur in south west WA.

What is interesting to scientists about the Family Tremandraceae, is the apparent speed at which the species have diversified. Recent work using DNA and other modeling has proved the link to Elaeocarpaceae This might seem a little odd, for that little family contains little heathy shrubs, and we recognize plants in the Elaeocarpaceae as rainforest plants, including many large trees such as *Sloanea* and *Elaeocarpus*.

With rainforest roots, but having decided to compete for space in the drier sclerophyll environs, *Tremandra*, *Platytheca* and *Tetratheca* continued to diversify, with some species in more arid areas doing away almost entirely with leaves, and evolving a way of using the stems (cladodes) to undertake the important process of photosynthesis.



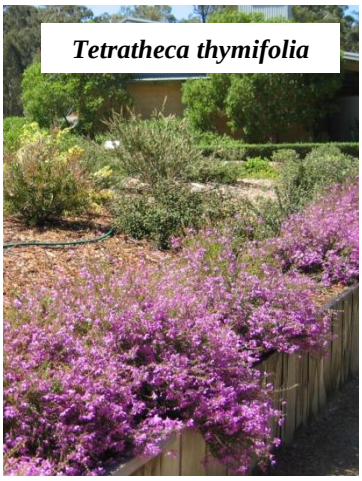
Looking inside a Tetratheca flower

Most will be familiar at least with *Tetratheca*, so I will tell you a little of what I know about these gems. *Tetratheca* is derived from 'tetra' (four) and 'theca' (box or sac) and refers to the stamens, which are 4 celled or 4 lobed. Your 10x lens will give a good view when looking down on the stamens, for you will readily observe the box like structure, with terminal pores. Flowers have 4 – 5 petals and twice that number of stamens, and a single superior ovary and style. As mentioned the flowers are generally, but not always pendent, adapted to visits by insects. I have observed blue-banded bees and hover flies frequenting the flowers, but cannot confirm that they are pollinators, as my garden plants have not produced seed.

Tetratheca contains a range of small shrubs well suited to home gardens, and it is pity that few species are available. When I worked at Australflora Nursery in Melbourne in the 1980's there was 11 species available, and they were fairly popular. Over time, as fewer people propagate their own plants, and purchase what is current in the nursery trade, some plants inevitably disappear, and it seems the time of Tetratheca had gone.

There is always a need for small plants to fill gaps, and for this Tetratheca is ideal. They are mostly dwarf to small shrubs, often with soft herbaceous foliage arising from a woody rootstock. Flowers of most species are pink to pinkish-purple, although some species have white flowered variants. Nearly all flower from late winter through spring, and the flowering can be very prolific. A few species will carry on flowering into summer, and pruning can assist in this. Scattered through a garden, they provide a unifying palette without being dominant.

Plants do best when grown in company with other plants, and prefer something less than full sun. However they do require good drainage, and will suffer if the soil is wet around their roots. That said, they do appreciate a drink when the weather gets dry. (don't we all !) It has been said that plants can be short lived, and while this is obviously true of some species, others persist for many years. To grow these plants successfully, regular pruning of the old stems is important. Once a plant begins to make new shoots from ground level, it is safe to remove the old woody shoots, as one would for raspberries for example. Thus pruned the plants generally grow away strongly, preparing to produce another stunning display next season. Usually, for plants grown in open sunny sites, I would wait until the heat of summer is over, say mid March, before pruning heavily, as the older growth protects the young shoots. However, if your plant has finished flowering by October, and new growth has commenced, a pre-summer pruning is preferred. Although quite happy without supplementary feeding, a sprinkle of slow release fertilizer in early autumn will help produce strong growth and better flowering. A dusting of potash is also beneficial at this time.



Tetratheca thymifolia

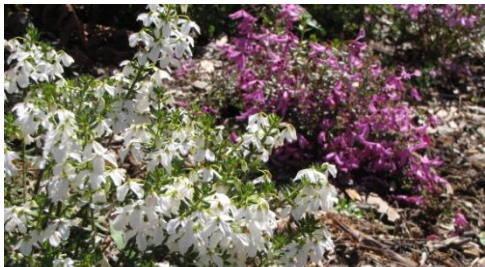
Some species worth growing :

Tetratheca bauerifolia, so named for its leaves resemblance to Bauera, is a small spreading shrub, growing about 40cm high and a little wider. During spring and early summer the plant carries delightfully perfumed pink bells along the stems. These can be prolific if the season has been kind. It does best with some protection from other plants, and in its natural habitat of the tablelands of Victoria and NSW, is found in rocky heaths. Good drainage is necessary, and the plants will adapt to drying soils once established. Common name is Heath Pink Bells.

Tetratheca ciliata , Pink Bells, is a small shrub, but somewhat larger than the previous species, growing up to 1m tall and 50cm to 1m wide. Plants are often erect in habit. Ranging from the coast to ranges of the southern states, plants are more often associated with crowded understorey rather than open sites. Popular in cultivation, Pink Bells flowers heavily on erect or arching stems from late winter through spring. Colour ranges from pink through mauve to white. The specific name *ciliata* refers to the fringe of hairs on the leaves, although the stems are usually much hairier.

Similar in size is ***Tetratheca labillardierei***, a species found on the ranges of NSW, Victoria and Tasmania and distinguished by the glandular hairs on the stems, hence the common name of Glandular Pink Bells. Once a popular garden plant, it is now rarely seen, although when in flower from winter to mid summer it is an eye- catching species. Usually deep pink, white flowered variants have been grown.

One WA species which deserves a revival is ***Tetratheca setigera*** Bristly Pink Bells, which occurs naturally south from the Darling Ranges. It can grow up to 1m high but is mostly smaller, and although fairly tolerant of well-drained conditions, can suffer if allowed to dry out during flowering, which is during late winter through spring. Be warned too that although the floral display is very prolific, the pollinators which this plant seeks to attract are lured by a less than attractive aroma.



Tetratheca thymifolia **white flowered f**

Tetratheca thymifolia, Black-eyed Susan, is probably the best known species, and is widely available, although forms in the trade may not represent the best that this plant can offer. Some are vigorous, growing to 1m high and up to 1.5m wide, but the best to my mind are those smaller forms with pleasant arching stems and often larger flowers. Plants grow from southern Queensland and through the coastal ranges of NSW. The selection **"Bicentennial Belle"** was released in 1988 and has proved a reliable and long flowered plant, tolerating shaded or sunny sites. Flowers can appear at any season, especially after soaking rains, which stimulate a flush of growth.

Species of Tetratheca are usually easy to propagate, using the young suckering shoots whilst still green. These usually produce roots fairly quickly, but the propagation mix must be well drained. The best time to propagate in my experience is from November to April, although patience will be rewarded if cuttings are taken at other times. If the plant from which you wish to propagate has not begun suckering, using the soft new growth on current years stems

is also suitable. Cuttings do better if shaded from the heat of summer, and as many species have variably hairy foliage, it is wise to avoid heavy misting.

Hopefully those who are growing these pretty little plants will get propagating and spread the cheer. For those who would like to include some of these in your own garden, it is always worth seeking out those members of APS who have a little nursery out the back. You just might be lucky. I wonder if my luck might be in. If I had a wish it would be that someone is growing *Platytheca galioides, (syn P. verticillata)* This delightful WA plant was once widely grown, but I have not seen a plant for years, and so **Tremandraceae** is no more.

References:
Encyclopaedia of Australian Plants for cultivation, W R Elliot and D L Jones Vol 9 (2010)
A revision of the Genus Tetratheca (Tremandraceae) Joy Thompson 1976 National Herbarium of NSW