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Welcome to the world of Australian Wildflowers

Editor

With this spring issue there will be many new members keen to know more about our wildflowers, as there are, no doubt, new members from recent years. This issue features an article on page 145 explaining how you can quite easily grow your own plants. This national periodical is styled to help you. The eight issues of two years form a volume, the current one, volume 21. The previous three issues of this volume have described and illustrated wildflowers that everyone can readily recognise and grow in the garden. In this issue we feature everlasting daisies, the bottlebrush flower head plants and epacrids from Tasmania.

Why grow wildflowers? They can be picturesque horticultural plants and will grace any home garden. Many of us enjoy doing this but there is a wider motivation, the conservation of the unique Australian flora. We will not conserve the flora by growing them outside their native habitat though there have been numerous cases where the only surviving plants were found in gardens, enabling us to reintroduce the plant into a wild situation. Over the years the Society has been functioning, since 1957, we have learnt a lot about the propagation and cultivation of wildflowers. As their native habitat disappears due to the activities of humans, it may become necessary to relocate many species.

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Front cover: *Melaleuca coccinea* as photographed by Neil Marriott, is an attractive shrub to 2 m high. A feature is the large brilliant red bottlebrush-like heads of flowers 4-8 cm long and to 5 cm across. See page 151.

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Daisies & a wedding

Our Garden No.36 in Bundaberg, Queensland

Margery Stutchbury

I have been a native gardener for many years. I live in Bundaberg, 365 kilometres north of Brisbane, and have been a member of the Society for Growing Australian Plants-Queensland Region Inc. for 16 years. My daisy garden was established in 1993 after becoming a member of the Australian Daisy Study Group.

We face east on a flat, sandy, corner suburban block. The main garden was set up along the front fence. A load of the sandy loam was brought in and spread over the existing grass, the sides being formed with logs. The garden is 14 metres long and 2 to 3 metres wide.

At one end of the garden is a large *Brachychiton acerifolius* and at the other end a regularly pruned *Liquidambar styraciflua*. In between these are the following: *Banksia robur*, *Banksia* 'Stumpy Gold', *Banksia* 'Birthday Candles', *Banksia ericifolia*, *Banksia oblongifolia*, *Banksia spinulosa*, *Banksia plagiocarpa*, *Pimelea* species, *Grevillea formosa*, *Melaleuca lateritia*, *Callistemon* 'Mr. Foster', *Callistemon pachyphyllus viridis*, *Eucalyptus torquata*, *E.* 'Summer Beauty' and around a curve, tall *Archontophoenix cunninghamiana* and a *Backhousia citriodora*.

Another garden along the side fence has daisies around a *Callistemon*, a small *Brachychiton rupestris*, *Baeckea* species (Mt. Tozer) and *Xanthostemon chrysanthus* as well as in the clear area between the trees and mass planted along the garden edge. Since everlasting daisies took over my life, I have also planted them in a little courtyard, which gets morning and mid-day sun, and along the side of the house, in addition to the front gardens.

Gardener's Tip:
Everlasting
daisies grow
well in the heat
at Bundaberg

Our daughter, Catherine, was married in October 2000 and she decided she wanted to have everlasting daisies as the main theme for her wedding flowers. Blooms from species of everlastings described below were picked and wired from late July through to the end of September, so some were three months old when used for the wedding. See the photos on page 140.

A friend who is a local florist, Marion Hennessey, took all the flowers a few days before the wedding and made bouquets for the bride, four maids, two flower girls, and corsages for the family. Daisies were also used to decorate the girls' hair, to make an aisle for the outdoor wedding, and scattered on the tables of the reception.

A paper daisy wedding →

Bride with bridal bouquet

It comprises everlasting daisies, a few *Banksia coccinea* and a South African *Gerbera*.

The daisies, prepared weeks before, wired up and ready for making the bouquet. ↴

↓ Bouquet as table decoration





Rhodanthe chlorocephala ssp. *rosea* in front garden

M. Stutchbury

See page 142



Rhodanthe manglesii and *R. chlorocephala* ssp. *rosea*
(large flower in lower centre)

M. Stutchbury

See page 143

Picking and spraying

The best time to pick the everlastings is in the morning when the flowers are freshly opened or later in the afternoon. I take jugs of water into the garden and place flower stems straight into the water when picked.

When picking is finished I immediately spray the blooms a few at a time, with Mat Spray, a permanent mat finish used for art work, and return them to the water jug. The sprayed flowers remain in the water till evening. They are then taken from the water, the stems cut and wired, and the flowers are placed haphazardly into a dry florist's Oasis to await arrangement.

Daisies when wired or dried flowers are best stored in a dry dust free area away from direct sunlight. All the blooms I have used were sprayed with the mat spray except *Rhodanthe anthemoides* and *Ammobium alatum*.

Wiring

I used 24 gauge wire for *Rhodanthe chlorocephala*, *Helipterum* 'Ebony White' and *Bracteantha bracteata*, and a finer 28 gauge wire for the smaller flowers with fine stems. To wire the blooms the stems are cut off about 0.5 cm behind the flower head. The end of the wire is dipped in super glue and the wire is then pushed gently up through the centre of the stem till it just touches the receptacle. To push the wire too far will mean the point of the wire may become visible as the flower dries. The wired blooms are then held in a dry Oasis keeping each flower separate and undamaged.

Sowing, germination and housing of daisy seed

In my area, sowing is done during April. Once established, *Bracteantha bracteata* and *Rhodanthe anthemoides* self-germinated in the garden almost to weed proportions. Other seed needs special treatment before sowing. Seed raising mixtures were used with added river sand.

Rhodanthe anthemoides (unbranched form) grows well in my garden self sowing and putting on a lovely display of its small white long flowering blooms. A good filler in the garden as well as in flower arrangements, it is best picked when freshly opened, unsprayed but wired the same day.

Gardener's Tip:
Everlasting
daisies still
look good
months after
picking

Rhodanthe chlorocephala ssp. *splendida* produces a delicate pearly white everlasting bloom. Seed is soaked in smoked water (using SISP papers) with a drop of Soil Wetter added. They normally soak for 24 hours but time restraints last year saw me leaving my seed soaking for three nights. Seed was sown (9/5/00) in seed raiser with river sand into plastic self-watering troughs 60 cm x 25 cm, in which they were allowed to grow and flower. Germination began six days later and after regular, gentle, above watering every few days (in spite of self-watering troughs), first flowers appeared early July. Another batch of seed of this species was sown (after an SISP + soil wetter soak) direct into a raised garden a month later. These also germinated well with flowers appearing from late August through September and early October. They are best picked when just fully opened.

Rhodanthe chlorocephala ssp. *rosea* are best picked when freshly opened though many will be quite satisfactory for wiring if open a few days before picking. It is hard to know exactly which flowers are freshly opened. Older flowers are in danger of insect damage and are best left in the garden for later seed collection. Seed of *Rhodanthe chlorocephala* ssp. *rosea* was directly sown successfully, no pre-sowing treatment required.

Rhodanthe manglesii have dainty nodding silver-pink blooms along the flower stems. They are picked when looking their best with some buds still to develop. These are wired with a very fine wire without cutting the stems short, hung upside down to dry. They are sown in seed trays after an SISP + soil wetter soak (24 hours) in early June, germinating in one week. Planted out into the courtyard garden early July the first nodding pink blooms appeared early in September. No pre-sowing treatment was required.

Helipterum 'Ebony White' was sown the previous year with no germination, so I was pleasantly surprised when very good germination resulted in 2000 after soaking for 24 hours in one drop of soil wetter in a small amount of water. These white everlastings with black centers flowered well in August and November from a June sowing. They are picked when first opened, and these two species are treated the same way as *Rhodanthe chlorocephala*.

Ammobium alatum sown without treatment in seed trays in June had good germination were planted out in July and flowered from late August through to November when hot conditions saw the plants die. Flowers are often picked in bud that stays closed after picking and are attractive that way. If picked when the flower has opened, its attractive yellow centre will usually turn brown with age but it is still an attractive dried flower, so I have used both buds and fully opened blooms. They are not sprayed but wired on the same day as picking.

Bracteantha bracteata in all its forms grows well in Bundaberg. Like *Rhodanthe anthemoides* it self sows prolifically in the garden, and I buy in some forms each year to keep up the quality of the blooms. They are best picked when the bud is just opening, as they will open fully after picking unless picked as very tight buds.

Gardener's Tip:
Everlasting
daisies are
easily grown
from seed

Brachyscome nodosa and *Brachyscome ciliaris* (Charleville) have grown and flowered well. *B. parvula* var *parvula* did not like the hot conditions.

Chrysocephalum semipapposum and *Chrysocephalum baxteri* do not like hot conditions.

The wilt

All is not perfection. Some half grown plants and some ready to flower suddenly drooped and died. It has been diagnosed as Verticillian Wilt that is soil borne and affects potato and cotton crops. Nobody has been able to give helpful advice. I have read that well-cooked compost would be the best way to perhaps beat the problem so I have now dug this in and am hoping. The section of the garden worst affected was where I had sown newly purchased seed from WA. Hygiene with tools is very important.



Everlasting Daisy arrangement, (48 cm across, 30 cm high) M. Stutchbury.

My dried flower arrangement

Having many wired flowers left over from the wedding and more available from the garden I decided to make the large basket arrangement. The basket is filled with dry oasis that is then covered with dried filler, old man's beard. The flowers were then placed at random starting at the top. Most of the flowers were two to three months old. The arrangement takes pride of place on our dining room table and still looks as good as new at six months old. Most of these everlastings close up if wet and reopen when dry so I expect a gentle spray with water would rejuvenate it. This has not been necessary.

The flowers used are *Bracteantha bracteata* (largest white and orange), *Rhodanthe chlorocephala* ssp. *rosea* (next largest white flower with orange centre and large pink with black centre and some with orange centre) and the subspecies *splendida* (white with pale yellow centre), *Rhodanthe anthemoides* (small white with yellow centre), *Helipterum* 'Ebony White' (white with black centre) and *Ammobium alatum* (white with brownish centre when open, all white when in bud).

Wildflowers from cuttings

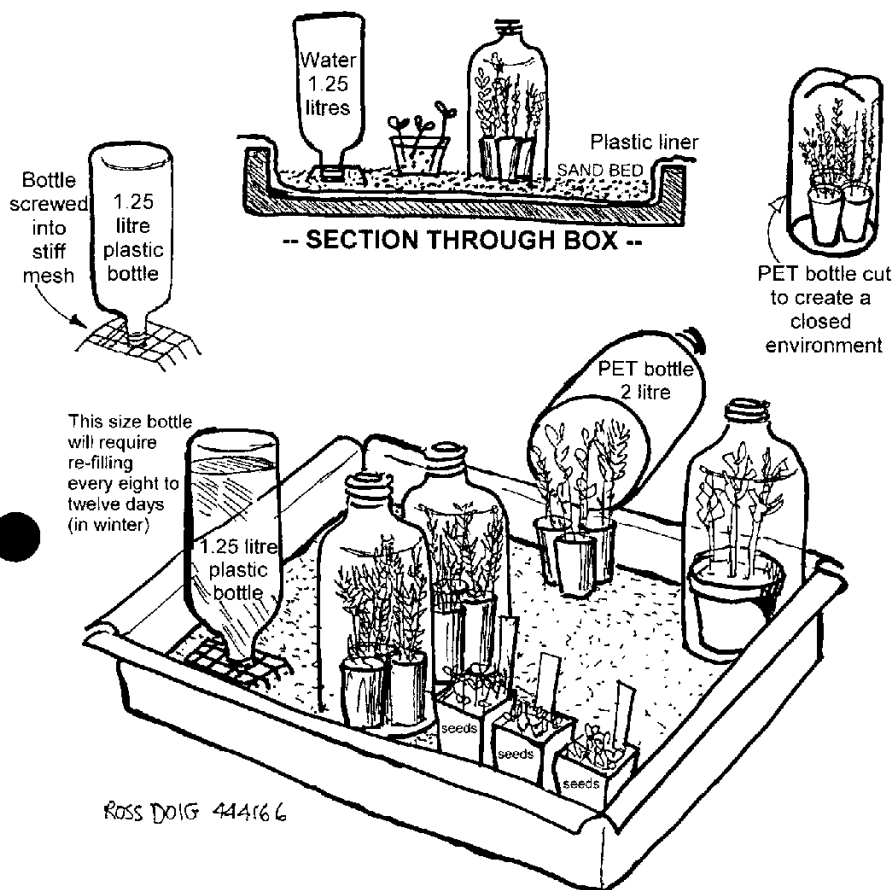
Part 2

Ross Doig

My propagation system 3

(Systems 1 and 2 were described in the last issue.)

This system creates a capillary bed as shown below, constructed from foam boxes lined with plastic sheet to make the box waterproof. Such boxes are available in fish, fruit and vegetable stores. (Note: broccoli and prawn boxes being waterproof do not need a liner). The bottom is covered with sand to a depth of 10 mm. The sand is kept moist by supporting an inverted 1.25 litre bottle of water as shown, screwed into a stiff mesh that is bent to a U-shape. The bottle will require refilling every 8-12 days in winter, more in summer. The box shown will hold 11 PET bottles and 33 50 x 75 mm tubes.

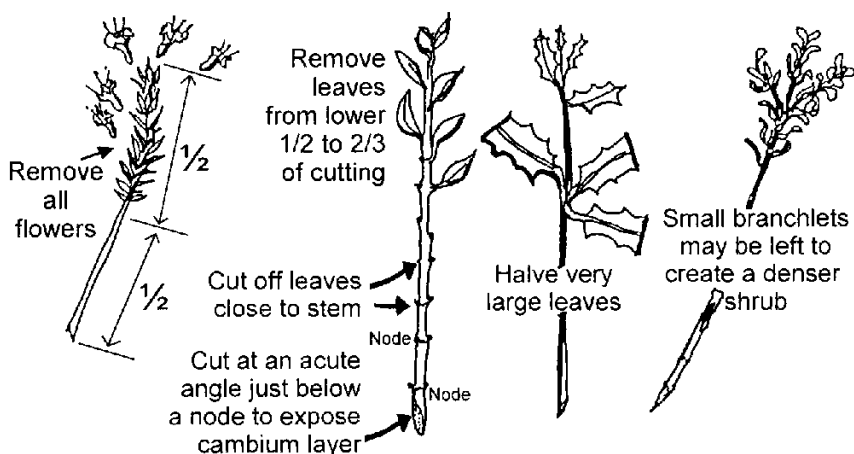


ROSS DOIG 444166

Propagation by cuttings

My propagation mix is river sand or propagation sand from a nursery washed in a bucket to remove silt. You could use crushed sandstone from 2 mm size down to just above silt size. Some people add coco-peat with great success but with this system I have not found it necessary.

Cuttings may be collected at any time of the year. Each cutting averages between 80 mm and 250 mm selected from growing tips or side shoots and leaves are left up to half the length of the cutting. Select wood up to a year old, but before it has become woody. As a general rule, softer stemmed material = shorter and harder = longer. The method is shown in the sketches below.

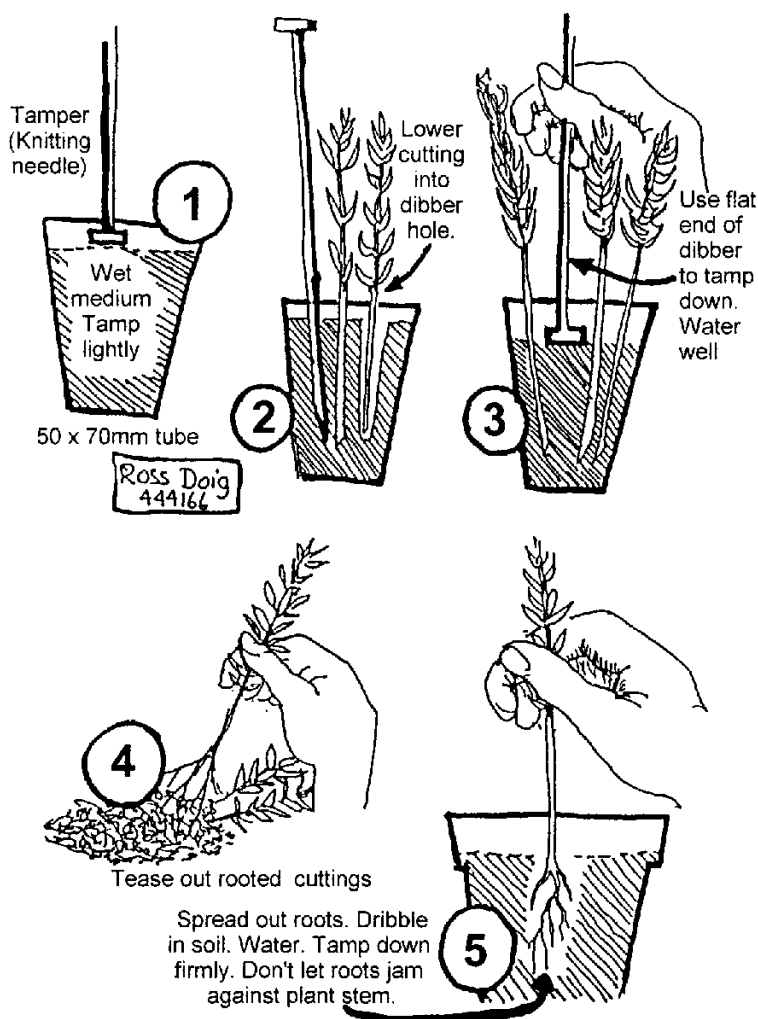


Types of Cuttings

If you are not going to plant the cuttings straight away then it is important to keep cutting material fresh. Place the material in a plastic bag, sprinkle water into the bag, swirl it about and upend to remove surplus. Store after closing the bag in a cool place or refrigerator for up to 5 days. Alternatively, the cutting material may be wrapped lightly in damp newspaper inside a bag or container for 3 or 4 days. In this form they may be posted. Cutting material can be put in a jar of water to restore moisture for a few hours or overnight.

When cuttings have been prepared, it is desirable, although not essential, to dip the end in a rooting hormone, a gel, powder or liquid, according to the manufacturers directions. Such products include Clonex Gel, Yellow "Induce" or Yates Hormone Powder. Many propagators are now using Clonex Gel but I have not found it better than my old method using a cutting powder.

A PET bottle is placed over three tubes. Eleven bottles with 33 tubes fit within the box. I get best results with PET bottles with the base cut out and the cap discarded but occasionally the reverse is used creating a closed environment as shown.



Place the box in a glasshouse, bush house, igloo, cold frame or a morning sun position on a veranda. Without heat or misting the system is maintained over the whole year and apart from the rooting time slowing up in June, July and August, no ill effects from temperatures down to 9°C have been noticed. Under these conditions I have propagated a wide range of plants including many epacrids.

Some Pointers for Striking Cuttings

Patience is required. Native plant cuttings of soft wood may take 4 to 8 weeks, but some hardwood cuttings may take between 12 weeks and at least a year, to root.

Be warned that a few species are so difficult that raising from seed is to be preferred. Flannel flowers, Eucalypts, Banksias and Hakeas are examples.

A short cut: some Scaevola, daisies and soft stemmed species strike more readily in a jar of water.

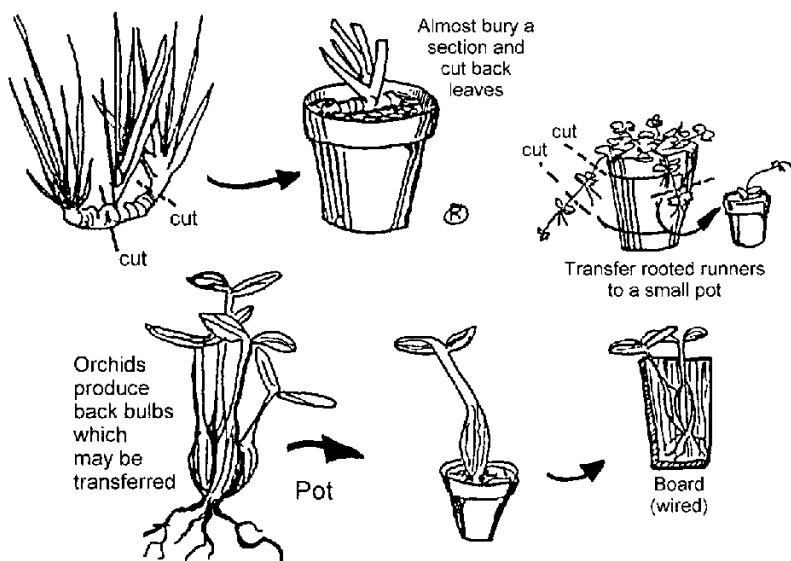
Advantages of Cuttings

There are many advantages to growing plants from cuttings. These include:

- Plants are true to the parent in all respects.
- Plants flower sooner in most cases than seed grown plants.
- Species difficult to grow from seed are often easily grown from cuttings.
- Seed is often unobtainable due to insect destruction, as in many pea flowers, or out of reach on a tree.
- As opposed to seed, cuttings may be collected at any time of year.

Propagation by division

Plants that produce runners, offsets, suckers, stolons or rhizomes may be reproduced by division i.e. Kangaroo Paws, *Patersonia*, Native Violets, *Dianella*, and some orchids.



Continued opposite →

Australian bottlebrushes in the United Kingdom

Jeff Irons, Heswell, England

While yellow-flowered *Callistemon* are more cold-tolerant than red ones, the red bottlebrushes are more popular. The toughest red, *Callistemon subulatus*, have proved hardy 32 km inland from Newcastle upon Tyne and near Richmond in North Yorkshire, damaged only by temperatures below -14°C. In Teesdale, dark red *Callistemon citrinus*, pale yellow *C. salignus* and purple *C. 'Violaceus'* have survived the past 4 winters in a courtyard garden. Hardest of all is yellow flowered *Callistemon ptyoides*, which blooms in July, a little after the red one. Both *Callistemon salignus* and *C. citrinus* will grow in slightly alkaline soils and all these species make good container plants. They flower on the previous year's wood and can be maintained at any desired size by pruning after flowering.

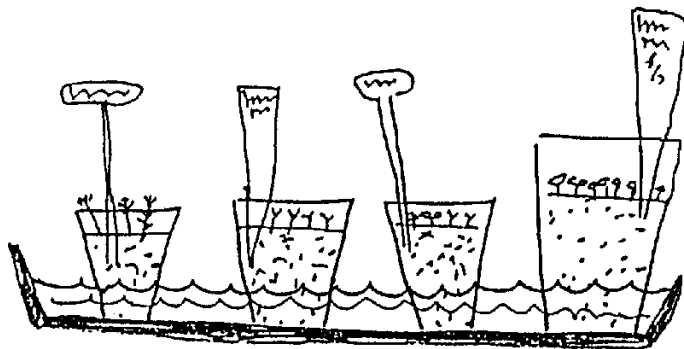
Reproduced from the newsletter of the Melaleuca and Allied Genera Study Group. This is one of the many articles by members of the group on their experiences. Study groups comprise members from a very wide range of habitats who exchange notes, seed, plants, etc, by mail through a study group leader, in this case, Colin Cornford of Bracken Ridge, Queensland. Other articles appear from time to time on Australian Plants On-line, look it up on the internet - <http://farrer.csu.edu.au/ASGAP>. The cost of membership to these groups is confined to postal costs, \$5-8. To enquire further write to the Secretary for your state as listed inside our rear cover. Editor.

Wildflowers from cuttings continued.

Propagation from seed - the bog method

Pots with seed for germination are stood in a tray where the water level is maintained at 8 mm deep.

Transfer seedlings to a dry environment at 10-12 mm high. Pot out when the first true leaves emerge. **Do not water the pots.**



The method is especially suited for plants of Myrtaceae such as: *Eucalyptus*, *Callistemon*, *Melaleuca*, *Kunzea*, Tea-trees, myrtles etc.

Myrtaceae

The bottlebrush / pom-pom flower headed plants _____ W.H. Payne

The Myrtaceae family includes two main groups, pom-pom flower headed plants and tea trees. A key feature to their identification is stamens, explained in this article.

Callistemon (cally-STEE-mon), a large group of easily grown shrubs, many selected as cultivars for their flower colour and abundance.

Calothamnus (cal-o-THAM-nus), widely known as one-sided bottlebrush as their flowers are usually carried on one side of a flowering branch. Their flower details are sketched on page 155. Illustrated on page 157 are:

Calothamnus pinifolius is an erect shrub to 2 m high, a feature being the densely crowded pungent leaves which give a conifer appearance. Many species of *Calothamnus* have a soft foliage that looks well in a garden even when not in flower, *C. quadrifidus* being the most popular.

Calothamnus gracilis is an erect, multi-stemmed, still, low, sometimes spreading, glabrous shrub to 1 m high. The photograph shows the characteristic red flowers of the genus.

Beaufortia (bo-FOR-she-a), from WA, are small drier land shrubs that have proven difficult to cultivate. Those illustrated on page 156 include:

Beaufortia orbifolia can form an upright dense shrub 2-3 m high, though there is a low bushy form. It withstands wet and dry periods. With flower heads 6 cm x 4 cm, this plant has cut flower potential.

Beaufortia sparsa is known as Swamp Bottlebrush, which may be a guide to cultivation, but success has only been achieved on well-drained locations in light to medium soils. It can grow to 2-4 m high but would be ideal for cut flower production. The spectacular flower heads are to 7 cm across and long.

Kunzea (KUN-zee-a) comprises some 35 species, many from WA but also widely spread in eastern and southern areas, mainly coastal where the pink pom-pom flowers are a feature. They need well-drained light soils.

Kunzea ericifolia is a tall arching shrub from WA to 3 m high, some with a graceful, pendulous habit with profuse bright yellow flowers. *Kunzea muelleri* from NSW and Victoria has been incorrectly sold as this species.

Kunzea parvifolia is a variable shrub from northern NSW to the Grampians in Victoria. The dwarf form does well in cultivation.

Kunzea preissiana from WA is a dwarf or small shrub that is showy in the garden, a species where the petals are more evident.

Kunzea pulchella x *Kunzea baxteri* is a garden cultivar developed by Philip Vaughan as a hardier, more floriferous shrub for horticulture.

Eremaea (er-e-MEE-a) comprises 15 species of bushy shrubs, all from WA. Preferring a warm to hot position with well-drained light soils, they have been difficult to cultivate and flower well. Contained cultivation could be tried.

Eremaea beaufortioides is a small shrub that has proven hardiest in cultivation.

Melaleuca (mel-a-LOO-ca), the largest of this group of plants with 150 species ranging from the paper-bark trees of periodically wet ground to small bushes, often of the drier inland. They are well suited for garden cultivation, surviving dry periods but rewarding good conditions with abundant showy flowers. Those illustrated on page 153 and on the cover are:

Melaleuca coccinea (on cover, page 137) is an attractive shrub to 2 m high. A feature is the large brilliant red bottlebrush flower heads 4-8 cm long and to 5 cm across, flowering for long periods over summer. It is found on granite outcrops of the Kalgoorlie area, WA. Volume 1 of *A Field Guide To Melaleucas** describes this species as having two subspecies which are now separate species as described in volume 2. To save confusion and the possibility that the plant on the front cover is one of these, they are *Melaleuca eximia* and *Melaleuca penicula*.

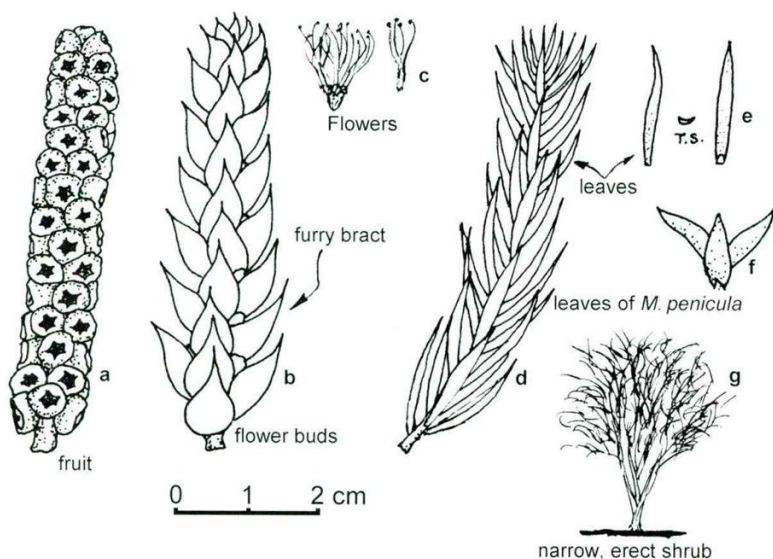


Figure 1: Sketch of *Melaleuca eximia* from "A Field Guide to Melaleucas Volume 2"

***A Field Guide to Melaleucas** by Ivan Holliday. This book has been around for 12 years now so you will be lucky to find one to buy. The botanists have since reviewed the genus and come up with some name changes and many new species. Ivan has published Volume 2 that describes and illustrates some of the new species in the same excellent way, as shown in the sketches above. You can purchase a copy direct from Ivan by post, 29 Tennyson Avenue, Tranmere SA 5073 for \$10.

Melaleuca eximia also has similar large brilliant flower spikes but can be distinguished by the narrower crowded leaves as shown in the sketch on the previous page, detail **d-e**, reproduced from volume 2. The young growth is softly hairy. A distinguishing feature is the very furry cordate bracts cupping the individual flowers. Detail **b** shows a flower head in bud, just before the individual flowers burst out from inside each of the furry bracts.

Melaleuca penicula has leaves intermediate between the above two species as shown in detail **f** on the previous page. The individual flowers have larger staminal claws, which could make this species even showier in flower.

Melaleuca trichophylla is a low ground-hugging, spreading shrub to 0.5 m high with small pointed leaves to 2.5 cm long. The flowers are numerous in showy clustered terminal and lateral heads, but flowering is brief, no more than 2 weeks in late spring. It is widespread in various forms in WA from Southern Cross to Kalbarri and south to Perth. Photo on page 153.

Melaleuca leiopyxis is a low spreading dense, ground-hugging shrub to 1 m high. The profuse bright yellow flowers can cover the bush in spring. It is confined to the northern sand plains of WA. Photo on page 153.

Melaleuca gibbosa is a dense bushy shrub 1-2 m high and to 2 m across, with attractive foliage as shown opposite. The mauve to pink flowers are 1-5 cm long, forming at the base of the new lateral shoots or along the previous season's branches. This species is confined to SA, Victoria and Tasmania.

Want to learn more? There are more plants in this group but these are all I can illustrate in this issue. The article will be continued in a future issue.

The tea-tree group of plants (in the plant family Myrtaceae)

If the fruit is a dry capsule or nut and the **petals** are **larger than the stamens**, figure **2a-c**, then the plants are in the tea-tree group of plants, *Leptospermum* and *Thryptomene*. This group of plants will be featured in future issues.

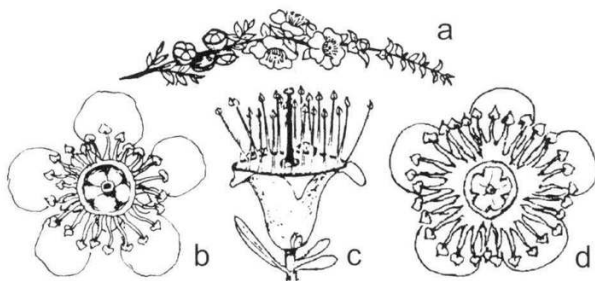


Figure 2 *Leptospermum*: **a** flowering twig; **b** & **c** individual flowers *Asteromyrtus*, **d** individual flowers. Reproduced from *Australian Plants* Volume 16.

The tea-tree group of plants are best known from the genus *Leptospermum*, a group of plants widely known as Tea-tree. It is some time since we described these easily grown shrubs as the botanists have been reviewing many closely related groups and assigning them into separate genera. This work is nearing completion and it is proposed to clarify the whole group in an issue shortly.



Melaleuca gibbosa

See page 152 Ivan Holliday



Melaleuca leiopyxis

See page 152 Ivan Holliday



hylla

Ivan Holliday

See page 152

The bottlebrush group of plants (in the plant family Myrtaceae) continued.

Stamens, what are they? Figure 2b shows a tea-tree flower from above. The free stamens are spaced around the outer edge of the flower centre (the ovary) all shorter than the five petals. In figure 2c the petals are removed, the many stamens grouped in the centre of the flower around a thicker central 'stalk' called a **style**. Digressing, it is the styles of many small flowers in *Grevillea* that are the prominent feature of the 'tooth-brush' flower head, *Grevillea* not having stamens in the form shown for Myrtaceae. *Grevillea* will be featured in an issue shortly.

Asteromyrtus were formerly regarded as tropical *Melaleuca* but figure 2d shows the stamens shorter than the petals, the stamens united at the base in an undulating ring the broadest fusion in front of each petal.

If the **fruit is a dry capsule** or nut and the **stamens are longer than the petals** then the plant is in the bottle brush group. Actually the petals are so small as to appear non-existent on most of the bottlebrush-flower headed plants. They may be subdivided into two groups: flowers with free stamens and flowers with stamens fused together into bundles.

Stamens free, as in figure 3b and 3c, occurs in two genera, *Callistemon* and *Kunzea*.

Callistemon, commonly called bottlebrush, have stamens free as in figure 3b distinct from stamens grouped in bundles as in *Melaleuca*, figure 4.

Kunzea, figure 3c is another group of plants that have their stamens free.

Kunzea are easily distinguished from *Callistemon* as they do not retain the seed capsules on the plant and the leaves are much smaller, < 15 mm long. The shorter flower head is in a ball (pom-pom). Each flower head comprises flowers usually with tiny petals as marked in figure 3c. To confuse us some *Kunzea* also have noticeable petals that make them attractive but the petals are always shorter than the stamens. There is always one that spoils a good story, *Kunzea baxteri* has a bottlebrush head.

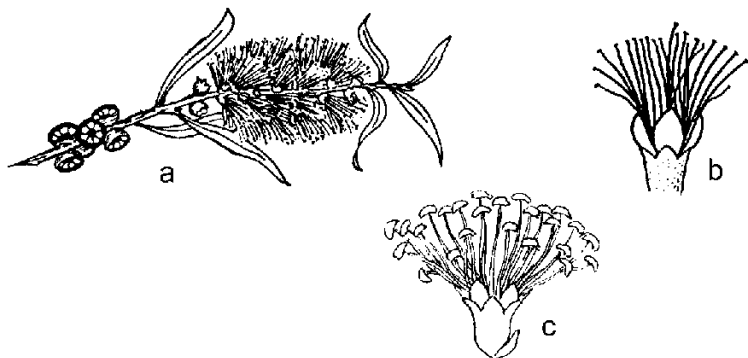


Figure 3 *Callistemon*: a flowering twig; b individual flower. *Kunzea*: c, individual flower. Reproduced from *Australian Plants* Volume 16.

Stamens in bundles, fused together, can be found in *Melaleuca*, *Calothamnus* and *Beaufortia*.

Melaleuca has stamens in bundles, figure 4b-c. *Melaleuca* flowers have their stamens fused together at the lower end some resembling a claw and these are known as the 'claw flowered' group of *Melaleuca*.

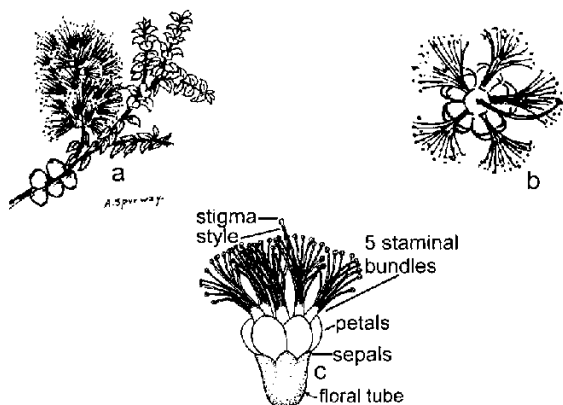


Figure 4 *Melaleuca*: a flowering twig; b & c individual flowers. Fig 4a-b reproduced from *Australian Plants* Volume 16. Fig 4c reproduced from *A Field Guide to Melaleucas* Volume 2'

Calothamnus have the stamens fused for most of their length as in figure 5b but they usually have their flowers on one side of the stem and are known as the 'one-sided bottlebrush'. Fruit is beaked remaining on bush.

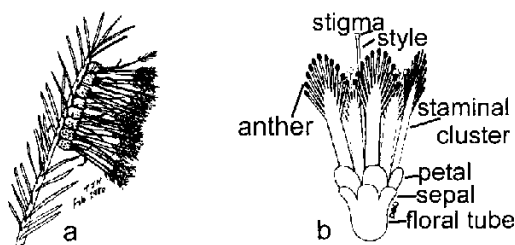
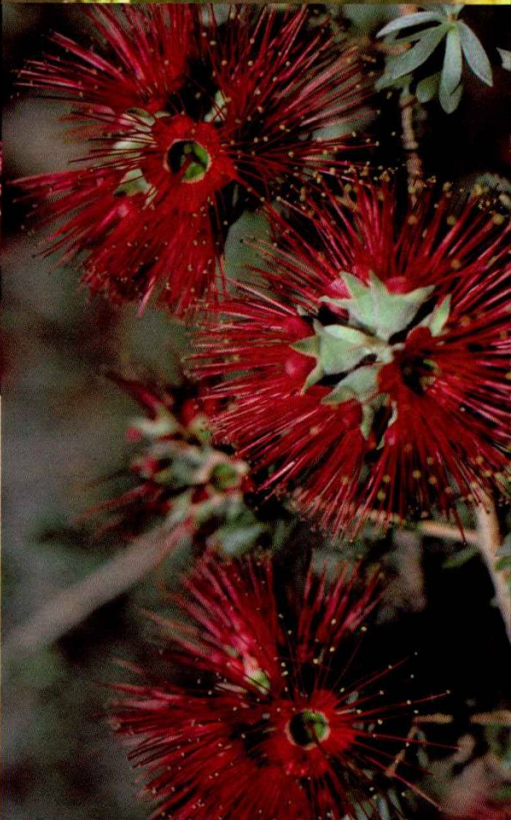


Figure 5 *Calothamnus*: a flowering twig with flowers, b the anther (fused). Reproduced from *Australian Plants* Volume 16.

Beaufortia have partly fused stamens as well as other genera so we need to look at the number of compartments in their seed capsules and anther. (**Anthers** are an appendage on the end of a stamen that carries the pollen).





Top row from left to right:

<i>Beaufortia squarrosa</i>	Ivan Holliday
<i>Beaufortia decussata</i>	Ivan Holliday
<i>Calothamnus pinifolius</i>	T. Hawkeswood
<i>Kunzea ericifolia</i>	Ivan Holliday

Bottom row from left to right:

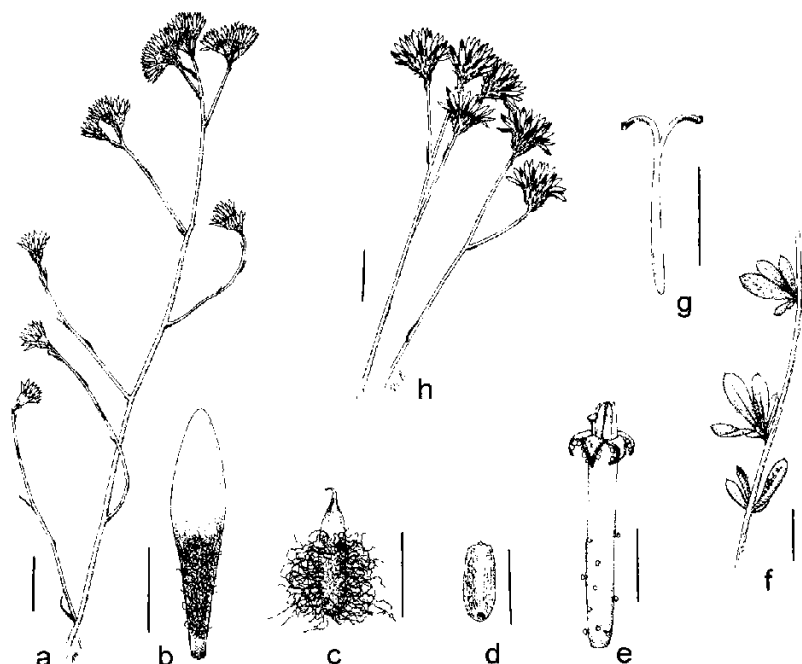
<i>Beaufortia orbifolia</i>	Ivan Holliday
<i>Beaufortia sparsa</i>	Ivan Holliday
<i>Calothamnus gracilis</i>	Alan Morrison
<i>Kunzea pulchella</i> x <i>K. baxteri</i>	W.H. Payne

See page 150

Pithocarpa

The genus

B.J. Lepshi*



Pithocarpa corymbulosa: a flowering branchlet, b median involucre bract, c outer involucre bract, d cypsela and e floret. Scale bars a, f & h are 10 mm, others 1 mm.

Pithocarpa pulchella: h flowering branchlet, f a branchlet with vegetative seasonal growth and g style.

There are two species of *Pithocarpa*, both confined to south-west Western Australia and both have yellow flower heads. As with all the flowers in the plant family Asteraceae, the heads are composed of numerous individual flowers or florets, detail e, cupped by papery bracts, detail b & c (outer involucre bract), the cypsela is d and the style g. They are perennial herbs or spindly shrubs to 1 m tall. The leaves are clustered towards the base of the main stems becoming progressively more distant and smaller up the stem. Vegetative parts are covered with whitish, cobwebbed indumentum (hairs).

Pithocarpa species would make excellent 'fillers' for dried flower arrangements. They flower in summer and are extremely hardy. The only drawback is that during the cooler months the plants die back. The leaves also wither by the time flowering starts, which makes them appear rather twiggy.

*The full description was published in *Nuytsia*, vol. 13/1, 1999, journal of the Western Australian Herbarium. The sketch is by M. Pieroni.

Darwinia

Trevor L. Blake*

Darwinia can be useful as rockery plants, as low shrubs with prostrate, decumbent or upright habit. They are naturally under shrubs in open or semi-shaded situations. Most like moisture and are found in situations where this is provided. They respond to light pruning which will thicken the habit of the plants and encourage abundant flowering. They respond well to light applications of blood and bone just prior to and after flowering.

Many of the flowers are nectar producers. Insects or honey eating birds frequent this food source. Recommended are *Darwinia citriodora*, *D. fascicularis*, *D. grandiflora*, *D. leiostyla*, *D. pinifolia* and *D. taxifolia*.

Mention must be made of the fragrance of some species, not the flowers but the lemon scented foliage such as *D. citriodora*, *D. diosmoides*, *D. leiostyla*, *D. darwiniioides* and *D. flavescens*.

Many are excellent subjects for tub or container growing, with long flowering period and massed displays. These include *Darwinia collina*, *D. hypericifolia*, *D. macrostegia*, *D. meeboldii*, *D. neildiana*, *D. oederoides*, *D. oxylepis*, *D. speciosa* and *D. squarrosa*, all with large heads of hanging flowers. They are more reliable as grafted plants.

Darwinia collina, Yellow Mountain Bell, is a bushy shrub to 1.8 x 1.5 m with tightly packed elliptical leaves, 5-9 mm long, which have minutely toothed margins. The 'bell-like' flower heads to 60 mm long hang on the ends of the branchlets giving a spectacular and massed display. Large, yellow bracts that resemble petals enclose each flower head, the outer ones being short and green blending into the stem leaves.

**A Guide to Darwinia and Homoranthus* by Trevor L. Blake is a unique small 88 page book that describes all 45 species of *Darwinia* and seven species of the closely related *Homoranthus*. The notes above are taken from the book. The descriptions in the book are more complete, most species being illustrated by sketches showing the botanical features used. There are also cultivation notes, a description of habitat and distinguishing features for each species and many large colour photographs. This is a book for the grower and is available direct from Trevor Blake by mail for \$11, including postage, 22 Vista Ave, East Ringwood VIC 3135.

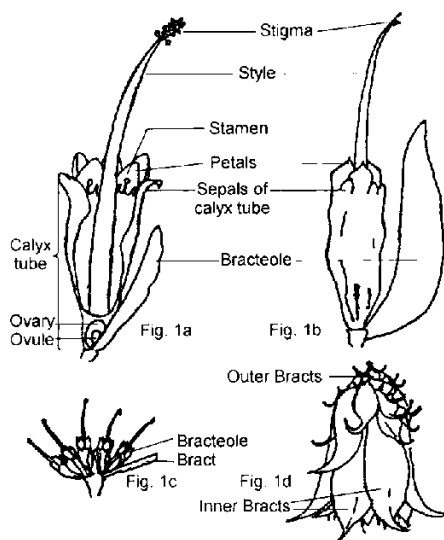


Fig. 1 Flower types, open & bell reproduced from *Australian Plants* Vol 18 No 146.

a Flower or floret in cross-section, b Flower before opening, c Flower head of above flowers, d Flower head enclosed inside bracts





Top row from left to right:
Darwinia meeboldii
Darwinia macrostegia
Darwinia vestita

Bottom row from left to right:
Darwinia oxylepis
Darwinia wittwerorum

Photos by Eddy Wajon
 See page 162



Darwinia meeboldii, 'Cranbrook Bell', is a slender shrub of erect habit to 3 m high, the tallest of the genus. The 10 mm leaves are pale green, very narrow and crowded. The terminal flower heads comprise 7-8 flowers enclosed by 30 mm long tri-coloured inner bracts which are red, white and green. Photo on page 160.

Darwinia macrostegia, 'Mondurup Bell', is a straggling shrub from 700 mm to 2 m high if not pruned to shape. The almost stalk-less leaves are elliptical to 20 mm long. This is the largest of the bells, to 6 cm long, white but blotched and streaked with variable amounts of red. Each little branch is terminated with a pendulous flower. The large outer floral leaves or bracts completely enclose 8 or so small flowers but as they open greater white areas are revealed. Photo on page 161.

Darwinia vestita, Pom-Pom Darwinia, has flower heads more similar to many eastern species as large floral bracts do not cup them. The flowers varying from deep red to white are on short stems, crowded into condensed, globular, terminal heads 10-20 mm across, each containing 40-60 flowers. It forms an erect bushy shrub to 1 m high. Photo on page 161.

Darwinia oxylepis, 'Gillhams Bell', is a dense upright bush 1-1.5 x 1 m wide if not pruned. The thickened leaves are recurved and densely arranged on the stems. The bell-shaped flower heads are magnificently displayed hanging on the ends of leafy branchlets. Each flower head is 30 mm x 25 mm wide, the 10-12 individual flowers enclosed in an outer floral envelope of green becoming red towards the apex, each recurved as dainty skirts. Photo, p160.

Darwinia wittwerorum, 'Wittwers Bell', is an upright slender shrub 30-80 cm high with scattered narrow leaves 5-10 mm long that are triangular in cross-section. The oval flower head comprises 5-9 individual flowers enclosed by an outer floral envelope or bracts, ranging in colour from red, pink to cream down the 'bell'. The photograph on page 161 shows the four outer bracteoles that are green curving back to cup the flower head to 21 mm long. Photo on page 161.

***Colour Guide to Spring Wildflowers of Western Australia, Part 2, Perth and the Southwest** by Eddy Wajon. This book is available from Wajon Publishing Company, 16 Eckersley Heights, Winthrop WA 6150, phone 08 9310 2936, for \$19.95 plus \$2.50 postage. This is the ideal reference for travellers in the west, keen to see and identify the vast array of wildflowers. For each of the 220 species described, there is a beautiful colour photograph such as those for *Darwinia*, which are reproduced on pages 160 and 161. The plants are presented in groups of similarly coloured flowers, red, pink and mauve, orange and brown, yellow, white, green and black and blue and purple flowers to assist with identification of flowering plants in the wild.

***Darwinia*, ideal plants for the garden or container**

Editor

Darwinia are small showy shrubs ideal for the rockery or container, even when not in flower. Those illustrated are all from Western Australia and are not readily cultivated in the garden unless grafted onto the very hardy eastern species *Darwinia citriodora*. *Australian Plants* Volume 18 number 146 describes more of the most attractive species with details of cultivation. For container cultivation, follow all the best practices and you will get a long lasting, neat, rounded bush covered with attractive bell-flowers. I have had three grafted species growing in my garden for five years and each year they make quite a show. You can obtain grafted plants from your normal native plant nursery, who can order them in, or direct from Doug McKenzie, 35 Codamon Close, Ocean Grove VIC 3226.

Tasmanian Epacridaceae

Part 3

R.K. Crowden and Y. Menadue

Leptecophylla. 5 species (1 with 3 subspecies), 3 endemic

A genus erected by C.M. Weiller in 1999, containing four Tasmanian species previously included in *Cyathodes* Labill. In contrast to *Cyathodes* and *Planocarpa*, formerly *Cyathodes petiolaris* group, these species are all dioecious or gynodioecious, the male flowers having longer corolla tubes than the female. The apex of the stiff, narrow leaves tapers to a point.

Leptecophylla abietina is found around the southern and western coastline from Southport Bluff to Granville Harbour on rocks or dune faces in the salt spray zone. The white flowers appear in spring. The inner surfaces of both the corolla lobes and the upper part of the tube are densely bearded. The red drupe is spherical or slightly flattened, to 12 mm diameter. Photo on page 165*.

Leptecophylla divaricata is a plant of the dry sclerophyll forests of the east and southeast. The flowers, in midwinter are distinctly creamy-green with scattered long hairs on the inner surfaces of the corolla tube and lobes. The red (pink or white) drupe is spherical, about 8 mm diameter. Photo, p165.

Leptecophylla juniperina. The subspecies *juniperina* is widespread, occurring as a shrub or small tree up to 6 m, from sea level to mountain summits. The leaves are narrow with a slightly recurved margin. The white flowers are glabrous, the corolla tube longer than the calyx. Subspecies *oxycedrus* is coastal along the southeast, west and northwest and on the Bass Strait islands and southern coast of Victoria. It usually presents a low compact appearance due to persistent wind pruning, with broader leaves than the other sub species. The white flowers appear in spring and show a few stiff hairs on the inner surface of the corolla, the tube longer than the calyx. Subspecies *parvifolia* is the common highland form on the dolerite mountain blocks of central, eastern and northeastern Tasmania. It appears in all respects a diminutive form of the subspecies *juniperina* (usually less than 1 m high) and on morphological grounds barely warrants separation from it, although there are clear chemical features which distinguish the two. Photo on page 165.

Leptecophylla pendulosa is distinguished by the pendulous habit of the branch tips, with flowers and fruits hanging down. The white flowers, which appear in winter, are glabrous. The fruit is a red spherical drupe about 8 mm diameter. This species is found mainly above 200 m altitude in the dry sclerophyll forests of the east coast range, where it may overlap with *L. divaricata*, and on the inland northeastern mountains, Ben Lomond and Ben Nevis, where on an altitudinal overlap with *L. juniperina* ssp. *parvifolia*. Photo on page 177.

Leptecophylla pogonocalyx is confined to high altitudes on western and southwestern mountains. It resembles *L. juniperina* ssp. *juniperina* in most aspects, but differs by the short corolla tube (generally shorter than the calyx in male and female flowers) and by the puberulent calyx and bracteoles.

*The photo on page 165 shows fruit from last season's 'female' flowers and the current season's flowers, all functionally male. Gender can change from year to year.



Planocarpa nitida

R. Crowden



fruit

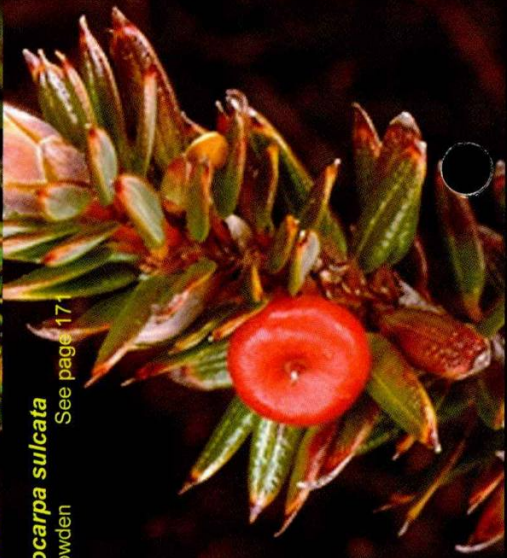
See page 174



Pentachonora pulchra

R. Crowden

See page 174



Planocarpa sulcata

R. Crowden

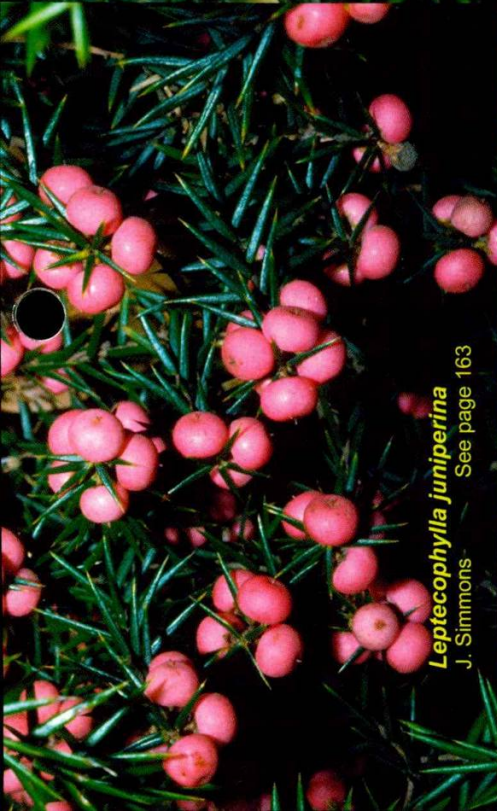
See page 174



Planocarpa petiolaris

R. Crowden

See page 171



Leptecophylla juniperina

J. Simmons

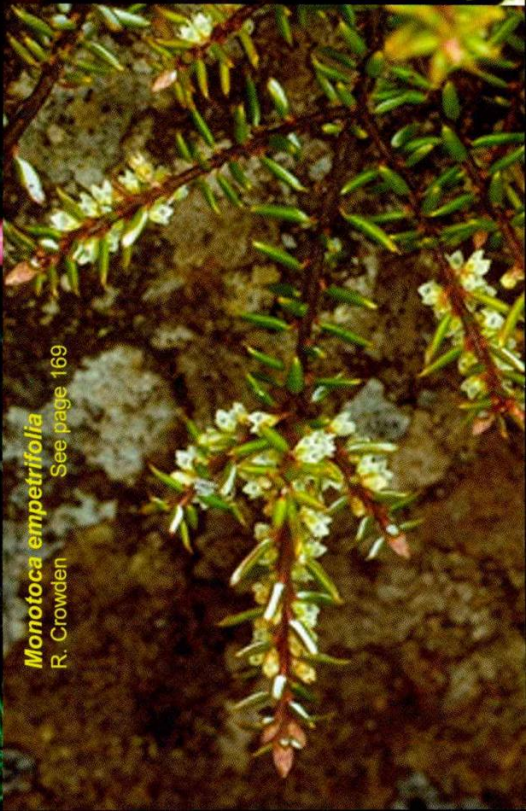
See page 163



Leptecophylla divaricata

R. Crowden

See page 163



Monotoca empetrifolia

R. Crowden

See page 169



Leptecophylla abietina

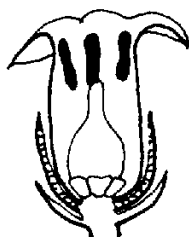
R. Crowden

See page 163

Leucopogon

The flower

Although *L. lanceolatus* is recorded in the *Student's Flora of Tasmania* (Curtis, vol.2), we have never sighted this species anywhere in Tasmania. The few herbarium specimens may be assigned to *L. parviflorus*. With respect to *L. collinus* we recognise the separation of three species after Powell (1991), viz. *L. collinus*, *L. pilifer* and *L. oreophilus*.



Key to *Leucopogon* in Tasmania.

- 1 Leaves arranged in false whorls, representing seasonal growths. Plant of high mountains in the southwest. *L. milliganii*
Leaves alternate, not in clusters or whorls. 2
- 2 Leaves concave or the margins involute, apex tapering to a point. *L. virgatus*
Leaves flat, or the margins recurved. 3
- 3 Leaves mostly 1.5 cm long or longer. 4
Leaves mostly less than 1 cm in length. 6
- 4 Leaf apex acuminate. Anthers without sterile tip. *L. esquamatus*
Leaf apex acute with a short callus mucro. Anthers with a sterile tip. 5
- 5 Leaves sub-erect with distinct veins. Fruit flattened, yellow. *L. australis*
Leaves spreading, veins faint. Fruit spherical, whitish-yellow. *L. parviflorus*
- 6 Plants diffuse, prostrate or procumbent, branches rarely exceeding 10cm in length. 7
Plants mostly erect and bushy often up to 1.5 m high. 9
- 7 Flowers solitary, axillary. Anthers without sterile tip.
Leaf apex acuminate. *L. stuartii*
Flowers in short spikes. Anthers with sterile tip.
Leaf apex acute-broadly acute, with a callus mucro. 8
- 8 Flowers on terminal spikes only. *L. oreophilus*
Flowers on axillary and terminal spikes. *L. pilifer*
- 9 Inner surfaces of corolla lobes covered with dense woolly hairs. 10
Inner surfaces of corolla lobes papillate but not hairy. *L. hookeri*
- 10 Flower spikes at ends of long branches, or on dwarf laterals near branch tips. Fruit greenish not succulent. *L. collinus*
Flower spikes on short axillary spikes extending down much of the branch length. Fruit whitish, semi-succulent. *L. ericoides*

Leucopogon australis is an erect shrub to 1.5 m. Leaves sub-erect, up to 6 cm long, lanceolate to oblanceolate, apex acute, brown, with a blunt mucro. Margins slightly recurved. Flowers in axillary racemes, crowded near branch tips, the racemes usually longer than the leaves. Flowers white, corolla tube equal to the sepals, shorter than the lobes. Ovary abruptly contracted into a short style. Drupe flattened, yellow. Flowers in spring. It occurs in heathlands and scrub near the coast in the north.

Leucopogon collinus is a much branched shrub, branches erect or scrambling, generally less than 60 cm high. Leaves erect or spreading, narrow-oblong to oblong to lanceolate of variable shape and length on the one plant. Margin recurved, apex acute, blunt or with a short callus point. Flowers in short dense terminal spikes on main branch or short laterals near the branch tips, lobes longer than the tube. Flowers over a long period from autumn to spring. Widespread in heathlands and dry sclerophyll statewide. Earlier definitions of *L. collinus* had included two variants recently given species status (1991), *L. oreophyllus* and *L. pilifer*. Photo on page 180.

Leucopogon ericoides is an erect shrub with spreading branches up to 2 m high. Leaves variable as in *L. collinus*, but usually up to 1.2 cm. Flowers in short axillary spikes. Flowers in spring. Widespread in sandy heathlands. Photo on page 177.

Leucopogon esquamatus is a shrub with numerous erect branches to 60 cm. Leaves erect, lanceolate/oblanceolate/elliptic, flat, apex acuminate. Flowers 2-3 in axils down the stem, the tube shorter than both sepals and lobes. Flowers in spring. Damp habitats, Flinders Is. Photo on page 180.

Leucopogon hookeri is an erect bushy shrub up to 1 m with a typical grey-green cast to the leaves that are erect, apex rounded with a blunt callus point, margins recurved. Flowers crowded in short spikes on apex or uppermost axillary laterals, the corolla tube longer than the calyx and the lobes; vestiture of the lobe inner surface due to papillae rather than to a covering of dense woolly hairs. The density of papillae varies with location, tending to decrease with altitude where the lobes are glabrous or nearly so. Fruit a red, spherical, fleshy drupe in autumn, most of which are shed before winter. Plant dioecious. Flowers in late winter and spring. Photo on page 181.

Leucopogon milliganii is a shrub of high altitudes on the south-western mountains. Spreading branches up to 60 cm, semi-procumbent as if weighed down by snow. Each season's growth of new leaves produces a pseudo-whorl, with scarious scales separating the clusters. The older stem bared by abrasion of the leaves. Leaves are thick, narrow-linear and convex with revolute margins, apex apiculate, the abaxial surface with short white hairs. Flowers white, corolla tube equals the sepals, but longer than the lobes. Fruit a red, spherical drupe. Flowers in summer. Photo on page 181.

Leucopogon oreophilus is a prostrate shrub of high altitudes on some western mountains. Leaves erect and broadly elliptic, concave above, apex broadly acute with a tiny abaxial callus. Flowers white, partly hidden by the leaves, borne 3-6 on terminal spikes. Corolla tube shorter than the sepals. Lobes often twice the length of the tube. Flowers in summer.

Leucopogon parviflorus is an erect, bushy shrub up to 4 m with spreading leaves, lanceolate to oblanceolate to elliptical up to 3 cm long, apex blunt, margins recurved. Flowers similar to *L. australis*, but ovary drawn out and tapering into the style. Fruit spherical, whitish-yellow. Coastal and widespread around the state. Flowers in spring. Photo on page 181.

Leucopogon pilifer is a dwarf diffuse shrub of high altitudes of the Central Highlands (also in Victorian Alps). Leaves erect to suberect, oblong or elliptic, concave above, apex acute with a small callus. Flowers erect, white borne 4-9 on terminal spikes on short uppermost axillary laterals. Corolla tube shorter than sepals, but longer than or equal to the lobes. Flowers in summer.

Leucopogon stuartii is a much branched, nearly prostrate shrub, mostly less than 10 cm high, found in open forests and heaths at mid to sub-alpine altitudes. Leaves oblong-lanceolate to oblanceolate, flat, apex acuminate. Flowers solitary, axillary, longer than the subtending leaf. Corolla tube about twice the sepal length and longer than the lobes. Fruit fleshy, spherical, yellow. Flowers in spring.



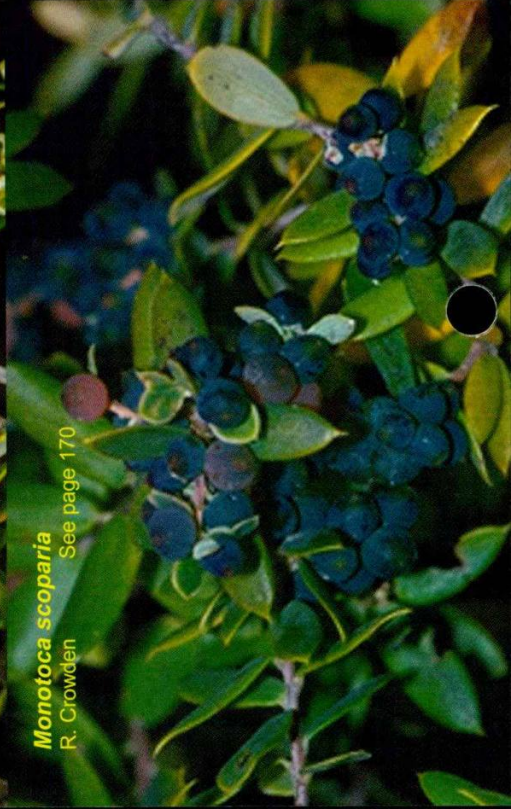
Monotoca glauca
R. Crowden See page 169



Monotoca elliptica
R. Crowden See page 169



Monotoca submutica
R. Crowden See page 170



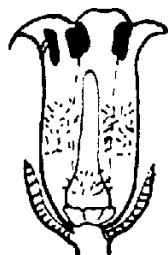
Monotoca scoparia
R. Crowden See page 170

Leucopogon virgatus is an erect or spreading shrub with slender, branches to 60 cm, found in lowland heaths and grasslands. Leaves erect, appressed to stem, lanceolate, margins incurved, apex drawn out tapering to a point. Flowers in short dense terminal and axillary spikes near ends of branches. Flowers white (unopened buds with a distinct pink tinge), corolla tube shorter than the sepals and lobes. Fruit greenish – black, dry. Photo on page 180.

Lissanthe

A photo of both species on page 184. A flower is shown on the right.

Lissanthe montana is an erect bushy shrub up to 50 cm occurring on southern and central mountains. It presents an appearance similar to *Leucopogon hookeri* with which it is often confused and it may well represent a clinal extreme for this species. The supposed main differences are the glabrous nature of the corolla lobes (or with sparse, small papillae - refer to the notes on *Leucopogon hookeri* on page 167) and the retention of the drupes through the winter season. Flowers in summer.

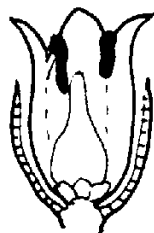


Lissanthe strigosa is a short, much branched shrub, rarely exceeding 30 cm, the branches erect or semi-ascending. Leaves narrow linear-lanceolate, the apex tapering to a pungent point, margins recurved. Flowers 1-5 in terminal and axillary racemes, near the branch tips. Sepals and closed buds often pink, corolla white (or with a pale pink stripe), tube more than twice the sepal length and constricted at the throat with scattered hairs inside. Lobes short, spreading and glabrous. Fruit spherical, fleshy, white. Flowers in late winter-spring. Widespread in dry sclerophyll and heathlands at low altitudes.

Monotoca

6 species, 3 endemic. A typical flower is shown on the right.

Leaf venation in *Monotoca* appears palmate rather than parallel as is common in other genera. This is particularly evident in the broader-leaved species *M. elliptica*, *M. glauca* and *M. submutica*.



Monotoca elliptica is an erect bushy shrub or small tree up to 5 m, on the east coast north of Freycinet Peninsula. Leaves elliptical-oblong to oblanceolate, slightly convex, upper surface dark green, shining, apex ovate with a pungent mucro. Flowers small, crowded in terminal and mucro axillary racemes at branch ends, corolla tube campanulate, longer than the sepals and lobes. Fruit is spherical, orange-yellow and fleshy. Flowers in winter. Photo opposite.

Monotoca empetrifolia is a semi-prostrate shrub of alpine scrub and heath, the branches wiry and spreading, about 20 cm long. Leaves narrow-oblong with a pungent mucro, margins recurved. Flowers 2-3 in short axillary spikes, tetramerous, sometimes gynodioecious. Corolla campanulate, tube longer than the sepals and lobes. Fruit spherical, pale greenish-white, fleshy. Flowers in spring. Photo on page 165.

Monotoca glauca is an erect shrub or small tree up to 6 m high, widespread in heaths, wet and dry sclerophyll and scrub bordering rainforest, from lowland to subalpine habitats. Leaves linear-elliptical to oblanceolate, variable on the one plant, flat or slightly convex, apex broadly acute with a pungent mucro. Upper surface shining, bright green. Flowers tiny, 1-5 in axillary spikes, mostly hermaphrodite but sometimes dioecious. Corolla tube shorter than the sepals and the spreading lobes. Fruit ovoid, blue – green, not fleshy, falls early. Flowers in late winter, spring. Photo on page 168.

Monotoca linifolia. The subspecies *linifolia* is an erect bushy shrub up to 3 m, mostly in southern Tasmania in wet sclerophyll forest. Leaves narrow-oblong, apex a sharp mucro, margins recurved. Flowers 2-5 in short axillary spikes, tetramerous, the plant dioecious. The corolla tube of *Monotoca linifolia* is about equal with the sepals, but shorter than the spreading lobes. Fruit ovoid, purple, not fleshy. Flowers in spring. Photo on page 177.

The subspecies *algida* is an erect bushy shrub up to 1 m, in sub-alpine wet sclerophyll forests of Mount Field and the central mountains. Vegetative plants resemble ssp. *linifolia* but the flowers are pentamerous (a few tetramerous on the same plant) and the fruit is spherical, pink or white, somewhat fleshy. Flowers in spring.

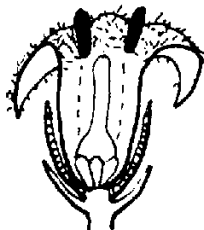
Monotoca scoparia is an erect bushy shrub up to 1.5 m, rare in the northeast (e.g. near St Helens). Leaves sub-erect or spreading, narrow-oblong, apex acute with a sharp mucro, convex, margins recurved. The plant is dioecious. Flowers 2-4 in short axillary spikes, corolla tube longer than the sepals and the lobes, pentamerous. Fruit ovoid, dull, brownish, dry. Flowers in late autumn-winter. Photo on page 168.

Monotoca submutica is an erect bushy shrub up to 3 m, widespread in the south and southwest on "buttongrass" and wet sclerophyll scrubs. Also patchy occurrences on the east coast in scrubby heaths. Leaves mostly oblanceolate, apex obtuse with a blunt mucro, margin slightly recurved. The plant is dioecious and tetramerous. Fruit spherical, orange, somewhat fleshy. Flowers in spring. On Mount Field there is a variant which is a small sparsely branched shrub, about 40 cm high which consistently flowers in autumn with slightly larger, fleshier, orange-brown fruit. Photo on page 168.

Pentachondra

3 species, 2 endemic. A typical flower is shown on the right.

Pentachondra ericifolia is a small heath like shrub either procumbent or ascending to 60 cm. The leaves are erect and often appressed, narrow-linear, 3-6 mm long with spreading hairs on the margins. Numerous, solitary flowers occur near the ends of short branches. The corolla is longer than the calyx, white, bearded inside and with a few scattered hairs on the outside, anthers barely visible. Occurs locally in subalpine habitats on the Central Plateau and north-east highlands. Flowers in spring.



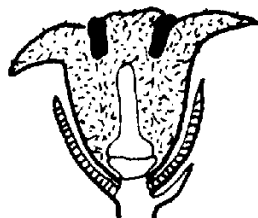
Pentachondra involucreta is a small shrub with branches up to 40 cm long or rarely to 2 m. The leaves are broadly elliptical, 8-18 mm long and with soft spreading hairs along the margins. The solitary flowers are in small groups near the ends of short branches. The corolla is equal to or shorter than the calyx, white or pinkish, bearded on the inside, but glabrous outside. Anthers exserted. Occurrence is sporadic in the south and east of the state in a variety of habitats, e.g. sea cliffs, sub-alpine sclerophyll forest and wet sclerophyll. Flowers in autumn.

Pentachondra pumila is a small prostrate plant with the tips of the branches sometimes turning upwards. The leaves are oblong, blunt, 2-4 mm long and have ciliate margins. The flowers are solitary near the ends of branches, white corolla longer than the calyx, bearded inside but glabrous outside. Anthers barely visible. The persistent fruit is ovoid, red, often retaining the dried corolla and bearing (usually) five pyrenes. The fruit falls into two distinct sizes depending on location of the population. It is locally abundant in heaths at high altitudes. Flowers in spring. Photo on page 164.

Planocarpa

An endemic genus with 3 species. A typical flower is shown on the right.

A new genus erected by Weiller (1996) formerly *Cyathodes*.



Planocarpa nitida has a restricted distribution on the Central Plateau near Lake Augusta. It is a compact shrub up to 40 cm high. The leaves are ovate, the margin recurved and with a pungent tip. Wax development on the leaf abaxial surface is not so marked as in other *Planocarpa* species, due to the presence of a unique type of epicuticular wax. Flowers solitary, the corolla tube is equal to the lobes which are sparsely pubescent. The fruit is a flat, shiny, black drupe. Flowers late winter into spring. Photo on page 164.

Planocarpa petiolaris is restricted to high altitudes above 1200 m on dolerite mountains of the southeast and Central Plateau. It is a diffuse or compact shrub rarely exceeding 1 m. The leaves are oblong to ovate, flat, with a short, hard tip. The white flowers are solitary, the tube constricted at the throat and the lobes covered in dense hairs. Fruit is a dull red or red-black, flattened drupe. Flowers late spring into summer. Photo on page 164.

Planocarpa sulcata is restricted to the western mountains above 950 m in subalpine scrub and heath. It appears similar to *Planocarpa petiolaris* in habit, but differs in features of the leaf, corolla and fruit. The leaves are longer, have a recurved margin and a midrib groove on the upper surface. The corolla is cylindrical and hairs on the lobes are restricted to the lower part and deflexed towards the tube. Fruit is a shiny, red, flattened drupe. Flowers early summer. Photo on page 164.

Part 4 will complete this description of Tasmanian Epacridaceae.

Callistemon, bottlebrush

Growing in Large Pots _____ Byron Williams*

I started growing callistemons 30 years ago in the Melbourne suburb of Kew. It didn't take me long to realise that if callistemons were regularly pruned each year, fertilised and given a little tender loving care, they turned out quite different to the many *Callistemon* bushes I had seen in and around Melbourne. There is no need for those twisted gnarled grey limbs and hundreds of old seed pods, some dating to the first year of flowering. I soon had a garden full of *Callistemon*, beautiful bushy shrubs rewarding me with masses of bottlebrush flowers from mid October to late November.

I then encountered the dilemma every Australian plant enthusiast has to deal with sooner or later. I had no more space available on my standard sized suburban house block to plant my ever-increasing collection of *Callistemon*. One hot summer day I came across a water tanker providing water for a number of semi-advanced English trees growing in large concrete tubs situated along the city footpath. Why couldn't I do the same thing with some of my *Callistemon*?

By growing *Callistemon* in large pots, the shrubs are immune from the effects of unfavourable soil types, poor garden aspect and can be moved out of the ravages of the Victorian climate, be it century heat, wind, rain, hail, snow or frost. In the flowering season the pots can be grouped together to take advantage of the variations of colour of the brushes, white, red, pink and mauve!

I have now been growing *Callistemon* in large plastic pots for a number of years with good results. The main essentials are a reasonably large sized pot, good drainage, good soil and regular fertilising and watering. I use large black plastic pots, about 50 cm diameter and 40 cm in depth. Remember good drainage is essential for growing any plants in pots. My pots are filled with good rich natural garden loam from my stock of last year's leaf compost and lots of decaying leaf material. After I put my *Callistemon* in the pot, I mulch the surface soil with old leaves. All the plants are staked and tied with a soft but strong non-cutting tape and each pot is labelled with a permanent marking pen on coloured PVC sticky tape, with the name of the *Callistemon*, and the date of planting.

The fertiliser used is blood and bone, applied on a wet soil surface and carefully watered in within the pot. This is applied a couple of times a year, once in autumn and again in late winter before the flowering time commences. (Don't use too much fertiliser at this time as the flower buds can turn to leaves!) An application of sulphate of potash in early spring will give you the colour that only southern grown *Callistemon* can produce. There again, keep the mulch and organic matter up because sulphate of potash can leach the soil out a little.

* First published in the May 1996 issue of the newsletter of the Society's Melaleuca and Allied Genera Study Group. Enquiries to your state secretary. Editor.

Callistemon in large pots can have problems with scale, particularly if they are sheltered (as a result of lack of air movement) and with this comes the problem of ants. Control of scale should keep the ants away. Sometimes in bad cases of scale, one is forced to use white oil, but for the most part, a fine spray of high-pressure water from the hose will get rid of scale. Those of you who live near the coast subject to prevailing southern winds should have little trouble with scale.

Callistemon should be pruned back behind the flower heads as soon as they fade, usually mid summer (early December in Melbourne), a little earlier on the coast. Depending on the age of the plants you can, if necessary, shape the bush at that time, too. The general flowering habits of *Callistemon* are the same whether you grow them in containers or in the ground. Some flower regularly every year, year after year, whilst others for various reasons, miss a year or turn around and flower in autumn instead. These variations can be caused by pruning too hard, or not enough, fertilising at the wrong time, variations in water and the seasons. In general, if you treat your plants right, they will reward you with a floriferous display as only *Callistemon* can.

Remember, some *Callistemon*, but not all, grow in swampy and bog conditions. Make sure that these plants get plenty of water in the warmer months. They can also dry out quickly in winter, if the pots are kept under cover or in a sheltered position such as under the eaves of the house or against the wall sheltered from the prevailing weather.

A word of caution, get yourself a little two wheeled trolley to move your pots, otherwise you risk doing the old back in; large pots can get quite heavy when filled with soil and even a medium sized plant.

Callistemon for large pots

Obviously the smaller varieties will be more suited for pot culture and are easier to handle. Some worth having a go in large pots would be *Callistemon* 'White Anzac' (with unusual white brushes), *C.* 'Captain Cook', *C.* 'Little John', *C.* *pityoides* 'Cobberas Dwarf' and *C.* *pearsonii*. There are many forms of *Callistemon citrinus*; the smaller growing cultivars are most suitable for containers. The unusual green-coloured flower spike of *Callistemon pachyphyllus* var. *viridis* has a cascading habit of growth which would suit a large container.

Those who want a challenge could try the large varieties, *Callistemon* 'Western Glory', *C.* 'Hinchinbrook Island' and even some of the old time Victorian veterans *C.* 'Mauve Mist', *C.* 'Burgundy' and *C.* 'Reeves Pink'.

I have had some success with some of the Queensland varieties in pots, viz *Callistemon* 'Mr. Foster', *C.* 'Horse Paddock', *C.* 'Howies Fire Glow', *C.* 'Jenny Wren' and *C.* *polandii* at Kew. Many of the Queensland varieties, apart from the lovely red bottlebrush flowers, have spectacular pink to dark red foliage at various times which is absent in southern *Callistemon*.

Growers in warmer climates such as New South Wales and Queensland, who often have difficulty getting some of our southern *Callistemon* cultivars to flower, might well consider growing them in large pots. Editor

Astrotricha

Two recent Queensland species _____ A. R. Bean*

Astrotricha is a group of at least 18 species of unusual shrubs or small trees, belonging to the Araliaceae family. They are found in Queensland, New South Wales and Victoria. There is also one species that grows in Western Australia.

Dense hairs on the young branches and leaves create their ornamental value and give the whole bush a white to cream appearance, especially in windy conditions. These stellate or star shaped hairs are featured in close up (8 x magnification) in Figure 1 f.

Recent research has resulted in the description of two new species (Bean 1997). These two species, *Astrotricha umbrosa* and *Astrotricha brachyandra*, are indigenous to Queensland.

Astrotricha umbrosa is an erect, well branched shrub to 2 m high. Fig. 1 (opposite) shows a, portion of the inflorescence x 3; b, flower at the male stage x 6; c, flower at the female stage x 6; d, fruit x 3; e, leaf x 6; and f, stellate hairs.

Astrotricha umbrosa is only known from half a dozen widely scattered populations extending from Kroombit Tops to Mapleton. It grows in sandy or sandy loam soils in dense and shady open forest, hence its name from the Latin *umbrosus* meaning growing in shade.

Its white to pinkish flowers can be seen from September to October.

Astrotricha floccosa is similar in appearance but for larger bracts and inflorescences (3 times longer with twice as many flowers). It grows in the Sydney region.

Astrotricha longifolia is also similar but it has a tighter tomentum, narrower (or shorter) stellate hairs and narrower leaves. It grows in the coastal areas of southern Queensland and New South Wales.

Astrotricha brachyandra is an erect, sparsely branched shrub to 2 m high. Fig. 1 (opposite) shows g, portion of the inflorescence; h, flower at the male stage x 6; i, flower at female stage; j, fruit x 3 and k, a leaf x 0.6.

Astrotricha brachyandra is restricted to a 50 km geographical area comprising Kroombit Tops and Callide Range (near Biloela). It grows in woodland in sandy soils derived from sandstone at altitudes between 600 and 800 metres.

Its purple flowers have been seen from October to December. Short stamens are a feature of this species, hence its name from the Greek words *brachy* meaning short and *andros* meaning male. The filaments are only 0.6 mm long compared to 1.9 mm long in *A. umbrosa*.

* This text has been summarised from a paper by A.R. Bean (1997). A conspectus of *Astrotricha* DC. (Araliaceae) in Queensland, including the new species. *Austrobaileya* 5(1): 63-69. This paper contains a key and further information about the 11 species that are indigenous to Queensland.

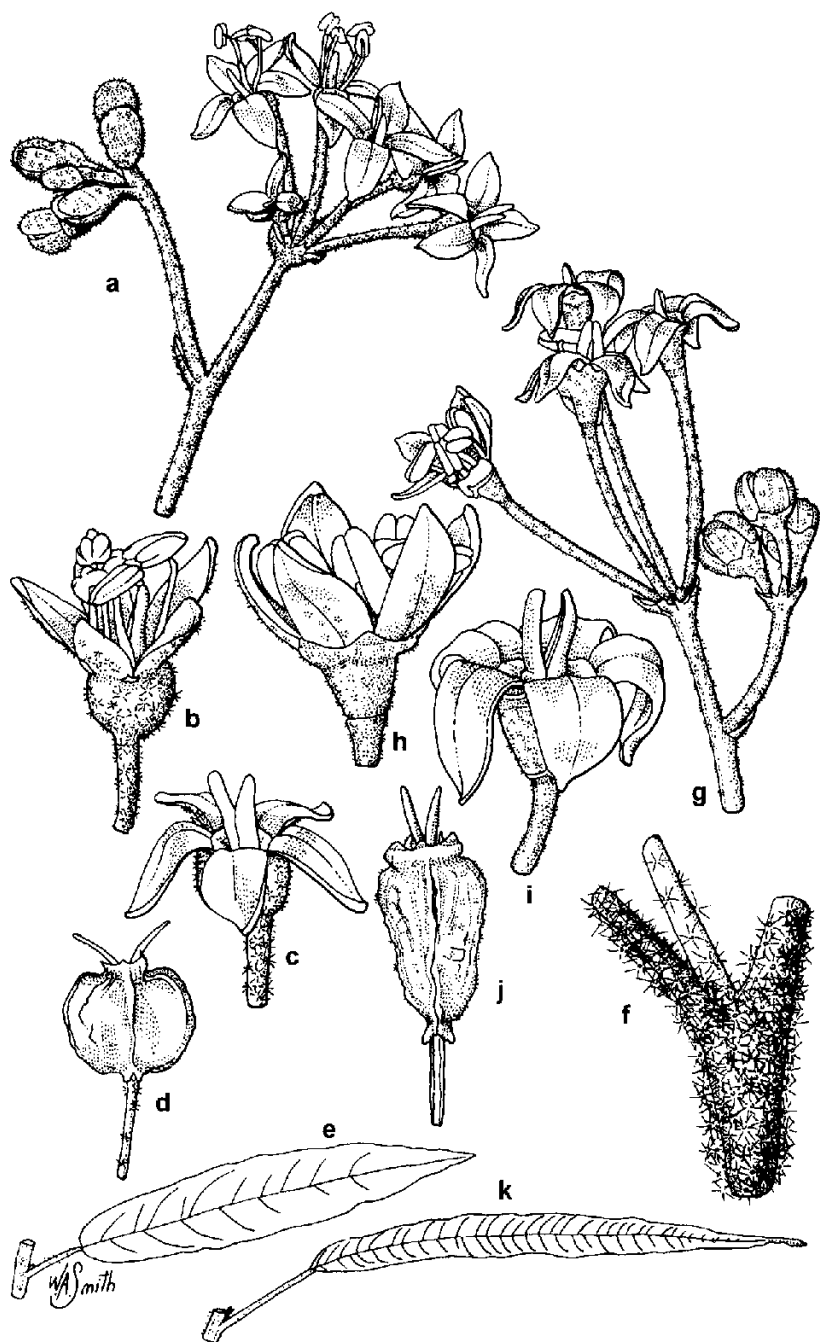


Figure 1 reprinted from *Austrobaileya* 5(1):67

Integrated pest management — IPM

W.H. Payne

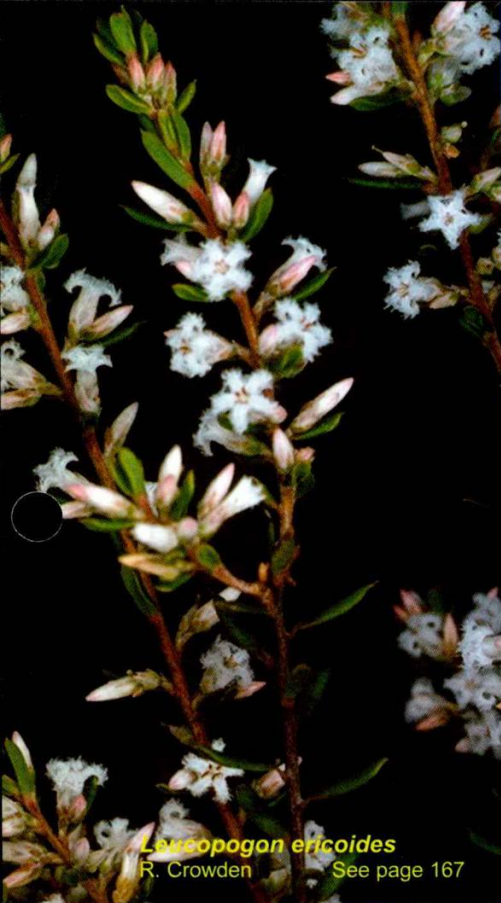
This is a term used in the horticultural industry to reduce the usage of harmful insecticides and to find alternative means of pest control by:

- (a) Not using an insecticide if there is another effective way;
- (b) Using a biological control, a friendly bug to control a destructive bug, if possible;
- (c) Using a 'soft' insecticide in association with a biological control that is fully compatible with beneficial agents and has a short residual life.

I attended a workshop at University of Western Sydney where experienced supporters of IPM from England, Netherlands, Canada and USA reported upon the trends overseas. My conclusions are that:

1. Regular spraying results in insect and pests becoming resistant to the chemicals forcing even more frequent spraying with less and less success.
2. Regular chemical spraying has produced environmental problems through the contamination of ground water. This has become so serious in countries such as Denmark that the authorities have imposed such severe restrictions on certain chemicals, that some alternative must be found. Other countries are following this trend and biological control agents are rapidly being developed to keep the horticultural industry in business.
3. There is a rapidly growing biological control industry overseas giving serious competition to the chemical companies still selling 'hard' insecticides. One company lists 33 beneficial arthropods to control a wide range of greenhouse pests, all of which have been successfully used for a number of years, 13 of them for more than 10 years. Few are available in Australia.
4. Whereas there is now a range of 'soft' chemicals available overseas, there are only three in Australia. Most commercial growers (76%) are still using 'hard' chemicals, those that are very harmful to beneficials and have a long persistence in the crop.
5. 'Soft' chemicals will still be necessary to complement biological control agents prior to planting and to control pests that reach harmful proportions. Once a crop is under control, biological control will usually contain pests to a level that further spraying is unnecessary.
6. Hopefully all readers are already practising IPM by:
 - (a) Regular inspection of their plants and the physical removal of pests by removing leaves or by using a strong jet of water.
 - (b) Encouraging beneficial agents of biological control, such as birds and reptiles.

The use of 'soft' insecticides only as a last resort. I cannot tell you which of the available chemicals come into this category. Will a competent person please advise me.



Leucopogon ericoides

R. Crowden

See page 167



Leptecophylla pendulosa

R. Crowden

See page 163



Monotoca linifolia* ssp. *algida

R. Crowden

See page 170

Farm forestry

A conservation project _____ W.H. Payne

If we grow trees, why not grow those that yield the greatest return for the grower and for the national economy. Greening Australia is seeking properties to establish farm forests - contact them if at all interested. They will help you get established with advice, even money for fencing. Our previous issues give very practical advice from experienced growers, especially the March 2001 issue. *Eucalyptus* and *Acacia* will be in an issue shortly.

Rainforest timbers for turning and carving. A lucrative market exists.

Ackama paniculata, Brown Alder; deep brown.

Acmena resa, Red Eungella Satinash; light brown.

Agathis robusta, Kauri Pine; soft cream or pale brown. Fast grower.

Ailanthus triphysa, White Siris; white soft.

Albizia (now *Paraserianthes*) *toona*, Red Siris; red brown, striped. Slow.

Aleurites moluccana, Candle-nut; white, soft. Fast growing.

Allocasuarina fraseriana, Western She-Oak, reddish-brown, boldly flecked.

A. inophloia, Thready-bark Oak; dark reddish-brown, boldly flecked.

A. littoralis, Salt Water Oak; deep brown, boldly flecked.

A. luehmannii, Bull Oak; deep brown, boldly flecked.

A. verticillata, Weeping She-Oak, flecked, boldly striped red-brown.

A. torulosa, Rose She-Oak; red-brown, flecked and striped.

Alloxylon wickhamii, Satin Oak; light brown, boldly flecked.

Alphitonia excelsa, Red Ash; orange or red, soft.

A. petriei, Pink Ash; pink and gold striped.

Angophora lanceolata, Smooth-barked Apple; brown, striped.

A. subvelutina, Broad-leaved Apple, grey brown, striped.

Araucaria bidwillii, Bunya Pine; white soft. Fast growing.

A. cunninghamii, Hoop Pine; white soft. Fast growing.

Archidendropsis xanthoxylon, Yellow Siris; light golden brown.

Argyrodendron actinophyllum, Blush Tulip Oak; pinkish grey, flecked.

A. trifoliolatum, Brown Tulip Oak; pinkish grey, boldly striped. Slow growing.

Atherosperma moschatum, Southern Sassafras; greyish brown.

Avicennia officinalis, Grey Mangrove; greyish brown.

Backhousia bancroftii, Johnstone River Hardwood; dark brown, striped.

Beilschmiedia bancroftii, Yellow Walnut; cream flecked.

Blepharocarya involucrigera, Rose Butternut; golden, striped.

Caldcluvia australiensis, Rose Alder; deep greyish-pink, striped.

Callitris columellaris, White Cypress Pine; yellow to deep brown.

C. macleayana, Brush Cypress Pine; yellow striped.

Calophyllum costatum, Red Touriga; light brown, striped.
Canarium australasicum, Scrub Turpentine; grey.
Cardwellia sublimis, Northern Silky Oak; deep brown, heavily flecked.
Carnarvonia araliifolia, Candedonian Oak; dark reddish-brown, striped.
Castanospermum australe, Black Bean; dark blackish-brown. Slow growing.
Casuarina cristata, Belah; dark brown, flecked.
C. cunninghamiana, River Oak; pink and brown.
C. glauca, Swamp Oak; brown, boldly flecked.
Ceratopetalum apetalum, Coachwood; pinkish-grey, distinctly striped.
C. succirubrum, Satin Sycamore; pinkish-grey.
Choricarpia subargentea, Ironwood Box; brown. Fast growing established.
Cinnamomum laubatii, Pepperwood; light pinkish-brown, boldly striped grey.
C. oliveri, Olivers Sasafras, Camphorwood; red, brown or black, fragrant.
C. laubatii, Champhorwood; grey.
Cryptocarya corrugata, Corduory Laurel; pale pinkish-grey.
C. erythroxylon, Pigeonberry Ash, Rose Maple; pinkish-grey, fruity odour.
C. oblata, Bolly Silkwood; pink striped.
Dacrydium (now *Lagarostrobos*) *franklinii*, Huon Pine; pale yellow.
Daphnandrum micrantha, Sacketwood; pale yellowish.
Dyospyros ferrea, Queensland Ebony; black-brown, hard.
D. pentamera, Grey Persimmon; grey.
Disoxylum fraserianum, Rose Mahogany; dark red-brown.
D. muelleri, Red Bean; red-brown.
Elaeocarpus grandis, Blue Quandong; creamy-white, light brown or grey.
E. ruminatus, Brown Quandong; light creamy-grey.
Endiandra discolor, Rose Walnut; yellow/orange, spicy odour, fast growing.
Endiandra glauca, Brown Walnut; light grey-brown.
E. palmerstonii, Queensland Walnut; light to deep brown.
E. virens, Plumwood; pale brown, striped.
Eremophila mitchellii, Budda; cream and brown.
Erythrophleum chlorostachys, Ironwood; red-brown.
Eucryphia moorei, Stinkwood; dark pink, distinctly striped.
Euodia vitiflora, Northern Euodia; white.
Euroschinus falcata, Pink Poplar; pale pink-grey.
Flindersia acuminata, Silver Silkwood; grey, flecked.
F. australis, Crows Ash; yellow flecked.
F. brayleyana, Qld. Maple; light golden-brown, striped. Fast growing.
F. iffina, Hickory Ash; cream striped.
F. lareicarpa, Scented Maple; light pink.
F. maculosa, Leopardwood; yellow, spotted.
F. schottiana, Silver Ash; creamy-yellow, striped. Fast growing.
F. xanthoxyla, Long Jack; yellow, flecked.
Galbulimima belgraveana, Magnolia; creamy-white.
Geijera salicifolia, Brush Wilga; cream and grey, striped.
Geissois benthamiana, Red Carabeen; cream but not showy grain.
Gmelina leichhardtii, White Beech; pink-yellow, no growth rings. Fast growing. Very valuable. Other *Gmelina* species are similar.
Grevillea robusta, Silky Oak; brown, boldly flecked. Fast growing.

To be continued in a future issue together with trees for colder areas.



Leucopogon virgatus
R. Crowden See page 169



Leucopogon
R. Crow



Leucopogon esquamatus
R. Crowden See page 167



Leucopogon milliganii
R. Crowden See page 167



Leucopogon hookeri
R. Crowden See page 167



Leucopogon parviflorus
R. Crowden See page 167

Floral arrangements - are you interested?

A well-presented vase of flowers in the home adds beauty to our environment. In an issue last year we initiated a competition among readers involving the artistic use of our wildflowers. The winning arrangement for the period of June 2000 to June 2001 is shown on page 144. Why not attempt a floral arrangement and send the editor a photograph? Do not be overly concerned about the photography problem. Use the family camera and the usual print film. Place the container of flowers on table covered with a plain tablecloth, the table against a pale coloured wall with very good light or flash and give it a go. The photograph must be in-focus and without blurring from movement. Should you be interested, we will give you advice on how your arrangement could be improved. This is an excellent way to show our wildflowers to advantage and it could encourage their preservation.

Join in the fun! Editor.

Wildflower Nurseries in Queensland

Fairhill Plants and Botanic Gardens — Huge range; rainforest plants, grafted grevilleas, rare plants, wildflowers, ferns, orchids, revegetation trees. Extensive display gardens. Open every day 8.30 a.m. to 5.00 p.m. Fairhill Native Plants, Fairhill Rd, Yandina, Qld 4561. Tel. (07) 5446 7088.

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Annangrove Grevilleas — 98 Annangrove Rd, Kenthurst 2156. Tel. (02) 9654 1380. Wide range of natives including hundreds of different species in tubes — many hard to get. Ten percent discount to SGAP members.

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Illawamba Native Growers — PO Box 89, Cobargo, NSW 2550. Tel. (02) 6493 7398, mail order specialist. Send 2 x 45c stamps for catalogue of our large range including rare species.

Newcastle Wildflower Nursery — 260 Lake Rd, Glendale 2285. Tel. (02) 4954 5584. Extensive range of native plants including rare and endangered species.

Stocks Native Nursery — Lot 3, Simmonds Rd, Harden, 2587. Tel. (02) 6386 2682. Plants for frost and dry weather suited to Canberra, Wagga Wagga, Orange type conditions.

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Brenton Tucker Native Plants and Carawatha Garden — Placid Estates Rd, Wellington East via Tailm Bend. Tel. (08) 8572 7104. Wide range of tubestock and advanced plants. Extensive display gardens and picnic areas. Open weekends and public holidays March to November and by appointment, 10 a.m. to 4 p.m.

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For Australia's largest range of Australian flora including rare and unusual forms. Delivery to most states. Free stock list on request.

Australian Wildflower Seed Suppliers

R. Horner — 1 Grundy St, Alice Springs, NT 0870. Seed of trees and shrubs of Central Australia. Please sent 45c stamp for a list.

Wildflower Society of Western Australia (Inc.) — PO Box 64, Nedlands 6909. A range of seeds available, labelled and packed, at \$1.50 (plus postage) per packet. Send for a current Descriptive Seed List (\$3.00 posted) to: The Seed Sales Officer, Eastern Hills Branch, PO Box 111, Glen Forrest, WA 6071. Also available a book *Hints on Growing Native Plants*, at \$4.00 posted.

The Grevillea Book, volumes 1, 2 and 3 by Peter Olde and Neil Marriott, is a complete reference to all species of *Grevillea*. The Australian Plants Society NSW ensured that they were published to a very high standard with at least one large colour photograph of each of the 340+ species, an easily read description of each species and details of its occurrence and cultivation. They are available from the Australian Plants Society NSW, PO Box 744, Blacktown, NSW, 2148, at \$44 per volume plus postage and handling of \$7.50 for 1 or 2 volumes and \$15.00 for 3 volumes within Australia.

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Lissanthe strigosa

R. Crowden

See page 169



Lissanthe montana

R. Crowden

See page 169