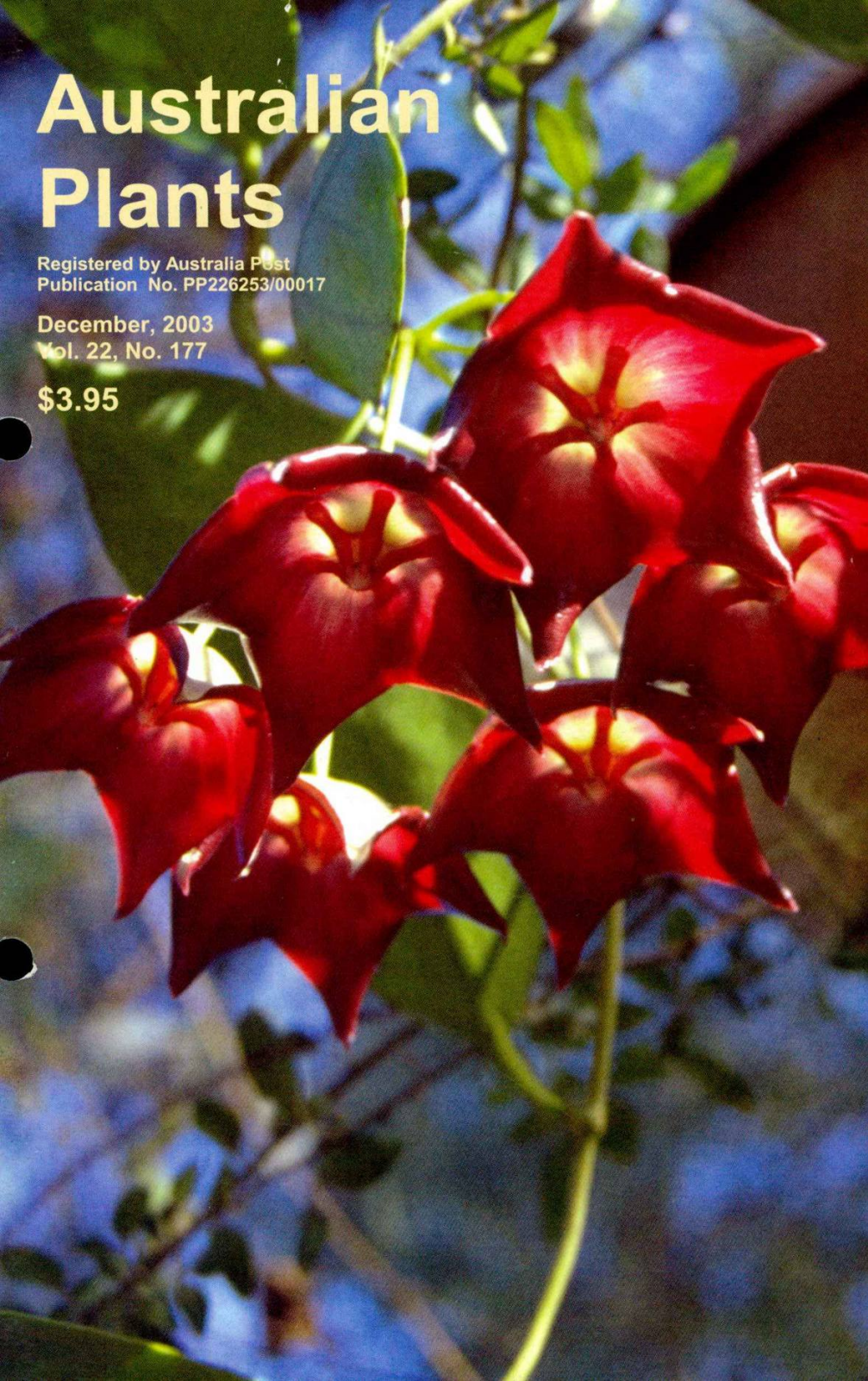


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Editorial

Cas Liber and Joanne Caldwell, Publishing Committee

Every two years the ASGAP national conference provides a great opportunity for members of different states to get together and hear some great talks on Australian plants. In January 2004 (it should have been in 2003) it will be held in Launceston. In 2005 the ASGAP national conference will be held in Western Australia and in 2007 in New South Wales.

Perhaps the 2005 conference in WA will provide an opportunity for us to see the beautiful eucalypts at the Kalgoorlie Arboretum, to view mass plantings of *Anigozanthos* in Kings Park, to see WA Christmas Bush (*Nuytsia floribunda*) in cultivation or visit the Bungle Bungles. All these were described in the last issue of *Australian Plants* (September 2003). In this issue we have an article from WA on the recently revised genus of *Pileanthus* (Coppercups).

The main focus of this issue is some of the talks from the 1999 ASGAP conference in Queensland, and the 2001 conference in Canberra. Three articles visit different types of vegetation in Queensland: the Wallum, Mountain Heaths and the Wild Places of the very North. For those of you who constantly wonder why some serious weeds are still being sold in retail outlets, an article from Canberra reflects on some successes that have been achieved in the ACT over the last 10 years.

Finally, as most of the nation is fearing a 'double dip drought', our garden features a prize winning 'water-wise' garden in an area that is mostly dry.

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Front cover: *Hoya macgillivrayi* - photo Pam Tanner - see page 175

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The Wallum:

Beerwah through the seasons

Barbara Henderson, Wallum Study Group Leader

This talk was given at the 1999 Queensland ASGAP conference

Introduction

To me, Wallum is one of the most beautiful plant communities we have in Australia. 'Wallum' is the Queensland name given to the wildflower heaths of both the low-lying wetlands and the high dunes along Australia's eastern coastline, from near Rockhampton in Queensland, to south-eastern South Australia, including Tasmania's east coast and Kangaroo Island in South Australia. In these southern States, the community is simply called 'coastal heathland', while the sandplain heaths of Western Australia's south-west, with their glorious wildflowers, go under another unusual name, the 'Kwongan'.

I won't go into lengthy descriptions or explanations of just what Wallum is, as that information is available in various publications, and would take up too much space and time here.

Twenty years ago there was a lot of interest in the Wallum from SGAP members, but, perhaps due to difficulties in cultivation of the site-specific plants, it was put aside as other types of plants proved easier to grow, and became available. Conservation issues also focussed strongly on rainforest, and this occupied a lot of time, energy and expertise. It appeared that Wallum was put into the 'too-hard' basket, and largely ignored. As a result, 10–15 years of rampant development and destruction of the Wallum north of Brisbane passed relatively unnoticed. It was almost as if, while everyone was growing and saving rainforest, behind their backs down on the coast, the developers with their bulldozers did as they liked. The Wallum areas became houses, roads, and tourist venues.

Almost 50 years ago Barbara, as a ten year-old schoolgirl, saw a red bottlebrush flower in an open *Melaleuca* swamp. Now she introduces others to all the Wallum wildflowers she knows and loves. In the early 50's Bribie Island was a wildflower paradise and its 'Boronia Patch' provided hours of pleasure for Barbara and her best friend.

Thirty years of work, marriage and family commitments passed before she returned to Bribie Island Wallum with the Redcliffe Australian Plants Club, a member body of SGAP, in 1979. Barbara joined the Society two years later, became concerned about the rampant destruction of Sunshine Coast Wallum, and got involved in efforts to save sensitive areas from Motorway and other intrusions.

Wanting to increase knowledge and awareness of Wallum wildflowers and their fate, she started the Wallum & Coastal Heathland Study Group in late 1992. Nowadays her greatest pleasure comes from introducing school children and other interested persons to her precious Wallum, hoping they will continue the work of other older conservationists and teachers of natural studies.

This talk & tour was part of the 1999 ASGAP conference. As a final update, the Beerwah State Forest Scientific Area is likely to be made a National Park under changes in tenure going ahead in Queensland.

The Wollum in Winter...



Scribbly Gum forest, *Eucalyptus racemosa*
See page 150

B. Henderson



Banksia integrifolia ssp. *compar* peaks in winter
See page 186

C. Liber



From July on, the pea flowers
begin: *Aotus ericoides*



The Woolly Aotus, *Aotus lanigera*



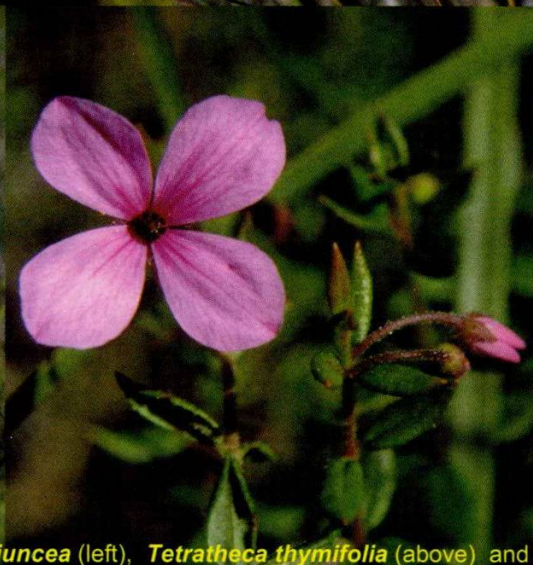
Daviesia umbellulata

See page 150 Photos: B. Henderson

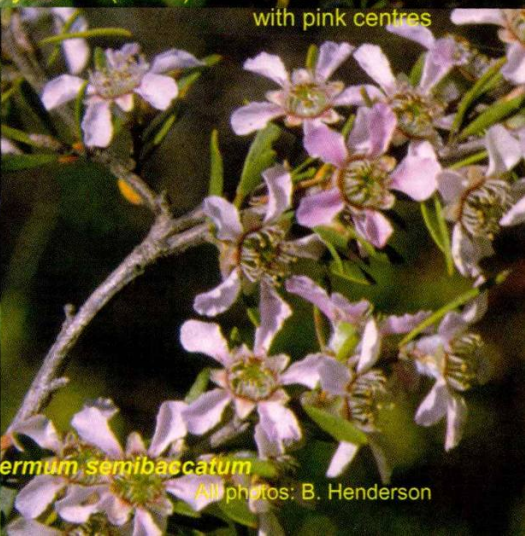
Spring...



Mirbelia rubiifolia (left) and *Patersonia sericea* (right)



Sowerbaea juncea (left), *Tetratheca thymifolia* (above) and *Pimelea linifolia* with pink centres



Dampiera sylvestris (left) and *Leptospermum semibaccatum*

See pages 151 and 186

All photos: B. Henderson

But Wallum has been preserved in both large and small National and Environmental/Conservation Parks - Bribie, Moreton and Fraser Islands, Noosa and Cooloola, are the larger National Parks, with the Noosa National Park now extending south to Coolool Beach. Two notable Sunshine Coast persons worked extremely hard, with varied degrees of success, to save Wallum. These days both Arthur Harrold of Noosa, and (the late) Kathleen McArthur of Caloundra, are the most admired wildflower conservationists in the region.

However, developers still hold leases over many valuable and sensitive areas, which will remain at risk for many years yet.

The Department of Natural Resources, through its Forestry section, manages some quite large remnants of Wallum among its pine plantations. The Beerwah State Forest Scientific Area 1 is one such area. Here, fire management is practised in the blocks of wet and forest Wallum and records are kept at the Gympie offices. Several rare and endangered species are found here - among them the tiny *Acacia baueri* and *Eucalyptus conglomerata*, the Swamp Stringybark.

The term 'Wallum' is applied to many types of coastal wildflower communities. These include open treeless areas of wetland with grey peaty sands, and high dune heaths with deep white sands. Nowadays, the understorey of coastal forests, especially those dominated by Scribbly Gums, *Eucalyptus racemosa*, is also called 'Wallum'. It includes larger shrubs and many species different from those of the open wetlands directly near the coast. Photos on pages 148 & 189.

The Beerwah State Forest Scientific Area has open swamps and Scribbly Gum forests, as well as sections with scattered *Banksia aemula* and *Melaleuca quinquenervia* among the heath plants. Understorey vegetation varies from one section of forest to another and plant communities change subtly as the forest meets the swamps.

It is a mistake to think that the Wallum is only worth looking at during the spring flowering peak. There are flowers all year round. Through autumn into early winter, *Epacris pulchella* dominates the scene in the open heaths, with its mainly white, but also lots of pink, flowers. *Acacia ulicifolia*, Queensland's Prickly Moses, is covered in fluffy balls from cream to deep russet before the curled seedpods form. As will be seen during the Conference day tour, in winter there are bits of colour everywhere.

In **Winter**, from July on, the pea flowers begin to add yellow to the scene, as *Dillwynia retorta* and *Dillwynia floribunda* produce their 'Mickey Mouse ear' flowers, the *Gompholobium virgatum* bushes become covered in clear yellow flowers with green keels, *Daviesia umbellulata*, (photo page 148), has its umbels of yellow and brown flowers on arching branches of sharp-tipped leaves which trap the unwary, and the *Aotus lanigera*, (photo page 148), boldly shows off its yellow blooms, attracting the bees along with its relative, *Aotus ericoides*, (photo page 148). The *Pultenaea*s are somewhat 'quieter', with only a few plants of low-growing *Pultenaea petiolaris* in flower, unlike *P. myrtoides* and *Aotus ericoides*, both of which are obvious with their yellow and red pea flowers.

Spring is brightened by the brilliant cerise pinks of *Boronia falcifolia* along the track and in the heath areas, and *Bauera capitata*, the Wallum Dog Rose, which favours wetter places. In contrast, *Dampiera sylvestris*, (photo page 149), has either vivid electric, or softer powdery blue flowers on plants which sucker along the edges of the roads or in the understorey. More yellow, with *Goodenia stelligera* standing tall and *Xyris complanata* and *Xyris juncea* keeping them company. These three-petalled Hatpins have interesting seedpods, which give them their common name. The broad leaves of *Persoonia stradbrokeensis* contrast with the finer foliage of two related species, *Persoonia virgata* and *P. tenuifolia*, but all have the same dainty yellow flowers.

More bright pink among the roadside vegetation proves to be *Mirbelia rubiifolia*, with its tiny pea flowers in pairs along the fine stems. Photo on page 149. Out in the open heath, *Leptospermum semibaccatum*, (photo page 149), bears white or pink flowers on stems just above the other plants and makes a marvellous spectacle in the sunlight.

Baeckea frutescens (previously *Baeckea stenophylla*) has dainty white flowers on weeping branches of fine foliage, and on taller plants, hangs like a veil. More white, with the little four-petalled *Zieria laxiflora* flowers over a medium-sized shrub, the tubular Leucopogons whose fluffy petals give the common name of White Beard, and the starry *Sprengelia sprengelioides* with their prickly leaves. Sweetly-scented Milkmaids or *Burchardia umbellata* and waxy *Philotheca* (prev. *Eriostemon*) *myoporoides* ssp. *queenslandicus*, the Queensland Wax Flower, both have touches of pink or mauve. Also sweet-scented and a feature of all Wallum areas, wet swamps or dry sandhills, are the *Sowerbaea juncea* or Vanilla Lilies (photo page 149), with heads of dainty star-like flowers on soft bluish stems which quiver in the breeze to produce a soft mauve haze over the wildflower field - an unforgettable sight. The perfumes of *Burchardia*, *Sowerbaea* and the white *Epacris obtusifolia*, the Common or Bell Heath, are a delightful combination of delicate honeyed scents, unique to our Wallum in springtime. This is sadly becoming more and more a memory.

Spring flowerings gradually fade and ease into the blooms of the hotter months of November to February, with heavy **Summer** rains and storms. Water tables are replenished, and some of the most spectacular Wallum heath species flower. *Xanthorrhoea fulva*, the trunkless Wallum Grasstree, puts up its spikes of massed cream flowers, attracting birds, butterflies and a host of nectar-seeking insects. If there has been fire through a Wallum swamp, there should follow a flowering of the glorious deep orange and yellow *Blandfordia grandiflora*, better known as simply Christmas Bells. These are also becoming something of a precious memory. Beerwah has one such swamp.

Wallum's lemon-scented Tea-tree, *Leptospermum livesidgei*, always grows around swamp margins, the tiny foliage giving out its delightful perfume when touched. Masses of white or pink flowers cover up to 20 cm of stem in January. Photo on page 188.

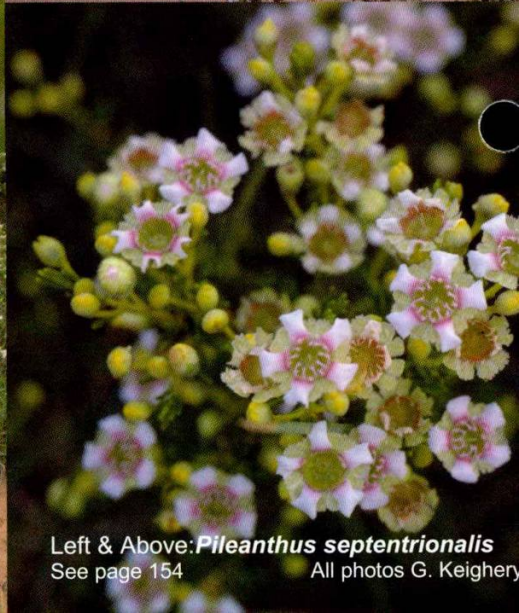
Continued on page 186



Above & below right: *Pileanthus limacis*
See page 154



Pileanthus rubronitidus See page 184



Left & Above: *Pileanthus septentrionalis*
See page 154

All photos G. Keighery

Coppercups

The genus *Pileanthus* (Myrtaceae) _____ Greg Keighery
Wildlife Research Centre, CALM, Wanneroo, WA

Greg wrote the revision of the genus *Pileanthus* published in *Nuytsia* in 2002

Introduction

Pileanthus is a small very distinctive genus of floriferous shrubs endemic to southern Western Australia. Although related to *Chamelaucium* Desf., *Darwinia* Rudge and *Verticordia* DC., it differs from those genera in having 20 perfect stamens and no staminodia, the sepals deeply bilobed giving the appearance of 10 calyx segments, a silky hairy hypanthium and large soft petals. The genus has the largest and most colourful flowers of all the genera that make up the *Chamelaucium* alliance, and populations are spectacular when in full flower.

All species are shrubs, with simple linear leaves that are aromatic when crushed. The large flowers are displayed in terminal leafy inflorescences and the flower buds are often covered in a sticky exudate. The flowers range from white, pink, and orange to red.

All eight species are endemic to southern Western Australia. There is a concentration of species on the sandplains north of Geraldton. This is a very different pattern to that shown by the related genera *Chamelaucium* & *Darwinia*.

Pollination biology

The pollination syndrome in the related genera *Chamelaucium*, *Darwinia* and *Verticordia* involves the deposition of their pollen onto the stigma in an oily droplet before the flowers open. This does not happen in *Pileanthus*. Very specific bee pollination has been documented in one species (*Pileanthus dilatatum*).

Cultivation

Members of the genus require excellent drainage and a sunny position. They formed a spectacular late spring and early summer display at Kings Park in such a position. In wetter regions the plants are very susceptible to moulds and mildews, although they have been grafted onto *Darwinia citriodora* as a rootstock, I am unsure of the success of this treatment.

Gardener's Tip:
Pileanthus are
suitable for
cultivation and are
readily grown from
cuttings.

Attempts to hybridise members of the genus with *Chamelaucium* Desf., *Darwinia* Rudge and *Verticordia* have not proved successful, although natural hybrids between species have been reported.

Plants can be readily grown from cuttings usually taken when the plants are growing from spring to summer and treated with hormonal powder. Plants have also been raised from seed sown in the autumn and flower in 3 to 4 years from planting. They benefit from slow release fertiliser.

In colder areas the plants are suitable for pot culture as they can be tip pruned to create a lower 'bushier' plant.

1. *Pileanthus filifolius* Meisn (Summer Coppercups)

Habit: Shrub to 1 m high.

Leaves: Not densely clustered, linear, triquetrous but flattened at base, 6–20 mm long, c 1 mm wide, gland-dotted, apex acute.

Flowers: Cerise, petals 12–15 mm long on a slender peduncle 7–20 mm long, profuse and highly conspicuous. Anther filaments bilobed. Flowering mainly December to January.

Distribution & Habitat: Occurs between Dongara, inland to Mingenew and south to north of Gingin. Grows on sand or lateritic sand, in *Banksia hookeriana* heath, *Banksia* low woodland and *Eucalyptus tottiana* Mallee over heath.

Notes: This species resprouts after fire.

2. *Pileanthus vernicosus* F. Muell., (Red Coppercups)

Habit: Upright slender shrub to 1 m tall.

Leaves: Clustered on short opposite shoots, linear-triquetrous, 3–5 (9) mm long, c 1 mm wide, oil glands prominent, margins and midrib with prominent tooth-like hairs, apex truncate to acute.

Flowers: Red with base pinkish, long on a slender peduncle 7–15 mm long, petals 8–11 mm long, 7–9 mm wide. Anther filaments bilobed. Flowers between mid September and early November.

Distribution & Habitat: Occurs between Geraldton and Peron Peninsula, Shark Bay. Grows on red or yellow sand in *Banksia sceptum* shrubland, Tree heath, coastal heath and *Acacia* shrubland.

3. *Pileanthus septentrionalis* Keighery (Northern Coppercups)

Photos on page 152.

Habit: Spreading open shrub, to 1.5 m tall, to 4 m wide.

Leaves: Linear, triquetrous but flattened towards base, 4–7 mm long, c 3 mm wide, with prominent raised oil glands, apex obtuse. Peduncle with prominent oil glands.

Flowers: White, on a slender peduncle 6–15 mm long, petals not overlapping, 3–4 mm long, 2–3 mm wide, white, apex laciniate-dentate. Filaments bilobed. Flowers August to October.

Distribution & Habitat: Occurs between Cape Range and the Kennedy Range, on the Eastern side of Lake McLeod on red sand dunes.

4. *Pileanthus limacis* Labill., (Coastal Coppercups)

Photos on page 152.

Habit: Low spreading or prostrate shrub to 80 cm tall, to 1 m wide.

Leaves: Crowded at ends of branches, 5–8 mm long, c 1 mm wide, covered by oil glands, adaxial surface flat, adaxial curved, margins hyaline with small tooth like projections, apex obtuse.

Flowers: White with centre flushed pink to red, or pale pink, on a peduncle 4–8 (15) mm long. Petals overlapping, c 8 mm long, c 6 mm wide, margins laciniate, apex rounded. Stamens bilobed. Flowering from July to October, depending on rainfall.

Distribution & Habitat: Occurs in near coastal situations and offshore islands from Shark Bay to Waroora Station, on coastal dunes usually over limestone.

Notes: Although often noted as having white flowers, this species normally has pale pink flowers or white flowers suffused pink unlike *Pileanthus septentrionalis* where they are invariably white. *Pileanthus limacis* and *P. septentrionalis* occur entirely within the arid Carnarvon Basin, one along the coast and the other inland.

Continued on page 184

Wild Places of North Queensland

Ann Radke, Yuruga Nursery

This talk was given at the 1999 Queensland ASGAP conference.

It is indeed an honour and an immense privilege to be invited to address this Conference of the Societies for Growing Australian Plants.

The Society for Growing Australian Plants is about just that - growing Australian Plants; that is, plants which belong to the Australian continent.

While there is an important role for breeding, development and promotion of hybrids, cultivars and 'improved' varieties, we should remind ourselves that none of this would be possible were it not for the original species growing out there in the bush. The bush is our roots.

I could expand on this philosophical theme of ornamental varieties versus wild species at great length, but to do the topic justice would be a session in itself. Nevertheless, there is a role for reflection, debate and careful consideration about what we are here for and where we are heading, and I would hope that I have sowed the seeds of thought in your minds.

So, I would like to take you on a journey - a journey out into the wild amongst wild plants, in a part of Australia that I know well and which is very close to my heart - northern Queensland.

North Queensland is my home. It is a great place to live. The bush extends in every direction, in a multitude of different habitats and a mind-boggling array of species diversity.

There are hot steamy rainforests, cool misty rainforests, dry rainforests, sandstone escarpments, gravelly ridges, sandy heathlands and open savannah woodlands. The climate ranges from the wettest in Australia to very dry. If you're going to journey here, you need to understand a little basic geography.

Ann Radke, B. Sc. (Hons) Dip Ed, has been a member of SGAP for 25 years.

It all started off when she and her husband Peter decided as a young (and penniless) married couple that the cheapest way to camouflage their dilapidated first house was to completely hide it with plants (a coat of paint being unaffordable) and, being keen bushwalkers, decided to plant native plants rather than the traditional azaleas and camellias.

Ann and Peter still remember going to David Hangar's Cloverdale Park Nursery in Brisbane to buy some plants, and David giving them some information about SGAP. So they shyly went to their first meeting in the western suburbs of Brisbane and were warmly welcomed by the members there. Many of those members became lifelong friends. Ann and Peter will always be immensely grateful for the influence of those friends and of SGAP in their lives.

Ann began her working life as a science teacher, but 14 years ago she and Peter established Yuruga Native Plant Nursery on the Atherton Tablelands in North Queensland. Her hobby has now become her livelihood, and she has written numerous articles, leaflets and books on various topics related to native plants.

Most of you here today are from the southern half of this continent. Your climate is more-or-less the opposite to that of northern Australia. Up here in the tropics, our climate is largely dependent on monsoonal influences - we get all our rain in just a few months in summer (the 'wet' season) and for the rest of the year it is dry (the 'dry' season). In fact, there may be no rain at all from Easter until Christmas, with maybe a few storms in October or November. That is, it rains in the hot months and is dry in the cooler months.

In southern Australia, your winters are wet and your summers are dry. That is, it rains in the cool months and is dry in the hot months.

This, of course, makes the north a great place to visit during winter, but our opposite climate also means that many of the seeds you collect in your travels along the way will struggle and fade away when you try to grow them back home.

Of course, we have the same problem in the north - most of your wonderful southern species are quite impossible for us to grow up here, being quite unable to make it through the shock of the first wet season.

So bear this in mind as you travel around. 'Sgappies' love to collect, but you must have realistic expectations.

While on the subject of collecting, I must touch on another subject before I show where our journey is going to take us: a fascinating topic - the law!

Yes, the law impinges on everything we do these days, and roaming the wilds and collecting plants is no exception. Here's your handy guide to keeping out of trouble in Queensland:

1. National Parks: Everything in Queensland National Parks is protected. You cannot collect seeds, cuttings, leaves, twigs, anything. Don't ask - it is extremely difficult for a private individual to obtain permission to collect anything from a National Park, and there are hefty fines for breaches.

2. State Forests: Some State Forests are public places where entry is openly invited. Other State Forests have restricted access and entry is by permit only. In either case, you need a permit from the Forestry Department if you wish to collect seeds or cuttings from Crown Land (including State Forests and roadsides). Unfortunately the reality is that for the private individual the bureaucratic maze you need to navigate your way through prevents most people from ever obtaining a permit.

3. Wet Tropics World Heritage areas: A large portion of the rainforests between Townsville and Cooktown (i.e. the 'wet tropics') are protected as World Heritage areas. A permit is required from the Wet Tropics Management Agency if you want to collect seed in these areas.

4. Protected Plants: Queensland has a complex piece of legislation called the Nature Conservation Act.

One of its stated purposes is to protect species in the wild. Consequently it contains a list of approximately 1200 plant species that are considered extinct, endangered, vulnerable or rare and therefore requiring of protection in the wild. Collection of seeds or cuttings of any of these species is strictly controlled by permits and complicated regulations, and breaches are subject to very hefty fines.

This legislation is no laughing matter. It is severely restrictive on the activities of anyone who may wish to grow any of the hundreds of the species on the lists, whether commercially as a nurseryman or privately as a hobby.

A few years ago the general public and nurserymen happily roamed the bush collecting bits and pieces of seeds and cuttings and at the same time contributing a vast array of information about our native plants in the wild. This legislation together with other permit requirements as mentioned above, has severely curtailed this in Queensland. For most people it is just too hard to understand the complex regulations, get the permits and complete the returns each month. It is too easy to accidentally make a mistake and get into a lot of trouble. It is just not worth the effort.

Fortunately SGAP members are covered under a blanket permit for the collection of small quantities of seed or cuttings for their own personal use. However, this restricts your collections to private land only unless you have the necessary permits from the Forestry Department or the Wet Tropics Management Authority as well.

This applies not only to ordinary people such as yourselves, but even more so for commercial nurserymen who have even more permits and returns to cope with. As a result there has been a marked trend amongst commercial nurserymen away from wild collected material and towards developed cultivars and varieties. This brings me back to the issue I touched on earlier. Where do we really want to be in several years time? Do we want our gardens and landscapes to present the real Australian flora, or are we happy with a 'quasi-Australian' look dominated by ornamental varieties and cultivars, removed by breeding from the real world out there?

For those of you from southern states which may be considering copying our Queensland legislation, consider this. What really wipes out species - the collection of a few seed every now and then by people with a genuine love of and interest in our native flora, or the wide-scale destruction of habitat by bodies such as Main Roads, Electricity Boards, Telstra, Water Boards, Gas Pipelines, and mass clearing of land for farms and developments?

The Queensland legislation has successfully cracked down on the little people, but made not one skerrick of impact on the real cause of species loss. Has it really achieved what it is supposed to do, has it just made a few public servants feel warm and fuzzy?

Yes, I'm passionate about the topic of legislation and regulation, because in this case it has not achieved anything and is in fact counterproductive. Nevertheless, this is only a side topic (albeit important) to the title of my talk, so back to the theme.

Please follow me on a journey into the wilds of north Queensland (if you're still game!).

Let's define north Queensland as Townsville north to Cape York. I'd love to go further afield, but if I make it any broader, we'll be here all day!

So, let's start at Townsville and journey northwards, meandering our way to Cape York:

1. Burra Range

Take the Flinders Highway west from Townsville towards Mt Isa. This is nice easy bitumen - you can do it in your ordinary car. Drive on through Charters Towers and keep going west. About halfway between the tiny settlements of Pentland and Torrens Creek lies the Burra Range. No, there's no sign, but 'Sgappies' will have no trouble knowing when they've arrived - all of a sudden you'll start seeing all sorts of wonderful plants along the roadside: *Melaleuca tamariscina*, *Calytrix exstipulata*, *Eucalyptus melanophloia*, *Jacksonia ramosissima*, *Grevillea pteridifolia*, *Grevillea sessilis* and *Grevillea decora*. This place is pure heaven in a good season. Stop the car, get out and poke around. If you're clever, you may be able to find a naturally occurring hybrid *Grevillea pteridifolia* x *sessilis* - in other words a wild version of *Grevillea* 'Sandra Gordon'.

2. Forty-mile Scrub

Turn around and go back to Charters Towers, then head north along the bitumen towards Mt Garnet and Ravenshoe. This is a narrow lonely road taking you through eucalypt woodlands. Keep an eye out for the odd gravely ridge - always good places to find interesting plants. If you stop you may find the Yellow Jacket (*Corymbia peltata*) and the Silver-leafed Ironbark (*Eucalyptus shirleyi*).

Not far past the turnoff to Mt Surprise you will drive through the Forty Mile Scrub National Park. All of a sudden the vegetation changes from eucalypt woodland to what us northerners call 'dry scrub' - that is, a dry type of rainforest with dense vegetation, full canopy cover, in an obviously dry climate.

Dry scrubs can seem uninviting at first - there's often prickly, scratchy plants around the outside making it difficult to walk in. Be persistent - once inside you'll find it much easier to walk around, and once you get your eye in you'll notice a lot of new and interesting plants. The wet season is the best time to visit dry scrubs, since many species are deciduous in the dry as an adaptation to the dry climate. Because dry scrubs are scattered across the landscape in isolation from each other, each patch of scrub is usually quite different species-wise from the next.

The most prominent species in the Forty-Mile are: the Northern 'Bottle' tree (*Brachychiton australis*), the Helicopter Tree (*Gyrocarpus americanus*), named for its fascinating helicopter-type seeds, the Scrub Wilga (*Geijera salicifolia*), and the two huge figs *Ficus platypoda* and *Ficus obliqua*, which are almost impossible to tell apart.

3. Irvinebank

Once you arrive at the Atherton Tablelands, you must visit the Irvinebank area - the home of the famous purple-flowered acacia, *Acacia purpureopetala*. Yes, this wattle really does have purple flowers. It is a prostrate plant which thrives on the gravely soils of the area. Its habitat is right in the middle of some good tin-mining leases, but luckily it thrives on disturbed soil and so regenerates easily. Funnily enough, being an officially listed protected plant you need a permit to collect the seed, even though the miners can bulldoze it into the ground whenever they like - an example of the absurdity of the Queensland legislation.

While this plant will regenerate itself quite happily in the wild, it does not behave at all well in cultivation. Seeds germinate well, but it very difficult to grow the plants on to maturity. Many have tried, most have failed.

You'll notice lots of other interesting plants in the Irvinebank area for you to look at: the Yellow Jacket (*Corymbia peltata*), the Pumpkin Gum (*Eucalyptus pachycalyx*), the Irvinebank Wattle (*Acacia leptoloba*), the Poison Pea (*Gastrolobium grandiflorum*), the Tabletop Wattle (*Acacia nuperrima* ssp. *cassiteria*), the very rare *Grevillea glossadenia*, and *Grevillea dryandri*.

4. Chillagoe

Head west of the Atherton Tablelands for a couple of hours to the limestone caves of Chillagoe. Nowadays this trip is nearly all bitumen, and you can certainly get there in your ordinary car. The limestone cliffs and battlements are spectacular in themselves, but you'll certainly notice some of the more prominent plant species: *Brachychiton australis*, *Brachychiton chillagoensis* (you'll see its large furry leaves), *Gyrocarpus americanus*, the native gardenias *Gardenia ochreata*, (photo page 161), and *Gardenia wilhelmii*, the native bauhinia *Lysiphyllum hookeri*, and the native *Croton Croton arnhemicus*.

5. Mid-altitude rainforests of the Atherton Tablelands - Atherton, Malanda, Lake Eacham, Lake Barrine

These rainforests are very easily accessible, and very scenic into the bargain. Some of the more prominent plants you will see as you drive around are: Blackbean (*Castanospermum australe*), Bumpy Satinash (*Syzygium cormiflorum*), Red Cedar (*Toona australis*), White Cedar (*Melia azedarach*), Quandong (*Elaeocarpus angustifolius*), Candle Nut (*Aleurites moluccana*), Lemon Aspen (*Acronychia acidula*), Queensland Maple (*Flindersia brayleyana*), Atherton Oak (*Athertonia diversifolia*), ferns, ferns, ferns, wait-a-while (various species of *Calamus* palm) and Cunjevoi (*Alocasia brisbanensis*).

6. High-altitude rainforests - Mt Lewis, Mt Bartle Frere

The high peaks of north Queensland have some extremely special rainforest. Rainforest on high peaks is of particular interest for two reasons: firstly, they contain different plants simply because of their altitude; and secondly, they are refuge areas of evolutionary significance since the rainforest retreated to these peaks during dry periods in Australia's climatic history and these refuges were isolated from each other for long periods. New species evolved during these periods of isolation, and the high peaks therefore contain some different, and very rare, plants.

Unfortunately, the high peaks are not very easily accessible. You can drive to Mt Lewis (which is located near Julatten on the northern end of the Atherton Tableland), but you need a 4-wheel-drive and a permit from the DPI Forestry. Mt Bartle Frere is accessible by foot only, and it is a hard climb for the very fit only. Nevertheless, both places are worth the effort.

The high peaks are a 'Sgappy' paradise. There is an enormous array of species diversity, but the most prominent plants are members of the spectacular families Proteaceae and Cunoniaceae.

Be prepared for Proteaceae indigestion: *Athertonia diversifolia*, *Alloxylon wickhamii*, *Gevuina bleasdalei* (previously *Bleasdalea bleasdalei*), *Buckinghamia celsissima*, *Carnarvonia araliifolia* var. *montana*, *Darlingia darlingiana*, *Grevillea baileyana*, *Lomatia fraxinifolia*, *Opisthiolepis heterophylla*, *Catalepidia heyana* (prev. *Macadamia*), *Orites excelsa*, *Placospermum coriaceum*, *Stenocarpus davallioides* (Mt Lewis), *Stenocarpus cryptocarpus* (Mt Bartle Frere), *Sphalmium racemosum* (Mt Lewis) and *Eidothea zoexylocarya* (Mt Bartle Frere), amongst others.

The Cunoniaceae are spectacular, and you're sure to notice: *Geissois biagiana*, *Caldcluvia australiensis* and *Pullea stutzeri*.

At the very top of the peaks you'll find Australia's *Rhododendron lochiaei**, along with the vine *Agapetes meiniana*.

7. Lowland rainforest - Cape Tribulation, Mission Beach

Excellent examples of lowland rainforest are easily accessible at either Cape Tribulation (north of Cairns) or Mission Beach (south of Cairns). Lowland rainforests are palm paradise - you'll easily find the following palms: *Licuala ramsayi*, *Ptychosperma elegans*, *Archontophoenix alexandrae* and *Normanbya normanbyi*, plus others if you go looking.

Some of the other prominent plants in these forests are: The Corkwood (*Melicope elleryana*** previously *Evodiella muelleri*), the Blackbean (*Castanospermum australe*), the River Cherry (*Syzygium tierneyanum*), the Llang Llang or Perfume Tree (*Cananga odorata*), the Milky Pine (*Alstonia scholaris*), the Golden Penda (*Xanthostemon chrysanthus*), the Nutmeg Tree (*Myristica insipida*), and the Mango Pine (*Barringtonia calypttrata*).

Once you leave the Cairns/Atherton Tablelands area and start heading north, you really need a 4-wheel- drive.

8. Cooktown-Laura-Cape Flattery

This region is the southern extent of the Cape York Peninsula. Here you can see *Banksia dentata*, (photo page 152), *Banksia robur*, *Hibbertia banksii*, *Thryptomene oligandra*, *Dodonaea polyandra*, *Eucalyptus phoenicea*, (photo page 152), *Eucalyptus tetradonta*, *Neofabricia myrtifolia*, *Lomandra banksii* and *Jacksonia thesioides* which are very representative of Cape York flora.

9. Riverine rainforests - Archer, Wenlock, Pascoe Rivers

The vast expanse of Cape York Peninsula is open eucalypt forest dominated by *Eucalyptus tetradonta*. However, virtually every creek and river is lined with a narrow belt of rainforest.

The dominant plants in these river crossings are. The flaky-bark Satinash (*Syzygium forte* ssp. *Potamophilum*), Rose Butternut (*Blepharocarya involucrigera*), Blackbean (*Castanospermum australe*), the River Paper-barks (*Melaleuca leucadendra* and *Melaleuca argentea*), the River Beech (*Pongamia* spp.), White Oak (*Grevillea baileyana*), Weeping Tea Tree (*Leptospermum madidum*), the River Gum (*Tristaniaopsis exiliflora*), Freshwater Mangrove (*Barringtonia acutangula*), the Bamaga Satinash (*Syzygium bamagense*), and the Cape York Alexandra Palm (*Archontophoenix tuckeri*).

* Australian Plants No. 175, June 2003, page 59 discussed the renaming of the Key to the Australian species of *Rhododendron*.

** See Australian Plants No. 176, September 2003, page 129 for *Melicope elleryana*.

Let's start at Townsville and journey northwards...



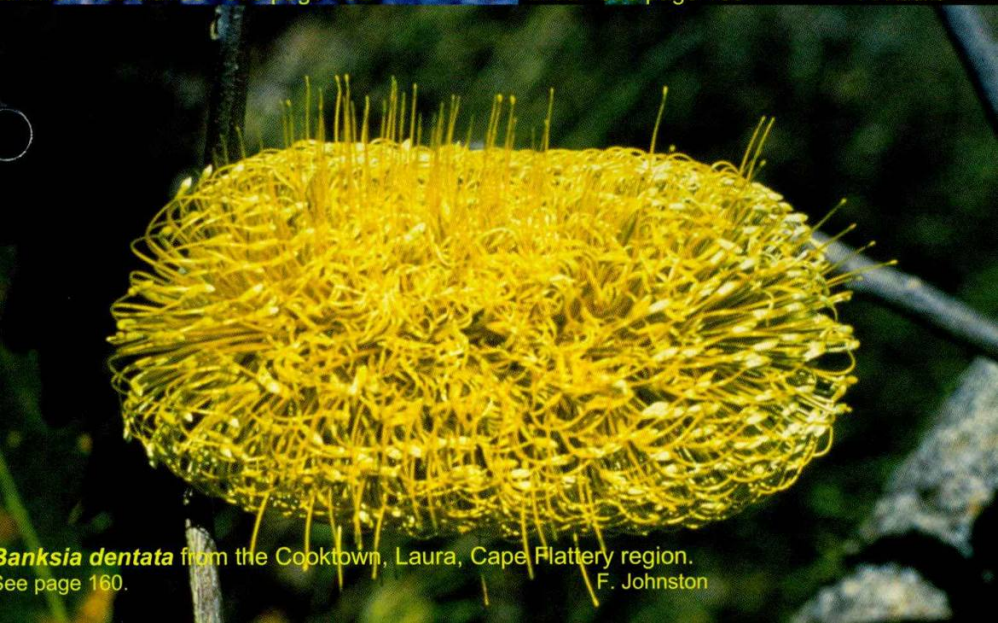
Eucalyptus phoenicea from the
Cooktown, Laura, Cape Flattery region.
See page 160 K. Townsend



Anthostemon sp. 'Mt Tozer' in the
Atherton Tablelands - see page 162



Gardenia ochreata in the Chillagoe
area - see page 159 P. Radke



Banksia dentata from the Cooktown, Laura, Cape Flattery region.
See page 160. F. Johnston

10. Iron Range—Claudie River

On the eastern side of the Peninsula, just near the tiny settlement of Portland Roads, lies a fantastic area of rainforest centred around the Claudie River. As you drive through, the most prominent plants you will see are: *Syzygium pseudofastigiatum*, *S. forte*, *S. fibrosum*, *S. malaccense*, *Cleistanthus hylandii*, *Maniltoa lenticellata*, *Aglaia argentea*, *Dissiliaria laxinervis* and the palms *Caryota rumphiana* and *Archontophoenix tuckeri*. You'll also find the delightful *Syzygium puberulum* along the river banks.

11. Tozer's Gap

The road into Iron Range passes through the fabulous heath country of Tozer's Gap. Look out for *Neofabricia myrtifolia*, *Asteromyrtus brassii*, *Asteromyrtus symphyocarpa*, *Asteromyrtus lysicephala*, *Grevillea pteridifolia*, *Grevillea glauca*, *Hibbertia banksii*, *Lomandra banksii*, *Dodonaea polyandra*, *Banksia dentata*, *Choriceras tricome*, *Gardenia scabrella*, *Xanthostemon* sp. 'Mt Tozer', (photo page 152), and the Pitcher Plant *Nepenthes mirabilis*.

12. Bamaga/Lockerbie Scrub

So you've finally made it to the top! The Lockerbie Scrub north of Bamaga is a fantastic rainforest area and well worth a stop as you rush to the very tip of Australia. Here you will find a number of very rare plants including: *Syzygium velorum*, *S. buettnerianum*, *S. bungadinnia*, *S. branderhorstii*, and *Tristiropsis canarioides*. Other prominent plants in the general area are: *Syzygium pseudofastigiatum*, *S. bamagense*, *S. fibrosum*, *S. tiemeyanum*, *S. forte*, *S. suborbiculare*, *Pandanus zea*, *Toeichima daemelianum*, *Maniltoa lenticellata*, *Bombax ceiba* and the palms *Gulubia costata* and *Livistona benthamii*.

Reference books to take with you:

Here are some suggested reference books that may ease the frustration of constantly exclaiming "What's this plant?"

If you have a laptop computer:

1. *Australian Rainforest Trees and Shrubs - an interactive identification system for trees and shrubs*. CD ROM and manual. CSIRO
2. *Australian Tropical Plants Volume 1*. CD ROM. Zodiac Publications

Books for the ordinary mortal:

3. Radke & Sankowsky, *Growing Australian Tropical Plants*
4. Cooper & Cooper, *Fruits of the Rainforest - a guide to fruits in Australian tropical rainforests*
5. Keith Williams, *Native Plants of Queensland* (various volumes)
6. David Jones, *Palms in Australia*
7. Sankowsky & Radke, *A Field Guide to the Rainforest Proteaceae of North Queensland*
8. Brock, *Top End Native Plants*
9. Tablelands Branch SGAP, *North Queensland Native Plants*
10. *Flora of Australia*. CSIRO. Various volumes particularly Ferns, Proteaceae, Sapindaceae)
11. Brooker & Kleinig, *Field Guide to Eucalypts Volume 3*

Mountain Heaths

Of Southeast Queensland _____ Glenn Leiper

Heath is low, shrubby vegetation that usually grows on fairly infertile soils and is well known for its riot of colourful wildflowers during spring. Heathlands are characterised by a lack of continuous tree canopy. Some trees do grow in heaths, but usually as isolated specimens or in small clumps. Where this type of vegetation occurs on mountains it is referred to as montane heath.

The montane heaths are remnants of ancient times. The areas in which they grow have been subjected to geologic and climatic changes and this has caused plant species to contract to the last remaining suitable soils. As a result, populations of some heath species are quite small.

Many of the mountains and ranges of the Greater Brisbane Region have areas of exposed rock that support montane heath and these include: the peaks around Mt Barney and Moogerah; Lamington National Park (mainly at Daves Creek); some of the Glasshouse Mountains; parts of Springbrook; restricted sections of Main Range; isolated peaks such as Mt French (near Boonah) and Glen Rock (near Esk); and the rocky outcrops of Diana's Bath and Mt Mee near Lake Somerset.

Although altitude, temperature and soil types differ significantly between montane and coastal heath, the two vegetation communities share many common species. Montane heath plants are also similar to lowland heath species further west such as at Girraween, near Stanthorpe. Many of these same species reach their distribution limits in the montane heaths of the Greater Brisbane Region.

The soils in montane heaths are usually acidic, are often based on weathered volcanic rhyolite or trachyte, are very low in nitrogen and phosphorous and have low levels of organic material. This is kept cool by rocks and boulders and often accumulates as skeletal layers over rock platforms, or between and in boulders, rock outcrops and cliff faces. Where these soils occur, there can an abrupt change in the vegetation from moist eucalypt forest or rainforest to montane heath. Drainage is usually good, although occasionally where soils are waterlogged, a unique mix of plants will occur.

The montane heaths are subject to extreme climatic conditions including frequent exposure to strong cold winds, low temperatures (even occasional snow on Mt Barney), fire and irregular rainfall, although moisture-laden clouds and mist are frequent. Many of the peaks experience relatively low rainfall, however Daves Creek averages around 150 cm a year.

Glenn Leiper is an enthusiastic SGAP member from Queensland. He originally gave a talk on mountain heaths at the 1999 ASGAP national conference in Queensland. This version, however, comes from the book *Wild Plants of Greater Brisbane* published by the Queensland Museum.

*Clinging to fissures in sheer vertical cliff
faces...*



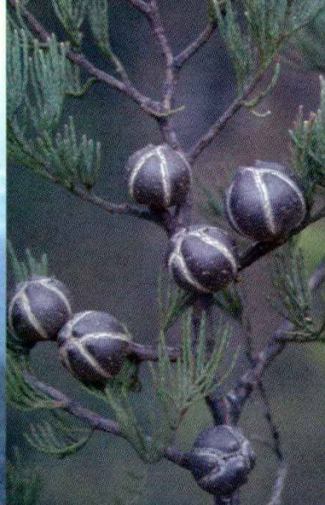
Mt Maroon (above); rare daisy *Tetramolopium vagans* (top right), the endangered tiny semi-parasitic *Euphrasia bella* (right), herbaceous *Scaevola* sp. 'Mt Ernest' (below) and the perfumed orchid *Thelymitra fragrans* (below right)

See page 167



All photos this page: Glenn Leiper

On the exposed and windswept ledges and outcrops...



The shrub-sized Mountain Cypress *Callitris monticola* (top right) and *Leptospermum variabile* (above & below) with its stunning red buds. The delicate papery flowers of *Helichrysum lindsayanum* (right) are relatively common. See page 167 All photos this page: Glenn Leiper



Although soil fertility in montane heaths is low, plant species diversity is surprisingly high and it is usually dominated by plants in the following families:

- Rutaceae (boronias etc);
- Myrtaceae (tea-trees, bottlebrushes etc);
- Lamiaceae (mint bushes etc);
- Mimosaceae (wattles);
- Fabaceae (peas);
- Proteaceae (grevilleas etc);
- Epacridaceae (epacris etc);
- Xanthorrhoeaceae (grass trees);
- Cyperaceae (sedges); and
- Orchidaceae (orchids).

At ground level, mosses, lichens and some grasses with cryptic terrestrial orchids grow in the accumulated organically rich soil.

Fire is an important influence in shaping heath communities. Species diversity reaches a peak about 10 years after fire and then declines. However all heath plants have special adaptations to either survive fire or re-establish afterwards. They possess a swollen, underground starchy root called a lignotuber from which the plant can re-shoot; there may be thick fire-resistant bark; or extremely tough oily leaves ('sclerophyllous' leaves); or they may have specially adapted seeds that are only released or germinate after the heat of the fire.

In response to fire, some heath species develop multiple trunks. One species that exhibits this characteristic 'mallee' growth form is *Eucalyptus codonocarpa* (Bell-fruited Mallee), found on Mt Maroon. Photo on page 169. It has clustered thin trunks and rarely exceeds a few metres in height. Mallees in SE Qld are a rare growth form with *Eucalyptus curtisii* being the only other species.

Restricted growth is characteristic of many other montane heath species. In these harsh environments, where roots are often forced between rocks and confined to narrow crevices and cracks with little soil, plants often become stunted, attaining only a fraction of their potential height after many years and they often look like gnarled bonsai specimens.

Heath plants have developed other strategies to improve their ability to colonise low nutrient soils. Some, such as the Proteaceae, have highly effective nutrient-seeking proteoid roots which are clusters of rootlets that develop on plants in response to nutrient-poor soils. Plants in the Rutaceae, Myrtaceae, Epacridaceae and Casuarinaceae groups have symbiotic fungi on their roots which enhance nutrient uptake. Similarly, plants of the Pea family (Fabaceae) have bacteria in their roots to assist access to nitrogen. The insectivorous Droseras (sundews) absorb nutrients from insects trapped by the plant. All heath species exhibit at least some of the characteristics mentioned above.

While most heath plants need excellent root drainage, often preferring to grow on cliff faces and on skeletal porous soils, there are also many species that colonise and thrive in wet conditions where soils often become waterlogged. *Callistemon pallidus* (Lemon Bottlebrush) and *Baeckea linifolia* (Swamp Baeckea) are two species that favour these habitats.

Montane heath plants often flower profusely and are very colourful so as to attract, insects, birds and some mammals which assist in pollination. This flowering usually begins in late winter and intensifies through spring. The most floristically diverse heath in the region occurs at Daves Creek, a 12 km return walk from Binna Burra. Here, at an altitude of 900 m, the heath-land covers nearly 300 ha of undulating ridges and precipitous cliffs. During spring, the variety of flowers can be stunning and the walk is enhanced by spectacular views. Among the many species occurring here are white *Leptospermums*, yellow pea plants and *Hibbertias*, the mauve flowered Mint Bush, *Prostanthera phyllifolia*, and *Westringia blakeana*; thickets of *Acacia obtusifolia* (Blunt-leaved Wattle), and the rare *Banksia conferta* (Mountain Banksia), small gnarled specimens of which are especially noticeable with their hairy bronze new growth and short yellowish brushes. Photos on page 176. The wetter areas enable the startling pink *Kunzea obovata* to proliferate, often found with some of its roots in the cool crystal clear waters of the springs here.

On some of the exposed and windswept ledges and outcrops, the shrub-sized *Callitris monticola* (Mountain Cypress), often seen flowering and fruiting at less than 60 cm tall, hangs on for dear life. It's in these harsh locations that stunted specimens of *Leptospermum variabile* with its stunning red buds, and the delicate papery flowers of *Helichrysum lindsayanum* are relatively common. Photos on page 165 and back cover.

Clinging to fissures in sheer vertical cliff faces, the rare daisy *Tetramolopium vagans*, escapes grazing by rock wallabies eagerly seeking out non-sclerophyllous leaves. These cliff faces occasionally trap organic material on ledges and crevices, enabling the perfumed orchid *Thelymitra fragrans*, the endangered tiny semi-parasitic *Euphrasia bella*, and the herbaceous *Scaevola* sp. 'Mt Ernest' to find a niche amongst the lichens, mosses and grasses. Photos on page 164.

In the understorey of the eucalypt forests on deeper soils, (photos pages 168 & 169), the delicate flowers of the rare *Leionema gracile* look like small pom-poms, and the stunning massed red pea flowers of *Bossiaea rupicola* are a sight long remembered. The endangered *Grevillea linsmithii* also prefers this shady habitat, producing softly hairy pink pendulous new growth and tiny paired red flowers. One of the rarest plants in this habitat is the practically unpronounceable *Cooperhooia scabridiuscula*, long considered extinct until the recent rediscovery of 2 tiny isolated populations. Its fragrant pink flowers are a pleasant surprise within the Goodeniaceae family. Fragrance is also evident in the crushed leaves of *Philotheca myoporoides* ssp. *obovatifolia*. Like most *Philothecas*, the oil glands are obvious on the leaf surface and the aromatic oils are a treat for the olfactory senses.

In the understorey of the eucalypt forests on deeper soils...



The endangered *Grevillea linsmithii*
See page 165



Mt Barney from Mt Balloona
See page 167 & 170



Stunning massed red pea flowers of *Bossiaea rupicola*
See page 167 & 170

All photos this page: G. Leiper



The rare *Leionema gracile* (right) has delicate flower
See page 167



Eucalyptus codonocarpa (Bell-fruited Mallee), Mt Maroon
See page 166 & 170



Coopernookia scabridiuscula was long considered extinct
See page 167

All photos this page: G. Leiper

Taller montane heath at Springbrook in the Gold Coast Hinterland is easily approached from the Canyon Lookout area and also occurs on the less accessible cliffs and escarpments in the area. Like Daves Creek, the rainfall here is high and fairly regular. *Leptospermum petersonii* (Lemon-scented Tea-tree), *Callistemon montanus* (Mountain Bottlebrush), *Platysace lanceolata* (Long-leaved Platysace), *Allocasuarina rigida* (Rigid She-oak), *Dendrobium kingianum* (Pink Rock Orchid), *Comesperma esulifolium* (Mountain Match-heads) and *Doryanthes palmeri* (Spear Lily) can be found here.

Along the Main Range, montane heath occurs in a few separate areas. Mt Bangalore's rocky windswept pavements and Mt Cordeaux's stunning massed slopes and cliff faces of Spear Lilies are the most botanically interesting.

To visit other montane heaths in the Greater Brisbane Region, put on your hiking boots and backpack and be prepared for some steep, scrambling walks. All of the peaks near Rathdowney have varying amounts of montane heath, with the richest species diversity on Mt Maroon, Mt Ernest and Mt Barney. Photo on page 164.

The upper slopes and summits of the Rathdowney peaks are exposed rocky areas with scattered heath vegetation. Mt Maroon is especially notable. A large, bowl-shaped depression below the North peak contains stands of Bell-fruited Mallee and an understorey of various species. On the surrounding rocky areas, gnarled and stunted shrubs include: a colourful form of *Leptospermum variabile* (photo page 165); the endemic prickly wattle, *Acacia saxicola*, regarded as the prickliest wattle in SE Qld, forms small virtually impenetrable thickets; the rare yellow pea, *Pultenaea whiteana*; bright pink *Kunzea obovata*; stiff, pungently foliaged *Leucopogons*; delicate triggerplants, *Stylidium laricifolium*; occasional flannel flowers, *Actinotus helianthi*; and the brilliant red pea bush *Bossiaea rupicola* (photo page 168) in shadier areas.

The more physically challenging climbs in the Mt Barney area, (photo page 168), should not be attempted without reasonable levels of fitness and knowledge about your intended destination. Mt Barney is physically demanding and can be dangerous. The same cautionary warning applies to Mt Maroon and Mt Ernest. Dense vegetation, steep gorges and gullies, undulating ridges, sheer cliffs and a lack of defined tracks can all combine to disorient visitors.

Fortunately most of these peaks and ranges are protected in National Parks or State Forests, however threats still persist. If fires are too frequent, some species are unable to set seed between fires and so will die off. Trampling of sensitive areas can damage plant populations irreparably, particularly where heath areas are small and visitor numbers are high. Weeds can displace or choke heath plants.

However, because some montane heaths in the Greater Brisbane Region are relatively inaccessible, botanical exploration has been limited. A number of new species have recently been found and there are probably quite a few waiting to be discovered.

See page 176 for more photos of montane heath

Our Garden No 41: 'Elsewhere'

Pam Tanner, Gladstone, Queensland

Welcome to 'Elsewhere'. You are about 12 km west of the port city of Gladstone in the dry sub-tropics of Central Queensland, just south of the Tropic of Capricorn, so I hope you have brought your hats and sunscreen, as the sun is very strong here, being almost directly overhead in the summer.

You ask why the name 'Elsewhere'? Have you heard the weather forecast which says "Rain in the north, rain in the south, DRY ELSEWHERE". And it mostly is.

Summers are hot, sunny and dry, with temperatures in the high 30's dropping to the mid 20's at night, there is really never any variation. Winters are cool, dry and sunny, around the mid 20's in the day time, sometimes down as low as 8 degrees at night, very little rain falls in winter.

Our main rainfall is in summer when the sun is so powerful making the evaporation rate extremely high. Annual rainfall is meant to be around the 1,000 mm mark, but someone has forgotten to tell the weather lately. We do rely on cyclones in the summer for our best rains. These need to be south of Townsville to be of much help. This hasn't happened for around nine years. When it does happen we have beautiful rain for five to six days, otherwise it rarely rains for more than a day and that is usually in heavy showers. The climate is great for tourists, not so good for water reliant gardens, so I have chosen to plant indigenous natives as much as possible.

We have a two acre block, on the lower slopes of Mt Beecher, with the front of the block facing east. Two dry gullies run down from the top of the block, one runs into our dam, which, when it does get water in it, is pumped into tanks for the garden. The other comes down to the house level, from there it is channelled into an underground pipe, which also ends up in the dam. This second gully was being badly eroded when we came here, so many a long back breaking hour was spent collecting rocks and carefully making a rocky bottom, this sadly has all been covered over by silt, but the erosion has stopped.

About two thirds of the block have been left almost in its natural bushy state as we are part of the Queensland 'Land for Wildlife' scheme. The soil is rich and red with small to medium sized rocks. Xanthorrhoeas love our area and grow in abundance, butterflies, birds and little native bees have a wonderful time when they are in flower.

Pam Tanner is an active member of the Gladstone branch of SGAP in Central Queensland. Her garden won a prize in the Water-wise section of the Gladstone Civic Beautification Garden Competition.



Top:
Entrance to 'Elsewhere'

Centre Left: Young
Clausena brevistyla

Above:
Hibiscus splendens

Left:
Xanthorrhoea spp.
growing naturally

Photos: P. Tanner



Top left:
new growth on small
Elaeagnus argentea

Top right:
Callistemon 'Red Devil'

Left:
Pavetta australiensis in
flower.

Below: Two year old
section, with
Harpullia pendula, *Jagera*
pseudorhus, *Brachychiton*
australis, *Geijera salicifolia*
& *Flindersia schottiana*
(the bigger leaves on the
right)

Photos: P. Tanner



When we came here 19 years ago, there were a few natural eucalypts, acacias and xanthorrhoeas. Most of the block had been burnt off, but there was a smallish garden in front of the house, covered in black plastic with small very unattractive rocks. The main feature was a HUGE Cactus... very prickly, some 'Mother of Millions' and little else. Guess what happened to those things!!!

It has taken me quite a while, a lot of sweat, hard work and joy to come up with, what is becoming a green oasis. A haven for honey eaters, red backed wrens, fan tails, pretty faced wallabies, possums, flying foxes and little bats.

Lots of different frogs including masses of green tree frogs. They don't only live out in the garden, they are in every water well pot, in the house, on top of the bookcase, in the cupboards and the loo, in the dogs water bowl, just everywhere, and I love them. Just have to be careful where you tread when you have to get up in the night, they scream very loudly when you stand on them, doesn't seem to hurt them, but doesn't do much for you state of peace and tranquillity.

Lucky me, my husband doesn't like gardening, so I get to do it all, apart from clearing dead fallen trees which could become a fire hazard, he does that for me.

I keep making gardens as with only tank water, lawns are not such a great idea. When making a new garden, I mark out the area, and dig a trench where I want the edge to be. Then at least six sheets thickness of newspaper are put down all over the area and covered with heavy mulch, usually hay as that is the cheapest, but also grass clippings and anything I can lay my hands on.

Then the fun starts with planting. Mainly from my own or from that of my friends Margaret and Clive's nursery, both of which are quite substantial, we grow the plants from either seeds or cuttings. Planting about 20 at a time is my limit.

Each hole has 'Osmocote for Natives' and water crystals put in the bottom, then the little plants go in and are well watered, mulched and marked with a silver flagged stake. Cut from the inside of an empty wine cask, little silver flags pop up all over the place reminding me where each new plant is.

They are watered twice in the first week, then once for two weeks. Once a month for a couple of months unless they get very distressed, then they are on their own. Good training as during the long drought I only lost one plant, and that was because we were lucky to get some heavy rain, and it didn't like it at all.

**Gardener's Tip:
Here is a Water-wise
watering regime that
works in the
Gladstone climate!**

No I am not quite heartless, I do walk around, talk to them and give them a drink if they really need it, however once they have been in for a year or so, they don't need watering. Just as well as it is quite a big area to water and it is all done with a hand-held hose.

This year I won the 'Water-wise' section of the Gladstone Civic Beautification Garden Competition - a great thrill. I also was runner up to Margaret and Clive, in the native garden section.

We all work in the herbarium at Gladstone's beautiful Tondoon Botanic Gardens (also native), as volunteers.

Field trips around the area, collecting for the herbarium and the Botanic Gardens have taught us all just what wonderful things indigenous natives are in our dry climate, especially the dry rainforest plants.

We are lucky, just across the road from 'Elsewhere' is State Forest 150, in which there are some beautiful patches of dry scrub. The birds are made welcome in the garden by the plants and water bowls which are scattered around, their payment for that are their droppings. Exciting little things keep popping up, and are either potted up, or left to grow where they are if it is a suitable place.

Some of my favourite dry area plants are Gladstone's floral emblem *Barklya syringifolia*, the butterfly bush *Pavetta australiensis*, the lemon myrtle *Backhousia citriodora* and the peanut tree *Sterculia quadrifida*. The black seeds inside a bright orange outer shell are very yummy when the first layer of black, then a milky layer then the second layer of black coating are taken off - inside is a creamy nut. I'm always at a loss as whether to eat the seeds or plant them.

Gardener's Tip:
Sterculia quadrifida can be grown from seed if you can resist eating them!

I also love *Terminalia porphyrocarpa* and *Harpullia pendula*, but my very favourites of all are *Flindersia australis*, *Flindersia schottiana* and the very beautiful *Polyscias elegans*. Photos of many of these plants can be seen in Australian Plants No 172, September 2002.

Gardener's Tip:
Hoya species are easily grown from cuttings.

Last but not least, *Hoya macgillivrayi* (see the front cover) is from the Cape York region of Queensland. I grew it from a cutting from one I bought in Cairns for my daughter. Like all Hoyas it just grew roots and took off. It is just growing in the garden and given no particular attention. The flowers are large, around 5 cm in diameter, and have a delicate perfume in the late afternoons.

My main expenses are for mulch and potting mix, but as the gardens get a little bigger, they seem to become self-mulching. Most of what is pruned is also cut up and put back onto the ground, sticks also are left where they fall, good for little skinks to hide under.

At present I am in the process of re-digging my pond as the original one always leaked. All the old cement has been taken out and the hole is being deepened in some parts and shelves are being dug on which to put pots of water plants. The cementing of the pond won't happen until the winter as it's just a tad too warm at present.

Thank you for letting me show you my garden, I hope you have enjoyed the visit.

Montane heath plants often flower profusely...



Mt Beerwah (above right). The rare Mountain Banksia *Banksia conferta* (above and below), noticeable with their hairy bronze new growth and short yellowish brushes.

See page 167



Fighting Threatening Plant Species

A Decade of Experience in the ACT

Geoff Butler

This talk was given at the 2001 Canberra ASGAP conference.

Weeds are threatening our natural environment and are one of the major threats to biodiversity around the world. In nearly all cases the impact of weeds is associated with a decline in native species richness and diversity. In the ACT 40% of the flora is introduced, with 532 weed species recorded. Many of these are fairly innocuous, but all species have high weed potential, with 43 species currently needing constant management. A similar situation exists for the Southern Tablelands region. Many of these weeds have arisen directly from horticultural (ornamental) origins. Weeds arising from horticultural origins are certainly the biggest single threat to agricultural production and some ecosystems in Australia.

The environmental movement has been keenly aware of the impacts of the so-called 'environmental' weeds arising from the many ornamental and functional species we widely cultivate, and has been raising community awareness of these species for at least 25 years.

But why has such a problem arisen with environmental weed species? The main factors behind their escalating impacts are:

- Environmental weeds have been (and in some cases still are) largely ignored because of the focus on 'agricultural' weeds. It appears it is far easier to estimate the (financial) impact of agricultural weeds, and not so easy for environmental weeds.
- The popularity of these species for ornamental uses, and people's familiarity with them have ensured their widespread usage, including aesthetic and functional uses in rural areas, whether on commercial farms or on rural residential blocks.
- Due to their widespread use and subsequent naturalisation, environmental weeds (until more recently) have been a sensitive issue, thus making the enforcement of management programs politically unpopular. While politicians in all levels of government are supposed to make hard decisions where necessary, most have only a very limited understanding, knowledge or concern for environmental matters. They have taken a 'good guy' populist position, showing they are not prepared to make decisions that are in the best long term community and environmental interest.
- The environmental weed 'problem' is too large, turning many away in dismay at the enormity of the issue.

This has led to a situation where huge tracts of 'natural' areas and rural properties have been so heavily infested that the cost of control of these infestations is greater than the value of the land.

In my opinion, another very serious dilemma has also arisen which is rarely addressed. Many woody ornamental weeds are widely and ever-increasingly used in rural areas (especially in rural residential areas) and this is leading to rapid incremental changes to our rural landscapes. There are now parts of Australia where it would be difficult to find a 'sense of place'. There are areas where the native vegetation cover has been all but eliminated, and woody weeds are practically the only vegetation present (e.g. the Central Tablelands and Central Western Slopes).

I was asked to address today, the concerted effort by some community sectors, to have environmental weeds adequately recognised for the problem they are. The Conservation Council for the South East Region and Canberra (CCSERAC), an umbrella group for 40 regional environmental groups, has been at the forefront of this effort. There have been a number of significant changes to environmental weeds in the ACT (though slower in the region). Some key events, presented in a chronological order, follow to give some indications of the time scales involved in effecting change.

1991 – Towards Ecologically Sound Australian Landscapes (TESAL)

This community group was formed to address regional environmental issues. It was initially driven by the motivation of the Society for Growing Australian Plants (Canberra Region) and the CCSERAC, and in particular by Leon Horsnell of SGAP.

TESAL addressed roadside vegetation clearance, wildlife corridors and environmental weeds in a number of submissions to the ACT government and Legislative Assembly committees. Their weeds submission proposed a series of recommendations of species that should be prohibited or restricted in the ACT. This became one of the baseline listings used for community consultation purposes in preparing a new ACT Pest Plant List in 1998.

August 1995 – the Berry/Mulvaney Report

The CCSERAC commissioned and received the Berry/Mulvaney Environmental Weeds Report (CCSERAC 1995). This report confirmed (and in fact increased) CCSERAC's concerns about the threat to ecosystems and addressed a number of issues including: exclusion, restriction or eradication of pest species; prioritising weeds; formation of a weed 'hit team'; weed education (particularly in identification); the role of the nursery industry; codes of practice for plant importers/retailers in related industries (e.g. aquariums); and heritage issues. The report confirmed that many of the proposed CCSERAC directions in relation to environmental weeds were warranted.

April 1996 – CCSERAC Weed Officer appointed

CCSERAC was successful in receiving a community environmental grant from the ACT government for a community liaison position (the Weed Officer). The main tasks for this position were publicity campaigns, influencing plant nurseries, determining the feasibility of a weed replacement scheme and increasing awareness. While these issues were addressed, the campaign extended to participation in various government working groups, in particular, representation on the ACT Weeds Working Group. The main focus of the position was education, though this was to change significantly over time.

September 1996 – ACT Weed Strategy adopted

In April of 1996 a draft ACT Weed Strategy (ACT Government 1996a) was circulated for public comment. CCSERAC had considerable input at early stages of the draft. The final strategy (ACT Government 1996b), much slimmed down, was adopted by the Legislative Assembly in September 1996. The Strategy recognised, importantly, the need for close community and inter-governmental partnerships if weed management was to be successful.

1997 – Weed Priority Program and mapping commenced

The ACT Weeds Strategy required the production of a Weeds Priority Program for weed management in the ACT. The priority program was perhaps misnamed, as it gave the indication that some community sectors felt the priority weeds species selected were the only species being worked on! This was not the case but the name was changed anyway. Drafts of each year's weed management program are provided to the ACT Catchment and Landcare Subcommittee, the ACT Environment Advisory Committee and the ACT Flora and Fauna Committee. The Weeds Strategy also required the locating and mapping of weed species. Weed mapping had been requested for some time by CCSERAC, in recognition that weed management efforts are not effective without knowing the scale and locations of the problem, thus not knowing where to begin efforts or where to direct efforts for maximum effect.

June 1997 – National Weeds Strategy (NWS) produced

The NWS is a more elaborate and glossy document but for all the extra words and rhetoric, it was pleasing to note that the ACT Weed Strategy reflected all the directions of the national strategy.

October 1997 – Weedbuster Week commenced

Weedbuster Week is a national event and its objective is to raise community awareness of weeds and weed management. While assisted with a grant from the ACT Government, Weedbuster Week is limited and preaching primarily to the converted, if the audiences we see are anything to go by. Community groups register weeding activities they are undertaking in Weedbuster Week. Weedbuster Week did, however, provide opportunities for a focus of larger events related to weeds, e.g. the release of printed material such as the weeds brochure and efforts focussed on retail outlets where many of the weeds originate.

November 1997 – release of Regional Pest Plant Listing

The ACT has degazetted its noxious weeds list. CCSERAC is still not really clear as to the reason why, but suspects a major part of the decision related to many years of neglect of weed management which had led to rampant infestations on both private and public land. The problem, it would appear, was too big, and how could the government possibly ask private landholders to manage weed infestations when its own lands, often inaccessible or outrageously costly to manage, were covered in the same weeds? It became obvious that the ACT needed an officially adopted list of the pest plants in the ACT, thus obtaining official government recognition of the weeds concerned.

The draft weeds listing was prepared from a variety of sources, including the work done by TESAL in 1991. The draft was circulated widely for consultation purposes in the ACT and region to industry groups (e.g. landscaping firms, nurseries and landscape architects), Parkcare and Landcare groups, certain environment groups and ACT and nearby shire government jurisdictions.

June 1998 – Release of the Upper Murrumbidgee Willow Management Strategy

For some years CCSERAC and individual environmentalists had been expressing concern about willow infestations on creeks and rivers throughout the region. The detrimental impacts of willows was manifesting in damage to stream banks, extermination of native riverine vegetation and issues of water quality and effects on the lower food chain. This led to calls through the Upper Murrumbidgee Catchment Coordinating Committee (UMCCC) for a management strategy for *Salix* spp. in the local region. The ACT was the first jurisdiction to acknowledge the weedy nature of willows and officially adopt a strategy (ACT Government and UMCCC 1998) for willow management. CCSERAC was heavily involved in the preparation of this strategy, along with Forestry CSIRO, Greening Australia, NSW Department of Land and Water Conservation and Environment ACT. This strategy was important as it officially recognised the importance of management programs crossing jurisdictional boundaries, already acknowledged as essential by environmental groups. At the same time, a leaflet entitled Help Stop Problem Willows was prepared and circulated through local nurseries and in local government rates notices.

October 1998 – Release of Garden Plants Going Bush weeds brochure

The ACT is currently spending around \$500,000 per annum on weed management in nature reserves, areas of conservation quality and urban parkland. It was therefore essential to examine ways of reaching the wider community to raise awareness that they were the primary source of the weeds, and they were shelling out the \$500,000 per annum for the privilege!

The weeds brochure was produced and funded initially by CCSERAC and the ACT Weeds Working Group, and 10,000 copies were produced. These did not last long and a second 10,000 run was done, and these gained some small amounts of sponsorship and have also been distributed. I believe it did contribute to the awareness of weeds in the ACT, and probably to the community sector where it was most beneficial.

October 1998 – Brochure released by Minister for Urban Services

The brochure was launched in Weedbuster Week by Brendan Smyth, Minister for Urban Services and Environment and received excellent media coverage.

November 1998 – Nursery visits

It was while circulating these brochures to nurseries that initial discussions on future weed directions in the ACT, and the role of the nurseries themselves in managing weeds was raised. All 55 nurseries in the ACT/Queanbeyan area were visited and asked to display the brochures and to consider not selling the species on the regional weeds listing.

Initially many nurseries expressed great surprise at some of the species that occurred in the brochure. This is perhaps a good indicator that despite all the less focussed education efforts that had taken place over many previous years on the impacts of these species, there was little awareness of them in the industry itself. Three nurseries agreed not to sell the plants.

Subsequent visits to nurseries to supply brochures presented the opportunity to update managers on weed issues, and to continue to encourage them to not stock weed species. Many indicated it was difficult to stop selling unless there was a level playing field. Some suggested legislation was required, and it was then that I placed more effort on new and specific weed legislation to complement the effort in education.

The brochure has run its course and done its job, and I note with interest the amount of printed material now being undertaken by various groups in the ACT.

1999 – Weeds ‘Hit Team’ established.

As a result of follow up on the Berry/Mulvaney report (CCSERAC 1995), money was secured in the government budget for weed hit teams located with Canberra Urban Parks and the Parks and Conservation Service. The team approach permitted focussed efforts on particular weeds.

1999 – Invasive Plants under the Spotlight

This document was a draft national strategy for education on environmental weeds. It was prepared by the Nursery Industry Association of Australia and the Weeds Cooperative Research Centre. It also proposed the listing of the top 100 environmental weeds across Australia. CCSERAC prepared a submission to this national consultation on environmental weeds, and the ACT government sent a letter in support of the CCSERAC submission. After years of battling, it was gratifying to see that *Pinus radiata* made it into the top 50 nationally recognised environmental weeds. And we have not heard the end of this species yet!

June 1999 – WONS List released

Wilson Tuckey, Minister for Forestry and Conservation, Mark Vaile, Minister for Agriculture, Fisheries and Forestry, and Robert Hill, Minister for Environment, released the national top twenty ‘most unwanted’ weeds. Willows were finally recognised for what they were!

October 1999 – Hardware/garden stores Bunnings and Magnet Mart, and Yarralumla Nursery discontinue stocking environmental weeds

During Weedbuster Week in 1999 two of the largest hardware/garden centres in the ACT and the government-owned Yarralumla Nursery officially ‘signed on’ to no longer buy and supply any species contained on the pest plants listings. This decision was announced by the managers at the launch of Weedbuster Week. These outlets stock considerable numbers of ornamental plants, and this was the first time that environmental weeds were no longer to be stocked by major players in the industry in recognition of the damage they do and the management costs they impose on the community. Probably more importantly, these companies contacted their wholesale suppliers advising them that any of the species on the weed listing would no longer be required. It is hoped that this may have an impact on the suppliers in the form of notification of the changing public attitude to pest plant species

January 2000 – Nurseries revisited and reprint of brochure

While revisiting nurseries to supply brochures, seven more nurseries agreed to sign on, though a few still expressed some reluctance unless there was 100 percent compliance. The brochure was reprinted with sponsorship from five 'The Garden' outlets, two Woolworths stores, SGAP and CCSERAC.

October 2000 – Environmental Weeds workshop

A workshop on environmental weeds was widely advertised and personal invitations and reminders were given to nurseries to attend, and at which all were hopefully to 'sign on'. Twenty-three agreed to attend and only two turned up. One of the presentations we had organised was by the National Nurserymen's Association, and dealt with the issue that self regulation was better than laws. The following day the Nurserymen's representative visited nurseries in the ACT and spoke to managers about the potential impacts of their complacency.

December 2000 – National Nurserymen's Industry Association Conference in Canberra

A presentation was given by Environment ACT. Local nurseries agreed that self-regulation was better than legislation.

2000 – Preparation of weed management plans

The Weeds Working Group began preparing management plans for weeds of national significance that occur in the ACT. The management plans are required to secure funding.

2000 – Environmental weed removal program on public lands

CCSERAC contacted the Minister in 1999 about a program to remove weed species from areas of public land. Canberra Urban Parks and Places (CUPP) had commenced programs to cull plantings of environmental weed species off public land, or restrict their use to areas where weed spread is unlikely. The Ginninderra Creek corridor is a prominent example of the program.

January 2001 – Revisited nurseries

Forty-six nurseries who had not signed on were revisited. All signed on though some were still reluctant. Signs indicating they were 'Bush Friendly Nurseries' were given out. The only plant outlets left were Coles and Woolworths.

March 2001 – ACT nurseries agree to discontinue stocking plants on environmental weeds listing

On this visit, a distinct change in attitude was noted. A number of nurseries indicated they would rather not sell these species, but if they discontinued stocking them customers may go to other outlets to purchase plants. They indicated they would rather see the species concerned banned from all outlets, but as all local nurseries had agreed, they all 'signed on'.

May 2001 – Pest Legislation Reforms discussion paper

This paper was a first step in public consultation with a proposal to introduce new weed legislation in the ACT. CCSERAC was involved in the formative stages of the proposal.

June 2001 – Further species of environmental weeds gazetted

Further species were gazetted to the official pest plants list including:

- All *Salix* species except the three permitted taxa (*Salix babylonica*, *Salix x reichardtii* and *Salix x calodendron*)
- Two privet species (*Ligustrum lucidum* and *Ligustrum sinense*)
- Five cotoneaster species (*Cotoneaster franchetii*, *C. glaucophyllus*, *C. salicifolius*, *C. pannosus*, *C. simonsii*)
- Three firethorn species (*Pyracantha angustifolia*, *P. coccinea*, *P. fortuneana*)
- All broom species

June 2001 – Coles signs on

The ACT Parks and Conservation Service received a request from Coles stores to sign on to agreement not to stock environmental weed species. Woolworths is now the only nursery outlet that has not signed on to the agreement.

July 2001 – Random inspections of nurseries commenced

As nurseries agreed not to stock environmental weed species, they were notified about the intention to conduct random visits to ensure they are complying, and that the Bush Friendly Nursery scheme would be promoted.

What is the future?

The following are some of the main future issues related to weeds work in the ACT:

1. Declaration of ACT as being free from certain weeds. The ACT is now very close to a position where it can declare public lands of being free of Broom and Gorse, and able to declare certain river and creek systems free of problem willows.
2. Monitoring of 'sleepers weeds'. As climate warming continues, there is a need to monitor other species that may arise as significant environmental weeds. This includes a range of aggressive native species, in particular some of the hybrid *Grevillea* species.
3. Education and awareness Continue with programs on individual weed species, e.g. Cootamundra Wattle.
4. Economic values of nature conservation. To convince government of the now accepted ways of placing an economic value on natural areas.
5. Reduce new imports. To continue discussions at the Federal level about the dangers of unproven species being imported into Australia.

References

1. ACT Government (1996a), *Draft ACT Weeds Strategy*. A draft prepared by the ACT Department of Urban Services for public consultation purposes.
2. ACT Government (1996b), *ACT Weeds Strategy – a 10 year strategy for implementing a co-ordinated program for weed control in the ACT*. A strategy adopted by the ACT Government.
3. ACT Government and the Upper Murrumbidgee Catchment Co-ordination Committee (UMCCC) (1998), *Willow Management Strategy for the Upper Murrumbidgee Catchment*. Prepared in collaboration by the Willows Working Group of the ACT Environment Advisory Committee and the Willows Working Group of UMCCC.
4. Berry S and Mulvaney M. (1995), *An environmental weed survey of the Australian Capital Territory*. A two-volume report prepared for Conservation Council of the South East Region and Canberra (CCSERAC).
5. Murrumbidgee Catchment Management Committee (1998), *Murrumbidgee Catchment Action Plan - for integrated natural resource management*.

5. *Pileanthus auranticus* (Orange Coppercups)

Habit: Upright slender shrub to 2 m tall and densely branched at base.

Leaves: Not densely clustered, linear, 10–17 mm long, c 1 mm wide, with raised oil glands, upper surface deeply grooved, undersurface convex, apex acute.

Flowers: Orange on a slender peduncle 15–20 mm long, petals overlapping, c 8 mm long, c 6 mm wide, margins laciniate, apex rounded. Stamens not bilobed. Recorded flowering in October.

Distribution & Habitat: Found on the northwest corner of the Eurady sand sheet, in undulating sandplain dominated by *Actinostrobos arenarius* shrubland over low heath. In this area all collections are from interdunal sites on yellow sand over yellow sandy clays. One collection has been recorded on red sand over limestone in low mixed heath closer to the coast.

Notes: Closely related to *Pileanthus bellus*, differing in the longer slender floral leaves, curved pungent umbo and orange flowers. The two species do not appear to occur together or overlap in distribution. *Pileanthus bellus* occurs on the tall yellow sand dunes of the Eurady Dune System (as does another endemic of these dunes, *Verticordia cooloomia*) which occurs to the east of the range of *Pileanthus auranticus*.

6. *Pileanthus bellus* Keighery (Beautiful Coppercups)

Habit: Erect shrub to 3 m tall.

Leaves: Not densely clustered, linear, triquetrous, 4–12 mm long, c 1 mm wide, glabrous, with prominent oil glands, adaxial surface grooved, abaxial convex, margin with scattered hairs but not hyaline, apex obtuse or acute.

Flowers: Pink on a slender peduncle, 10–15 mm long. Petals 7–8 mm long, c 8 mm wide, margin entire. Stamens not bilobed. Flowers from October to December.

Distribution and habitat: Mainly confined to the Eurady sand dunes, where it occurs on tall yellow dunes dominated by *Actinostrobos arenarius* shrubland, but also a disjunct southern record from shallow grey sands over sandstone emergent from low heath.

7. *Pileanthus rubronitidus* Keighery (Shining Coppercups)

Photos on page 152.

Habit: Erect shrub to 1 m tall. Leaves not very clustered, linear, triquetrous, 5–13 mm long, less than 1 mm wide, glabrous, with prominent oil glands, adaxial surface grooved, abaxial convex, margin entire, apex obtuse or acute.

Flowers: Red-orange on a slender peduncle, 12–22 mm long. Petals 7–8 mm long, c 8 mm wide, margin entire. Stamens not bilobed. Flowering between late September and early November.

Distribution and habitat: Occurs between Kalbarri and west of Northampton, with one very disjunct collection from Mount Magnet. Grows on grey sand over sandstone, white sand, in heath or *Banksia sceptrum* shrubland.

Notes: It has been frequently confused with *P. dilatatum* in the past, but differs in flower size, petal colour and in having entire stamens.

8. *Pileanthus peduncularis* Endl (Coppercups)

Habit: Low spreading shrub to 1.5 m tall by 3 m wide, usually less.

Leaves: Clustered on short opposite shoots, linear or clavate, triquetrous, 2–4 mm long, glabrous or hairy, with prominent oil glands, margin often with tooth-like hairs, apex obtuse or subacute.

Flowers: Orange with red or purplish centre on a slender peduncle 9–20 mm long. Petals 7–9 mm long, 4–6 mm wide, margins laciniate. Flowering period from August to November.

Distribution: Occurs from Minilya to Bruce Rock.

There are 2 subspecies:

8a. *Pileanthus peduncularis* Endl. **ssp. *peduncularis***

Leaves: Vegetative leaves glabrous. Bracteoles glabrous.

Flowers: Petals purple or reddish at the base, orange above. Anthers purple.

8b. *Pileanthus peduncularis* ssp. ***piliferus*** Keighery

Leaves: Vegetative leaves covered in non-glandular hairs. Bracteoles covered in tubercular hairs.

Flowers: Petals orange throughout. Anthers orange or pinkish red.

Distribution and habitat: Occurs from Minilya to Kalbarri. Grows on red or yellow sand dunes, or red, yellow or white sandy flats in *Banksia sceptrum* heath.

Notes: It differs from *Pileanthus peduncularis* ssp. *peduncularis* in having pure orange petals without a colour change to red or purple at the base. Plants may have either orange or pinkish red anthers. The vegetative leaves are covered in non-glandular hairs and the bracteoles are covered with tubercular hairs.



Above:

Pretty *Pileanthus* spp. in cultivation.

Left:

Pileanthus peduncularis ssp. *Peduncularis* growing on a roadside.

Photos: Dick Burns



Other *Leptospermums* and the *Melaleucas* flower mainly in late spring and early summer, although *Melaleuca quinquenervia* waits until late autumn. *M. sieberi* has clusters of white brushes after purplish buds. *M. nodosa* has roundish cream brushes and thin sharp foliage. *Melaleuca thymifolia*, (photo page 188), often produces its pink, mauve or purple curled brushes at other times of the year.

Autumn is for the *Banksias* and, near water, there is the blue-green *Banksia robur* with its large stiff yellow-ribbed leaves. The low-growing *Banksia oblongifolia* also likes moisture, but is usually part of the understorey which it brightens with its new foliage, often following rain. This is a velvety soft brown and this plant is quite lovely with its fresh pinky-green leaves and mauve-centred pale yellow brushes. *Banksia integrifolia* ssp. *compar*, (photo page 148), reaches its peak in winter, while the large creamy-green flowers of *Banksia aemula*, the Wallum *Banksia*, attract birds during autumn and winter. This *Banksia* and *Banksia robur* go through several colour stages during flowering, and their plants are spectacular in full bloom, with both old and new brushes on them. *Banksia spinulosa* brightens the understorey of the Scribbly Gum forests with its pretty golden spikes, and can have several colour forms, with yellow, red or black styles. Photos on page 189.

During the year, many plants flower spasmodically, with their peaks at different times. Red and cream *Callistemon pachyphyllus*, (photo page 188), show off side-by-side in the swamps, never hybridising into pink. There are several forms of *Pimelea linifolia*, (photo page 149), always with white flowers, but sometimes with pink or cream centres. Some plants are up to 1½ metres high, while others have only 6–8 flowers, instead of the usual large cluster on small plants. *Conospermum taxifolium* peaks in spring, but continues to have a few flowers off and on all year.

Two eye-catching plants are the Native Iris, *Patersonia sericea*, (photo page 149), with its three delicate papery mauve or purple petals (a white one has been seen at Beerwah), and our *Grevillea leiophylla*, the only species that tolerates wet places. The latter is an upright shrub here, with flowers from pale pink to deep mauve. In the Scribbly Gum forest, there are white *Lomatia silaifolia*, related to the Grevilleas, and *Acacia complanata*, the Flat-stemmed Wattle, the most beautiful wattle species in south-east Queensland. Shy Black-eyed Susan, the mauve-pink *Tetradlea thymifolia*, (photo page 149), also called 'Tom Dooleys' (hangs its head down) by a Wallum Study Group member, grows near the Forest Boronia, *Boronia rosmarinifolia*, which has foliage with a scent some find quite unpleasant.

Then there are the *hibbertias* (guinea flowers) which include *Hibbertia vestita* with its large five-petalled golden flowers, its smaller-flowered relative *H. stricta* which is an excellent groundcover in the forest, and in wet places, the creeping *H. salicifolia* and the tiny-flowering *H. acicularis*.

There are some plants of particular interest. Among the first to appear following fire are *Stylidium graminifolium*, the Grass Trigger Plants, their spikes of pink four-petalled flowers contrasting strongly with the burnt

surrounds. They have devised a clever pollination trick, where an insect sets off a loaded 'trigger' to pass on the pollen.

Droseras and *Utricularias* are marvellous examples of the adaptation of Wallum plants to the impoverished soils of their habitat. The *Droseras*, or Sundews, have a sticky fluid on their leaves, to trap unwary ants and insects which are then digested by the plant. *Drosera spathulata* shares the moist road gutters with tiny mauve *Utricularias* or Fairies' Aprons, which extract nutrients from the poor soils by way of underground bladders on their roots, to filter out the 'goodies'.

Grasses and sedges, among them *Caustis recurvata*, are an integral part of any Wallum community, and ferns add colour with their lighter greens, and pretty fronds. Ground orchids are less noticeable, but now and then we are lucky to sight one or two lovely Sun Orchids, *Thelymitra pauciflora*.

The Beerwah State Forest Scientific Area, while perhaps not quite as colourful as some of the near-coastal Wallum areas, is safe and accessible for the Wallum and Coastal Heathland Study Group. With the loss in early 1998 of a spectacular wildflower field (my favourite type of Wallum) on the Sunshine Coast, our studies now centre around the Beerwah and Bribie Island Wallum communities, protected as they are, in either National or Environmental Parks, or State Forest.

Beerwah shows that Wallum always has some flowers, no matter what season it is, but you need to venture into Wallum to find many of its treasures. Every piece of Wallum is different, making it difficult for preservation of all the variations. Each time we lose another patch of Wallum, we have lost an untapped resource, as there is still so much to learn about it, not the least being how to cultivate it for general gardening.

These are some of the different Wallum plant communities we have used and loved, and sometimes lost - Ningi, near Bribie Island; the Currumundi Environmental Park at Caloundra (Kathleen McArthur's greatest victory); the loved and lost wildflower field at Marcoola, south of Coolool Beach; Emu Swamp and its *Boronia falcifolia*, with Emu Mountain in sight; and the Marcus High Dunes south of Noosa, a battle still to be fought and hopefully won, for its inclusion in the Noosa National Park.

We must keep the Wallum ever in our minds, and ensure that the least possible amount of it is lost in the future. There is still so much to learn about it, so many different plants out there, so many mysteries to solve.

References and further reading:

1. Lebler, BA (1977), *Wildflowers of South-east Queensland*, Vol.1. Botany Branch DPI Queensland
2. McDonald, E (1980), *Wildflowers of the Wallum*. Boolarong Publications
3. McArthur, K (1982), *The Bush in Bloom*. Kangaroo Press
4. McArthur, K (1989), *Living on the Coast*. Kangaroo Press
5. Fearnley, C (1991), *Noosa Nature Part 2 - The Lowlands*
6. Harrold, A (1994), *Wildflowers of the Noosa-Coolool Area*. Noosa Parks Association Inc.
7. MacRae, IC (1996), *Wildflowers of Bribie Island*. Bribie Island Protection Association Inc.

The Wallum in Summer...



Wallum's lemon-scented Tea-tree, ***Leptospermum liversidgei***, (above) always grows around swamp margins.

See page 151

Melaleuca thymifolia (left) often produces curled brushes at other times of the year.

See page 186

Callistemon pachyphyllus (below)

See page 151



Autumn is for the Banksias



Banksia oblongifolia (above) has mauve-centred pale yellow brushes see page 186

Banksia robur (left) has large stiff yellow-ribbed leaves see page 186

Scribbly Gum forest, *Eucalyptus racemosa* with understorey of *Banksia oblongifolia*, *Persoonia virgata* & *Daviesia umbellulata* see page 150



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.

Nielsen's Native Nursery — Over 500 species including grafted grevilleas, eremophilas, eucalypts and brachychitons, also Foxtail Palms, cycads, rainforest, Bush Tucker plants. Display garden. Open 8.00 a.m. to 5.00 p.m. every day. 49-51 Beenleigh Redland Bay Rd, Loganholme, Qld 4219. Tel. (07) 3806 1414.

Wildflower Nurseries in New South Wales

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 APS members.

Dealbata (cold climate) Aust. Plant Nursery — off Bloomfield St, Dalgety 2630. Tel. (02) 6456 5043. Specialising in alpine and dry Monaro plants — Sorry no overseas orders. Phone to arrange a visit.

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.

Sydney Wildflower Nurseries — South at Heathcote (02) 9548 2818; West at Marsden Park (02) 9628 4448; North at Terrey Hills (02) 9450 1555. Excellent range of native plants. Open 7 days.

Wariapendi Nursery — Church Ave, Colo Vale (10 km north of Mittagong off the freeway towards Colo Vale). Tel. (02) 4889 4327. Extensive range of natives from tubestock to advanced for Southern Highlands and Tablelands, South Coast and Sydney Basin. www.wariapendi.com.au

Wildgems Native Plants — PO Box 89, Cobargo, NSW 2550. Ph/Fax (02) 6493 7398, Mob. 0427 937 398. Wholesale nursery open by appointment. Huge range including rare species.

Wirrimbirra Native Nursery — Hume Hwy, between Bargo and Tahmoor E. side 2574 (3 km from Freeway entry). Wide range including unusual plants. Tel. (02) 4684 1112.

Wirreanda Nursery — End of Wirreanda Rd, Ingleside 2101. Tel. (02) 9450 1400. Growers of advanced and semi-advanced native trees and shrubs. Open 7 days.

Wildflower Nurseries in South Australia

Brenton Tucker Native Plants and Carawatha Garden — Placid Estates Rd, Wellington East via Tailem 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.

Wildflower Nurseries in Tasmania

Plants of Tasmania Nursery — 65 Hall St, Ridgeway 7054. SAE catalogue. Tel. (03) 6239 1583. Open 7 days.

Wildflower Nurseries in Victoria

Kuranga Native Nursery — 393 Maroondah Highway, Ringwood 3134. Tel. (03) 9879 4076. www.kuranga.com.au 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 send a 45c stamp for a list.

Nindethana Seed Service — Broad selection of Australian seed. Send \$3 in stamps for a list to: PO Box 2121, Albany WA. Ph: 08 9844 3533, Fax: 08 9844 3573. www.nindethana.iinet.net.au

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* (\$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.

Australian Plants may be received by membership or subscription.

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Annual subscription: \$20.00 (A\$32.00 overseas) including postage to your address.

Binders: To fit the holes drilled. \$6.25 plus \$4.30 pack & post in Australia.

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Mail Order Book Service: Each Society listed below has a very wide range of books on Australian plants for sale, often at discount prices. Contact the Secretary for your requirements.

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<http://www.austplants-nsw.org.au> E-mail: office@austplants-nsw.org.au

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E-mail: edap@austplants-nsw.org.au Fax. (02) 9676 7603

PUBLISHING COMMITTEE: M Wagner (Convenor), J Caldwell, S Disney, C Liber,

M Robinson, R Smyth-Kirk, K Sommerville, G Teague, V Williams

All publication correspondence / feedback to: Publishing Committee, PO Box 744, Blacktown NSW 2148

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Helichrysum lindsayanum

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