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Australian Plants



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Front and back covers: *Ptilotus exaltatus* Photographer D John Barrie

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Australian Plants articles

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Contributions and offers to produce an issue are welcome. Please contact:

John Aitken and Merle Thompson
Editors, *Australian Plants*
PO Box 5026, Old Toongabbie NSW 2146
E-mail edap@austplants-nsw.org.au
Fax (02) 9631 4293

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'Australian Plants in a Wondrous Web'

Australian Plants Pre-2011 Conference edition

INTRODUCTION

Background photo J D Barrie

In 2010, Australia was 'a land of drought and flooding rains'.

South Australians had a great improvement in their winter gardening conditions. The early, ongoing season generated much growth, both plants and weeds, as we had not seen for many years. Despite that great improvement it was numbing to realise at the beginning of December we were still about 50mm below our average annual rainfall in Adelaide and many rural areas.

However, in the first week of December, Adelaide recorded its all time December one-day rainfall record and finally eclipsed the annual average! Many of our agricultural areas received even more rain and many crops were damaged. Full reservoirs provided some relief from water restrictions and good river flows recharged the Lower Lakes. Saline river water discharged to the sea putting a hold on eight years of dredging of the River Murray mouth. There the internationally listed Ramsar wetlands again support the migratory water birds.

We felt for those who suffered drought in Western Australia as we felt for those with excessive rainfall that wreaked havoc in the eastern states.

These improved conditions revitalised South Australia. Plants put on exceptional growth, flowered and seeded better than for many years. Plants reappearing and flourishing invite attention as our Society looks forward to showcasing our state to the nation in 2011.

South Australians are preparing to host the ANPSA biennial National Conference in October 2011 so the content of this pre-conference edition of *Australian Plants* connects well with our theme, 'Australian Plants in a Wondrous Web'. Articles come from most points of our compass and many threads of that 'Web'. To disseminate knowledge to our diverse audience and better engage with the wider community we are providing article variety, including:

The SA 'Native Garden Initiative'; 'how to' of an award winning garden; a post-burn and cyclic vegetation response; South Australian Santalaceae and Orchids; Arid, Verticordia, Waratah and Correa gardens; Pangarinda Arboretum, and a poem.

All illustrated with today's most utilised art form – Digitised Imagery!

We look forward to sharing a 'South Australian Experience' and the pleasure of your company next October. APS SA Region Inc.

Botanic Gardens of Adelaide

Sustainable Landscapes Native Garden Initiative

Sheryn Pitman and Marilyn Kuchel, Project Officers

The Australian Plants Society has enjoyed a higher public profile and closer working relationship with the Botanic Gardens of Adelaide in the past eighteen months as a result of the Native Garden Initiative.

The Native Garden Initiative (NGI) commenced in 2009 as a South Australian Government initiative to promote the beauty and benefits of Australian native plants and gardens and assist the community in establishing more sustainable urban landscapes.

Background

The NGI is managed and facilitated by the Sustainable Landscapes Project. The Sustainable Landscapes Project is a collaborative partnership hosted by the Botanic Gardens of Adelaide (DENR) and involving the Land Management Corporation, the Adelaide and Mount Lofty Ranges Natural Resources Management Board and SA Water along with many other partners and supporters engaged on a project basis.

A Steering Committee of government, industry and community stakeholders was formed in May 2009 to provide guidance and direction for the development and implementation of the NGI. This committee, chaired by the Director of the Botanic Gardens of Adelaide, Stephen Forbes, includes representatives from State Flora, Urban Biodiversity Unit (DENR), Nursery and Garden Industry of SA, Australian Plants Society, Local Government Association, Taylor Cullity Lethlean landscape architects, Horticultural Media Association and Botanic Gardens of Adelaide. The then president of APS SA, John Barrie, was the first APS representative during 2009 and early 2010, more recently replaced by newly elected president Michael Anlezark.

Achievements in the first twelve months

The Australian Native Garden in the South East corner of the Adelaide Botanic Garden and adjacent to the Eremophila Garden (planted in 2008 in association with the SA branch of APS), was designed to showcase innovative and artistic ways of using native plants on a domestic scale. The garden incorporates all Sustainable Landscapes principles and features a wide selection of water efficient native and local indigenous plants. Harvested rainwater supplements natural rainfall, recycled and local materials are utilised in creative ways throughout the garden and

a superb sculptural installation is inspired by the cellular structure of eucalypt leaves. This garden was officially opened on 26 November 2009 by Minister Weatherill and has proved extremely popular with visitors.



The Australian Native Garden in the South East corner of the Adelaide Botanic Garden
Photos courtesy of Adelaide Botanic Gardens unless otherwise indicated

The inaugural *Native Garden Awards 2010* engaged several community sectors in raising the profile of native gardens and publicly recognising their diversity and beauty. Awards were granted for home, school, public and commercial gardens, attracting significant interest and numerous entries. Prizes included raised garden beds, garden furniture, books and plant vouchers. The winning home garden owned by Judith and Andrew Baghurst, (APS and Trees for Life members) was opened to the public in September 2010 as part of the Australian Open Garden Scheme. This opening was hugely successful and attracted an enthusiastic crowd of around 1,500 visitors over the two days and featured guided walks and talks by the Baghursts and Sustainable Landscapes project officers, Sheryn Pitman and Marilyn Kuchel.

Birds, Bugs and Banksias was an entertaining and well-attended family fun day held in the Adelaide Botanic Garden during April 2010. The aim of the day was to awaken a sense of pride and appreciation for the unique qualities that Australian native plants can bring to our lives and gardens. The combined displays, presentations, guided walks, floral art demonstrations, bush food tastings, art workshops and didgeridoo



music performance attracted over 4,000 visitors including many young families. A highlight of the day was the creation of a giant mandala or floral carpet using the bark, leaves, pods, flowers and seeds of native plants in a bed of red sand. A four minute video of the day can be viewed on the Sustainable Landscapes website.

The *Native Garden Student Design Awards* 2010 were conducted in association with the University of Adelaide Landscape Architecture and TAFE SA Garden Design faculties. As part of their core curriculum studies, students were provided with a brief to design a new public space native garden for the site of the American Walk within the Adelaide Botanic Garden. Entries were of an extremely high standard and it is hoped that the winning design submitted by TAFE student Dianna Geary will be built, subject to funding.

Displays include a number of expos and events such as the HIA Home Show in October 2009 and 2010, the Gardening Australia Expo in March 2010 and the Australian Plants Society sales in October 2009, May 2010 and October 2010. Presentations about native gardens have been made to many gardening groups and community organisations. Workshops were provided for several hundred primary school students during the World Environment Day 2010 quiz trail in the Adelaide Botanic Garden.

A Native Garden Trail, a delightful selection of public space native gardens in South Australia, was launched by the Minister of Environment and Natural Resources in September 2010 to coincide with Biodiversity Month. The launch took the form of a 'Travelling Seminar' whereby fifty invited guests from DENR, state and local government, the Australian Plants Society, conservation groups and members of the horticultural media were taken on a coach tour visiting many of the Trail gardens.



The Hon Paul Caica, Minister of Environment and Natural Resources, and Sustainable Landscapes Project Officers Sheryn Pitman and Marilyn Kuchel at the launch of the 'Native Garden Trail' at the Jacob's Creek Visitors Centre.

The tour began at the Adelaide Botanic Garden and ended at the award winning Jacob's Creek Visitor Centre where Minister Paul Caica officially launched the Trail. As the coach travelled between sites an eminent zoologist, botanists, ecologists and conservationists provided short presentations and were thanked with gifts of bush food products supplied by Outback Pride. Feedback from participants has been



The Adelaide Botanic Garden's 'Australian Native Garden' Photo by D J Barrie

very enthusiastic, especially for the opportunity to network and share information about the work being undertaken by all agencies working together to promote the use of Australian plants and the sustainability of urban landscapes. The Trail brochure is available from the Adelaide Botanic Garden Visitor Centre and on the website.

The Native Garden Initiative has successfully involved a range of government, industry and community stakeholders in actively engaging many thousands of South Australians of all ages in the many activities and events promoting and encouraging the benefits and beauty of Australian native plants and gardens. The close working relationship developed by partners of the initiative, including members of the APS (SA region), has been mutually beneficial and enjoyable.

Reference: www.botanicgardens.sa.gov.au



Stokes Bay Wildflower Garden

John Stanton

John Stanton, native gardener extraordinaire. John and his wife Carol's efforts have resulted in an award winning garden comprising the cream of our spectacular Australian native plants, immaculately cared for and arranged for your appreciation.



Stokes Bay garden showing logs in place to add structure and aid moisture retention. All photos by Rosie Bell unless otherwise indicated

Welcome to our garden. Carol and I live on four hectares a few kilometres up the hill from Stokes Bay on the north coast of Kangaroo Island. Over the last 20 years Carol and I have transformed our surrounds into an award winning native garden that we have been sharing with tourists for 13 years. Our Island abounds with unique fauna and flora; for those of you who haven't visited, it's time you DID!

Each year we accept the challenge of introducing more plant varieties, either as plants, but more so now from seeds sown directly into the ground. We now find the latter to be more rewarding. Our best direct seeding times are around May to coincide with our opening rains. We currently have over 1,200 species growing and many individuals of each species. Plant numbers in our garden are anyone's guess, thousands and thousands, far too many to count. At age 62 I think we will likely run out of time before we run out of inspiration.

Twenty years ago our dream was just that, a dream. We started planting banksias as a challenge, just to see how many varieties we could establish. Initially we planted them between existing indigenous plants. To our delight they grew happy and healthy. We now have all

but about five species; a couple of newly discovered ones and *Banksia goodii* have remained elusive. One new introduction, prized by us, is *Banksia elegans*, 18 months old and doing exceptionally well. It is about 400 mm tall and hopefully, with patience, in about seven years, we will see flowers.

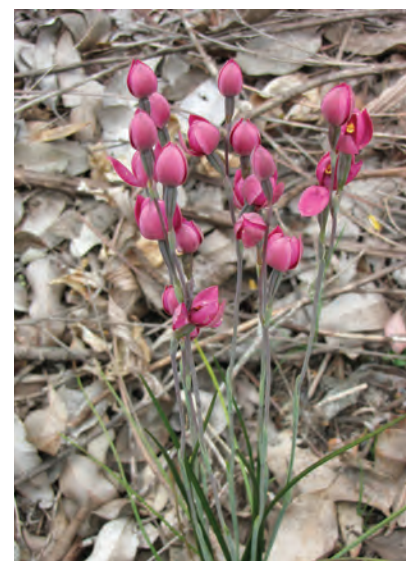


Banksia solandri

After starting with the banksias, things literally got out of hand. Not only banksias grew but most other natives too; mind you, it was and still is trial and error. There are factors we have in our favour.

Top of the list is soil pH. Ours is acid, a bit over pH5. We find most plants grow in our soil but, just as an experiment, we add limestone for alkaline loving plants.

Secondly; provide a well drained soil. Our garden is mostly on a gentle north facing slope. Half is ironstone gravel over clay and the other is clay just about to the surface. At times we do improve drainage by mounding areas with a sandy loam. Mounds also improve the landscaped appearance and we hope the perfect drainage will help combat *phytophthora* which is found on the island.



Thelymitra x macmillanii



Diuris corymbosa Photo by John Stanton



Darwinia oldfieldii

Other factors help us succeed. On the north coast of our Island we have winter dominant rainfall averaging about 20 inches (500 mm). Winters are mild, and, wait for it, rarely a frost! We feel for those of you who experience severe frosts; it would be depressing to lose our frost-sensitive plants. Our summers are 'hottish' with low humidity.

We water sparingly for the first couple of years until the plants are established and then generally most survive on rainfall.

Lastly our soil is very poor. However, later we will set our cat amongst your pigeons!

After reading about our conditions don't be put off if yours are not similar. Remember we are self-taught and still learning. Some things work, some things don't. We have had two identical plants, 20 m apart, one thrives and one sulks! Maybe it was root disturbance at planting, inappropriate watering, or different micro climate. Who knows?

We also have our ups and downs. One little devil has been the Waratah, (*Telopea speciosissima*, the floral emblem of NSW) until now. Touch



Relax by a
*Dryandra
formosa*



Using burnt logs helps keep the garden looking natural.

wood, after about 15 attempts over the years, we finally have an 18 month old thriving. This is possibly where Carol and I may have some of the 'old die-hards' shaking in their boots.

As an experiment we carted in a few truck loads of top soil from an area where sheep and cattle camp. Probably 80% was composted and fresh manure. Not only is the waratah doing well but various proteaceae, including banksias, are also thriving, contradicting what the books tell us. So what do we make of that? Mind you, another five years could be the test. Gardening is interesting. Don't be afraid to step outside the box.

In over 20 years we have grown many uncommon and harder-to-find plants from all over Australia, especially from the West. Some of our favourites probably will be no surprise to anyone. They include the many darwinias, verticordias, dryandras, pimeleas, hakeas. Oh let's face it, they're all favourites.

Before we finish, consider moisture infiltration and retention. There is a debate going on about which mulches are best. Once again we feel there are no set rules but, in our view, rainfall and soil composition are powerful factors. We successfully use both organic and inorganic mulch. Many tons of sandstone rocks have been landscaped into the

garden contributing to some extent as mulch. The ironstone gravel natural to much of the garden also contributes. Leaf matter and all our prunings go onto the ground as organic mulch also.

Our generally reliable rainfall infiltrates our heavier soil and subsoil well during the winter months. Moisture retention during summer months by keeping soil temperature down with mulch is more important. If your soil is sandy and your rainfall and water use is low, inorganic mulches may increase your rain infiltration by minimising run-off from the non-wetting tendency of these soils.

Once again, we have no set rules with our gardening but when we succeed it's a great feeling.

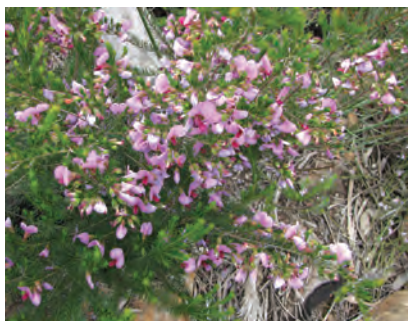
Happy gardening!



Eremaea violacea
Photo by John Stanton



Actinotis helianthi, self-sows in the garden
Photo by John Stanton



Burtonia scabrum



Banksia coccinea

Fire at Cape Borda

Bev Overton

Bev is an environmental crusader and botanist who has been, for many years, researching and conserving the flora of Kangaroo Island.

Kangaroo Island is a special place. There are over 1,600 kilometres of roads and many of them still have some or a lot of roadside vegetation on each side which is available for the public to explore. In addition to these roadside treasure troves, Flinders Chase National Park and the many large and small Conservation Parks still have much of their lands covered by native vegetation. Many farming properties have small to relatively large areas of native bushland in various states of health, so, all in all, almost half of the Island has some native bushland.

In these areas of native vegetation there are living worlds of plants interacting with birds, spiders and insects, and to the observant, there are plants flowering in all seasons and all months of the year. Some plants are edible, some are poisonous, some are fragrant and others have an offensive odour, but all have their own beauty and grace.

Fire plays an important role in these areas of vegetation, especially if Nature decides to take control. These natural fires (lightning strike fires can occur anytime between September and April) are usually hot fast fires.



Map showing Kangaroo Island and Fleurieu Peninsula Courtesy of Google



This article tells about one of my post-fire studies following two of these natural fires at Cape Borda.

Cape Borda once was called Section 53 Hundred of Borda and occupied approximately 200 hectares. Cape Borda precinct became part of Flinders Chase National Park in August 1997 and is now under the control of the Department for Environment and Conservation.

The soil type is shallow soil on calcrete or limestone, called Linois soil, but there are a few small areas that are sandy too. The vegetation type or community is described as being *Eucalyptus diversifolia* open mallee (2E) (Ball & Carruthers 1998).

On 2 January 1993 lightning began a fire north-north-west of Cape Borda Light Station, during which approximately 50 hectares of coastal mallee and heath native vegetation was burnt. This fire was contained by two dozers; one was positioned on the northern side and the other on the southern side of the fire.

I visited the area on 16 October 1993 to see if I could add this fire to my self-funded post-fire ecological surveys. For several years I have been discovering the life cycle of as many of Kangaroo Island's native plants as I could on as many soil types and plant habitats as possible.

My original goal at Cape Borda was to study the life cycles of two plants which are endemic to this particular locality – *Logania insularis* and *Platysace heterophylla* var *tepperi*, but on 29 September 1998 I also added *Olox obcordata* to the list. These three plants and the habitats in which they live became my main focus for gathering ecological data with the intention of continuing for 20 or more years or until the last of the known seedlings had either flowered or set seed.

I worked out that I had ample time to conduct this sort of lengthy study as fire history for Cape Borda had indicated that previously known lightning strike fires for this particular area occurred in January 1874 and January 1931, a time span of fifty-seven (57) years apart. Forty-six (46) years later an accidental fire lit by a tourist burnt the area in February 1957. The lightning strike fire in 1993 was thirty-six (36) years later. But, unexpectedly, this area was burnt again only fourteen (14) years later in December 2007, also the result of lightning.

By 20 December 2007 it was estimated that 77 hectares of coastal mallee and heath native vegetation was burnt during back-burn fires. Back-burn fires were lit to halt the wild-fire that had originated south of the Melrose Track north-east of Flinders Chase National Park headquarters.

Following this latest fire in 2007, alterations needed to be made to the quadrats because the short wooden and plastic stakes that I had used to mark out them out had either been burnt or had melted, leaving a blob of plastic at the surface level of the soil and the red paint on the limestone had also melted.

In 1993, once I had gained verbal permission from the resident staff, I walked down the old coastal walking trail to decide where I would establish some semi-permanent quadrats. Over time seven (7) 1-metre square quadrats were established. Four were established to study *Logania insularis* and *Platysace heterophylla* var *tepperi* and three for *Olox obcordata*. Each quadrat was defined by either wooden stakes or recycled plastic stakes driven into the soil, but at some locations the sheet limestone rocks were painted with red paint. Each stake was also painted with red paint on the top and sides, with the quadrat number written on top of the north-western corner stake which also gave the photo point direction for annual photographs of each quadrat.

During the research from 16 October 1993 to 6 March 2006, I conducted nine post-fire surveys between January to May, and seven from July to November, a total of 16 survey dates while attempting to capture flowering and fruiting times of the habitat plants of this area.

Considerable emphasis is placed on discovering how individual native plant species respond and recover after fire and to record this information, especially designed data sheets were used.



Bev Overton counting plants at quadrat #7, November 2010 All photos by Don Overton



These sheets posed questions concerning the response of native plants post-fire such as: how long after the fire did it take for either seedlings to grow to a stage where they could be identified or for plants to basally re-sprout. The height and width of each plant was measured, the percentage each species occupied within the quadrat was estimated and it was recorded when each plant produced bud, flower or seeds.

Because the vegetation had grown considerably over time, it was necessary to use coloured flagging attached to mallee or other shrubs, but in spite of these flags, it was increasingly difficult to relocate some of these sites.

Donations of labelled and dried plant collections were made to the Adelaide Botanic Gardens and State Herbarium with a sample of all species stored in my personal herbarium, thus officially recording these plants for the Kangaroo Island region, and my field identifications have been formalised.

Over time the data and field work proved that up until 1995 it was generally too early to capture the flowering times of many of the plants, whereas it took from 1998 to 2004 before I was able to record fruiting times of some of the plants.

Of the three plants I was particularly interested in, I discovered that *Logania insularis*, *Platysace heterophylla* var *tepperi* and *Olax obcordata* are all heath species that prefer to grow in the full sun and in this area they only grow on sheet limestone.

Plant descriptions

Logania insularis

Commonly called Kangaroo Island Logania.

This plant is endemic to Cape Borda and nearby western coastal limestone. It is considered to be Vulnerable in South Australia and Vulnerable on Kangaroo Island.

This is a tiny semi-prostrate or low shrub rarely growing taller than 10 cm high, spreading about 15 cm in width. There are tiny rusty coloured hairs on the stems which darken over time.

Logania insularis foliage



The tiny leaves are edged with a vein and have a central vein on the underside; often partially cupping with age. When very young the leaves have an orange tinge, then bright-green, becoming orange-toned with age. It is not unusual to find young plants that have been browsed by native fauna.

Flowers mainly occur in September to November with scattered flowering up to February. A few tiny creamy-white flowers are on little stalks. The fruits follow quickly and are dull-black, often contrasting with the flowers.



Logania insularis buds and flowers

Seeds stored in the soil quickly build up; seedlings germinate relatively readily, and by 12 months, post-fire seedlings are about 4 cm high. The first flowers and fruits occur at about two years of age. *L. insularis* favours limestone soil.

This plant prefers open areas and does not tolerate being shaded, so the population numbers quickly decrease. By five years post-fire it is difficult to find many plants because mostly they have been shaded out by taller and wider plants, but it is unknown how long individual plants live if they continue to grow in full sunlight.

Platysace heterophylla var. *tepperi*

Commonly called Kangaroo Island Platysace.

This plant is endemic to the general environs of Cape Borda. It is considered to be Rare in South Australia and Vulnerable on Kangaroo Island.

This is a small relatively short-lived perennial with a small clump of slender erect green stems when young, spreading at the base and can have trailing stems 10 cm to 40 cm long. Young stems are light-yellowish-green, darkening to mid-green and becoming light-greyish-brown with age.

Leaves are sparsely hairy when first emerged but soon become glabrous,



Platysace heterophylla var. *tepperi*



the three-fingered glossy-mid-green when young, becoming yellowish-green and darkening with age. Many leaves retain the trifid shape, while others become slender and narrow as the plant matures.

Pale-creamish-white flowers occur from January to March in small clusters along the stems. The small fruits are green-tinged reddish-brown, darkening as they ripen.

Seeds stored in the soil quickly build up; seedlings germinate relatively readily, and by 12 months post-fire seedlings are about 3 cm high; the first flowers and fruits occur about two years of age. *P. heterophylla* var. *tepperi* favours limestone soil.

This plant prefers open areas and does not tolerate being shaded, so the population numbers quickly decrease. By five years post-fire it is difficult to find many plants because mostly they have been shaded out by taller and wider plants. It is unknown how long individual plants live if they continue to grow in full sunlight.

Olaux obcordata

This plant has no common name but could be called Sweetheart-leaves. Currently it is only known to grow at Cape Borda in loose scattered populations. It is considered to be Rare in South Australia and Vulnerable on Kangaroo Island.

This is a glaucous, glabrous small erect shrub which rarely exceeds 60 cm in height and 45 cm across, but it is not a rounded shrub; instead the width is flattened fan-like and is often only about 5cm in depth. Young seedling stems can be dull light-bluish-greenish-yellow; becoming greenish-orange to dark-orange with age.

Leaves are usually dull light-bluish-greenish-yellow; becoming greenish-orange; alternate and stand erect along the stem; more or less ovate or heart-shaped and are cold to the touch.

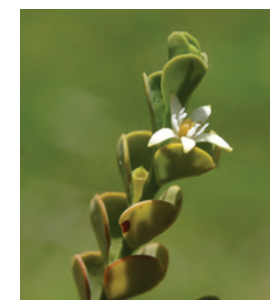
Buds begin to form in April; flowers in September and October; each flower is solitary, tiny, light-cream usually five petals. The fruit is a hard globular light-bluish green drupe with fine lines from top to bottom.



Olaux obcordata plant resprouted since the December 2007 fire

Seed store in the soil quickly builds up; many seedlings germinate; by 11 months post-fire seedlings are about 2 cm high with basal re-sprouting being up to 4 cm high.

Some seedlings may have a few flowers when they are only two years old, but generally it is three years before flowering and fruiting begin, by which time the seedlings are 14 cm or more in height and up to 8 cm broad. *O. obcordata* favours limestone soil.



Olaux obcordata flower

It responds favourably to occasionally being burnt in fire and I learnt from the December 2007 fire that some plants may re-sprout from their base, but mainly seedlings germinate near the original parent plants or nearby depending on the slope of the land.

O. obcordata is a slow growing long-lived perennial shrub which prefers open areas but can tolerate sparsely shaded areas. Based on the single plant I found at Harvey's Return in 1985, I assume that these plants may live for up to 30 years, as the last fire that had burnt this particular area was in 1958.

Historically this species has been recorded in the Adelaide Herbarium for Harvey's Return and nearby Cape Borda with a single record in late 1945 for Breakneck River. While I have searched burnt areas at Cape Borda for this species, at no time have I attempted to search for it at Breakneck River.

I extend my thanks for information about the size and origin of December 2007 fire to DENR staff members Deborah Davis, Ranger, West District and Rob Ellis KI Fire Management Officer, and to Rob for attempting to check the recorded size of the 1993 fire.



Overview of Quadrat #1

Awakening wilderness

Wendy Penhall and D. John Barrie

Wendy: Photographer, Mother, Tour Guide, Ambulance Volunteer, lives in the Flinders Chase National Park and was evacuated with her two small children when the 2007 wildfires closed in.

John: a greying grandad, native plant enthusiast, environmentalist, palaeontologist and author. Visits Wendy to observe and photograph plants on the Island but lives on that bigger rock across Backstairs Passage.



Distant sandhills impede drainage from the foreground, creating a perched wetland. *Achnophora tatei* is dominant in the foreground, *Allittia uliginosa* in the wetland. Photo Wendy Penhall

In recent years across Southern Australia, wildfires have had a devastating impact on many humans. At the western end of Kangaroo Island, in these almost unpopulated, conserved areas, the 2007 wildfires directly impacted on relatively few people. The impact of the fires on this wilderness was not all negative. Post burn regeneration provided an exciting adventure for some who had the opportunity to observe dynamic changes as the vegetation re-established. The authors were two of those privileged observers.

A drive from the National Park Headquarters at Rocky River to the coast at West Bay intersects many ecological niches that result from changes in soils, aspect and hydrology. Similar niches can be observed supporting similar plant associations across the island. However, a keen observer will also notice different species, and different vegetation structure, even in similar niches. In any one niche the presence or absence of seedlings, re-growth and youthful, mature or senescent plants alters the appearance, structure and diversity of its vegetation association.

Our observations of daisies at sites adjacent the West Bay Road deserve to be shared with you. The catalyst for the impressive display of most of these remarkable plants was the wildfire of December 2007.

We here experience a hypothetical walk starting at Sandy Creek on the West Bay Road in the river gorge, up-slope to a perched wetland, up its drainage lines, over a laterite plateau, across a windswept calcrete pavement, down coastal cliffs and through active sand dunes to the beach. Along the way we opportunistically note rare, spectacular and peculiar plant species. It was never intended to conduct a structured vegetation survey but the daisy family attracted particular attention. Eight distinct daisies, each growing in very different conditions, are discussed as we take this walk. The botanical gems we observed are unlikely to feature prominently again until a further disturbance occurs.

Let's commence our walk at Sandy Creek

The steep margins of this watercourse have only narrow terraces of humus-rich loam. Tall *Eucalyptus cladocalyx*, 'Sugar Gums', shelter an understorey of small trees and post-fire shrubs and ground covers including *Scaevola aemula*, *Ixodia achillaeoides* and *Apalochlamys spectabilis*.

Feature Daisy: *Apalochlamys spectabilis*, 'Fireweed', 'Native Tobacco' or 'Showy Cassinia' is a biennial herb which reached a height of four metres at this sheltered site. Germinating after the burn event, it had a rosette of broad 'tobacco' like leaves and was mostly single-stemmed in its first year. In its second year ascending branches with progressively smaller leaves developed. These supported terminal inflorescences of parchment coloured papery bracts encasing the tiny flowers. The immense proliferation of these plants was truly spectacular, more than justifying its specific species name. It flowers in January to March only in its second year post-burn and then dies.



Apalochlamys spectabilis Photos Left and Right: Wendy Penhall



Walking upslope from Sandy Creek

This incline with mostly a south easterly aspect has variable soils derived from the basement rock, aeolinite, laterite and coast derived sand. Sugar gums intergrade with mallee species on the incline that supports a variable understorey including *Ixodia achillaeoides*, *Acacia pycnantha* and *Xanthorrhoea semiplana* ssp *tateana*.

Feature Daisy: *Ixodia achillaeoides* subsp *alata*, 'Fireweed', was very common. It is an erect perennial shrub growing to from 0.8 to 2 m high. Its stems have decurrent wings extending from the leaf bases. The massed terminal clusters of small white papery daisy flowers provided a knee-high haze across this landscape. It flowers in October to February from its first year. A second subspecies *I.achillaeoides* subsp. *achillaeoides* with ribbed stems is common along the coast.



Ixodia achillaeoides subsp *alata* Left: Wendy Penhall, Right D J Barrie

Further upslope we find a Perched Wetland

This ephemeral wetland occurs where drainage from the higher plateau is impeded by a line of sand dunes. Prevailing winds blew this sand up slope from the Maupertuis Bay. As air speed decreased at the top of the rise the sand accumulated. These dunes restrain run-off sufficiently to support an ephemeral wetland of humus-rich sand. *Xanthorrhoea semiplana* ssp. *tateana* provided a clearly defined 'vegetation tide-mark' at the wetland margins. The wetland floor was lined with the charred stems of stunted *Melaleuca gibbosa*. *Allittia uliginosa* was dominant in much of this area but was accompanied by occasional *Achnophora tatei*, *Lobelia rhombifolia* and numerous indeterminate monocotyledon and succulent seedlings. *Melaleuca gibbosa* had germinated freely and in time will provide dense cover that will again shade out many of the species so conspicuous at the time of our visit.

Feature Daisy: *Allittia uliginosa* (formerly *Brachyscome uliginosa*) has a basal rosette of broad, somewhat dentate leaves with several vertical scapes to 200 mm high, each supporting a single mauve daisy flower. These delightful plants were dominant over much of this wetland. It flowers in September to November.



Allittia uliginosa, habitat and close-up Left: Wendy Penhall, Right: D J Barrie

Beyond the wetland are its in-feeding drainage lines

Between sand rises the drainage lines comprise firm sand with little humus content. Occasionally the basement rock is exposed and scattered ironstone pebbles from the laterite upslope are present. The many flowering Kangaroo Island Daisies were all but alone among the charred stems of burnt shrubs along these drainage lines. On the rising ground adjacent to the drainage lines *Lasiopetalum schulzenii* seedlings were very abundant and the *Xanthorrhoea semiplana* ssp *tateana* were a spectacle in full flower.

Feature Daisy: *Achnophora tatei*, 'Kangaroo Island Daisy', are 'Rare' small endemic plants with vertical rhizomes and simple leaves sheathing at the base. Flowers are white to pinkish with darker coloration on the backs of the ray florets. Like many brachyscomes, the ray florets reflex inwards protecting the disc florets at night and opening again by mid morning. It flowers in September to November.



Achnophora tatei Left and Right: D J Barrie



Above the drainage lines is the high Laterite Plateau

On the plateau shallow sand is underlain by iron nodules, the notorious 'ball bearings' that form many of the Island's roadways. *Lobelia rhombifolia*, *Thysanotus fractiflexis* and *Xanthorrhoea semiplana* ssp. *tateana* were in flower amongst regenerating mallee eucalypts. Many seedlings had germinated and the epicormic growth on surviving fire damaged trees had the colours of magic in their new leaves.

Feature Daisy: *Helichrysum adenophorum* As with so many daisies, the first leaves are large, greatly reducing in size along the upright flowering stems. These branched to support a number of terminal buds, often tinged pink, opening to a clear satiny white compound flower up to 50 mm in diameter. The central disk of tiny yellow florets was surrounded by the papery bracts. Recorded from calcareous sandy soils, it was here at its best on these neutral to acid sands. It flowers in October to March.



Helichrysum adenophorum Left and Right: Wendy Penhall

Descending towards West Bay is a Windswept Calcrete Pavement

This calcrete rise is exposed to the full force of the winds from the Southern Ocean. The fractured rock surface somewhat resembles crazy paving and provides great habitat for the skittish 'Tawny Dragon' lizards. Within rock cracks dark sandy soil provided a foothold for many seedlings and re-growth from lignotubers, buried tussock bases, bulbs and tubers. Where un-burnt, the 'wind shorn' plants provided a surreal 'bonsai garden' that intrigued us. It provided a great refuge for the diverse fauna and flora. Palatable species like many daisies survived only in protective rock crevices or amongst sharp spiky foliage out of reach of the lone kangaroo that tolerated our presence.

The amazing diversity of species present at this inhospitable site included: *Leucophyta brownii*, *Olearia axillaris*, *Ixodia achillaeoides* subsp. *achillaeoides*, *Spyridium* sp., *Carpobrotus* sp., *Microserus*

lanceolatus, *Melaleuca gibbosa* and *M. lanceolata*, *Lawrencia spicata*, *Grevillea pauciflora*, *Bulbine* sp., *Dodonaea* sp., *Thelymitra* sp., *Microtis* sp. and more.

Feature Daisy: *Brachyscome* sp cf *B. parvula*, 'Coast Daisy', thrust pale pink faces towards the sky from protective nooks inviting pollinating insects to alight. These are perennial plants with rosettes of fleshy basal leaves and cypsela (seed) that appear to key out to this species. Members of the Australian Daisy Study Group had determined this many years ago despite the species not being formally recorded from the Island. It flowers in September to January.



Brachyscome sp cf *B. parvula* Left: Wendy Penhall, Right: D J Barrie

At the edge of the Calcrete Pavement are Coastal Cliffs

Below the protective kunkar capping the aeolinite was eroded into high arching alcoves, below which screes of loose rock sprawled to the water's edge below. Amongst these rock screes and calcareous sand were amazing garden vistas of *Carpobrotus*, *Austrostipa*, *Leucophyta*, *Olearia*, *Disphyma*, *Ixiolaena* and *Scaevola* clinging to every nook and cranny, defying the fiercest forces of nature.

Feature Daisy: *Ixiolaena supina*. 'Stalked Ixiolaena' is a sprawling prostrate perennial with pale green leaves punctuated by its stalked white pom-poms. It is at its best cascading from rock crevices in sheltered nooks. It flowers in October to January.



Ixiolaena supina 'Stalked Ixiolaena'
Left and Right: D J Barrie





Adjacent the Coastal Cliffs at the head of the Bay are active Sand Dunes

These mobile calcareous sand dunes provided a foothold for *Carpobrotus*, *Leucophyta*, *Olearia*, *Lotus*, *Scaevola* and *Ixodia*. Wind driven sand accumulates within these plants' canopies. Survivors here are growing at least slightly faster than the sand is accumulating!

Feature Daisy: *Leucophyta brownii*. 'Cushion-bush' can be a shrub to 0.5 m tall but in exposed sites it is usually much less. At West Bay it maintains a very tight, tidy habit. The whitish foliage provides a strong contrast to most plants around it. Flowers are small and yellow in compound heads, mostly during February to April.



Leucophyta brownii 'Cushion-bush' Left and Right: D J Barrie

Footnote summary

After the wildfires in this wilderness it was not difficult to find even the tiniest plants arising from the ashes. This burnt landscape will, over a number of decades, return to what a casual observer may refer to as 'near boundless, monotonous scrub!' However, within the soil will again be dormant enigma: seeds, bulbs and tubers; the full vista of which will only be realised subsequent to another burn event. It has been a privilege to have had the opportunity to experience this wilderness awakening.

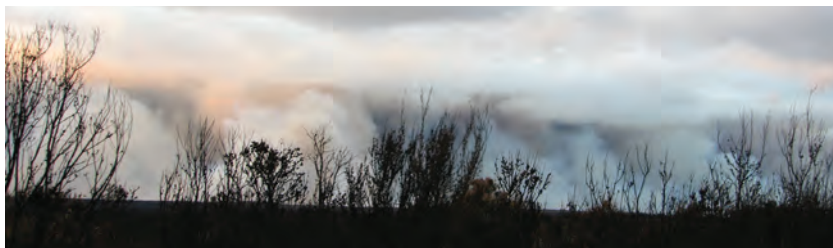


Photo by Wendy Penhall

Welcome to the wonderful world of Santalaceae in South Australia

Neville Bonney

Neville is a student of the Australian Bush, a very experienced grower of Australian native plants and a renowned author of books on native plant identification, propagation, bush tucker and the uses to which Aboriginal people put them.

In South Australia the genera within Santalaceae are *Anthobolus*, *Choretrum*, *Exocarpus*, *Leptomeria* and *Santalum*. All these have minute leaves (often scales), rarely exceeding 5–7 mm with the exception of *Santalum*, where leaves are usually 5–7 cms.

Santalum is represented in South Australia by four species, these being *Santalum acuminatum*, *S. lanceolatum*, *S. spicatum* and *S. murrayanum*. Of these, the native peach is 'Urti' to the northern South Australian Aboriginals. The popular word 'Quandong', has been anglicised from the NSW Aboriginals, who, back in the 1840's, knew it as 'Quandang'.

Native peach is popular as an edible fruit. It is a wide-spread, tall shrub to small tree that occurs in semi to arid regions of Northern Territory, Queensland, New South Wales, Western Australia, Victoria and South Australia. In SA it is common to most dry land environments or below 20 inches or 500 mm rainfall. Leaves are opposite, pale olive green, tapering to a hooked point, 10–20 cm in length. Flowers are small, arranged terminally or axillary as an inflorescence. Fruit is a drupe, mostly round in shape, varying in size from approximately 1.5–2 cm, ripening to a deep red colour.



Good quality fruit of the 'Native Peach' *Santalum acuminatum*
All photos by Neville Bonney

For centuries and even today, the fruit has been highly prized and eaten by Aboriginal people. It was known to be farmed in certain areas. The first known domestication of Quondong by Europeans was in the Adelaide suburb of Enfield. The area was known as 'the Pines', where the pioneering Ragless family had built a fine home called 'Angmering Vale' in the 1840s.

The family set up a saw milling business using local pine, *Callitris gracilis*. Later, when Mr. John Ragless retired in 1875 from the pastoral property, 'Minburra-Yalpara' in the northeast of the State, he returned and rebuilt 'Angmering', the family home of his youth. To keep his contact with the

north, he planted an orchard of Quandongs so he could again make and taste Quandong pie.

It was to be another century before renewed interest in domesticating Native Peach occurred, when Mr. Brian Powell, of Quorn, South Australia and Mr Ben McNamara of Eyre Peninsula, helped in the selection and growing of Quandong orchards. Today many orchards have been established in southern Australia.

Santalum acuminatum, Native peach, is a rich source of phenolic based antioxidants and is rich in vitamins C, E, folate, zinc, manganese, calcium and iron.

Like all members of the Santalaceae group, they require a host plant or many host plants to grow well. Young saplings send out feeder roots that develop a special attachment known as haustorium. These root attachments are able to absorb nutrients and water from their hosts.

Like other *Santalum* in southern Australia, their long term hosts are usually from the Casuarinaceae and Leguminosae families, although they are known to also attach to other species. When young, they will attach to a wide range of plants, including grasses. These we refer to as the primary hosts, but as the tree develops, they outgrow the small plants and require a long term host. They are able to have several hosts at any one time. Santalums require good drainage and much sunshine and a pH mostly between 6.5 and 7.5.

Santalum spicatum, Fragrant or Southern Sandalwood, is rich in history, being harvested for its scented wood. In South Australia it ranges across the state from the Western Australia border on a band towards Broken Hill, from a latitude of 30 degrees to 32 degrees south, although today, only remnants remain. The northern Aboriginals in South Australia called it 'Udlura'. It grows on hard baked loams and sandy soils. This plant will grow in a range of pH but usually between 6.5 and 7.5.

Commercial plantations now replace wild stands. Whilst this tree is known best for its timber, in recent years nuts from the tree are being used for many purposes.



Santalum acuminatum
'Native Peach', 'Quandong' or 'Urti'

It has blue-green foliage 5 to 7 cm in length, lanceolate to narrow elliptic in shape. Flowers are small, greenish, with a red exterior. Drupes (fruit) vary in size from 2 to 4 cm, are round in shape and not fleshy. A thin layer we know as the husk covers a smooth hard shell that contains the kernel. It also requires a host for its development.

For nut production, sow seeds or plant seedlings at 4–5 metres apart, allowing plenty of room for host plants to establish. Rows should be 5 to 7 metres apart. It is advisable to sow or plant hosts one to two years before planting Sandalwood.

Plants can be drip irrigated during their development years, especially during hot dry summers. Should the soils be hard, as with native peach, it is advisable that the rows be deep ripped to 50–60 cm and also run at right angles to the prevailing winds, should there be no wind-breaks in place.

For use as a food, remove the kernel from the nut and roast at 150°C for 15 to 20 minutes. At this point they can be broken up to a size that is useful for the dish being prepared. They can be used like any other nuts, within biscuits or on cakes.



Santalum lanceolatum 'Native Plum' or 'Manawarra' fruit

Santalum lanceolatum, Native Plum, or as the northern Aboriginals knew it 'Manawarra'. Native plum grows 3 to 5 metres tall and can be found growing on flood plains and creek lines in the north of South Australia. It has glaucous-green shiny leaves, narrowly elliptic to ovate elliptic in shape. The drupe is ovoid, ripening to dark blue or purple and is edible.

Last, but not least, in South Australia is *Santalum murrayanum*, or Bitter Quandong.

It is a wide-spread shrub to small tree found in the mallee and drier areas of the State. Branchlets are pendulous, dull grey-green linear to lanceolate foliage. The drupe is a brownish-red. Although not known to be as popular as other *Santalum* species, it still plays an important role in landscape ecology.



Santalum spicatum
Small tree with fruit on ground



Propagation of *Santalum*

Propagation of this species is mainly from seed. Prepare seed by removing husk. Ensure good quality seeds are sourced, e.g. tree shape, fruit size. Many plant propagators have their own techniques. One thing they all agree is that the endocarp (hard protective shell) needs to be cracked first.

Cracking with a nutcracker can be hit and miss, with damage sometimes occurring to the embryo within the kernel. In recent years, the method of soaking seed in water for 2 to 3 hours, then placing out in full sun 30 to 35°C for 1 to 2 hours will see a small hairline crack appearing in the apex of the shell. (If not, you may need to repeat again.) This causes no damage to the seed.

Seed can be stored dry until sowing time, but is best prepared a few weeks before sowing. Seed can then be placed in soil in a container or direct seeded into the ground. Germination will take place within 4–6 weeks. This process in southern Australia is best from March until May, whilst soils are still warm. Soil should be kept moist during this germination period.

Providing fresh seeds are used and the process adhered to, 80% germination can be expected. If growing in trays or pots, avoid damage to sensitive roots when transplanting.

References:

Bonney, N.B., 'Adnyamathanha and Beyond' 2007.

Bonney, N.B., 'Edible Wild Native Plants for Southern Australia' 2010.



Santalum spicatum fruit

Growing *Verticordias* in South Australia

Keith Pitman

Keith is a nurseryman, native plant enthusiast and 'Master Grafter' with skills enabling him to succeed with 'Drop-dead Gorgeous Plants'.

I first became interested in verticordia after joining the Society for Growing Australian Plants (now APS) in about 1962.

Going to one of the flower shows I saw verticordia for the first time and fell in love with these beautiful feathery-looking flowers in striking vibrant colours. I very soon decided that I would pursue this genus and one day have a collection of most, if not all, of the 68 known species at that time. We now know that there are some 150 species and sub-species named and possibly some not yet discovered.

At the time I lived north-east of the city of Adelaide at Holden Hill, the soil being heavy black rock-hard when dry and sticky/greasy when wet, with a pH of 5.5 to 6.5. Borrowing a truck from an uncle I shovelled on then off around 50 tonne of sand and small gravel from a river running through my uncle's property. This I used to create mounds ranging from 300 – 700 mm with an undulating affect.

Over the next eight years I successfully grew the following verticordias: *Verticordia monadelpha*, *V. chrysantha*, *V. plumosa* and *V. mitchelliana* as well as many other natives. The verticordias grew very well and flowered every year until I sold the property and moved away.

My passion was put on hold after that for a number of years due to job commitments etc.

In 1990 I sought to buy a block of land to build on, but it also had to be suitable for growing verticordia. After checking out several possible blocks I purchased a block at Cockatoo Valley, located east of Gawler towards the Barossa Valley and approximately 60 km north of Adelaide. The block of 1.1 Ha comprises fine sand over clay, ranging from 300 mm – 2.5 m deep, with a pH of 6-6.5. On the block already growing were 30 *Eucalyptus fasciculosa*, four *Baeckea behrii*, three *Xanthorrhoea semiplana* and one *Kunzea pomifera*. This area was part of the Second World War Army Training Camp and, later in the war, a Prisoner-of-War Camp.



View of the garden at Cockatoo Valley
All photos by Keith Pitman except as noted



Over the past 18 years I have successfully grown a number of verticordias and also some 1,200 other native trees and shrubs.

In November 2006 I started in earnest to plant up a verticordia patch, after removing other shrubs in order to do so. The first planting consisted of 35 plants: 22 species, with 25% grafted onto chamelaucium rootstock.



Verticordia huegelii, Inset, close up of flower.

A second planting in October consisted of 164 plants: 43 species and ssp, 50% of which were grafted on to chamelaucium rootstock.

The area was laid out with drip lines for easy watering and initial establishment. After planting, each verticordia receives a little general purpose slow-release fertiliser. No mulch is used on any of my plants. The reasons for this are:

- mulch (except for pebbles, gravel etc) stores too much moisture near the surface – especially when only light rain falls – causing roots to travel to the moisture, hence creating a shallow root system. By not using mulch, the roots travel much deeper in search of moisture, resulting in requiring less water overall. (Some old verticordia plants have not been watered for the past five years and survived the droughts of these years.)
- copying nature in Western Australia – no organic mulch is present around most verticordias and many other species – and most appear to survive quite well.



Of the grafted plants, most have outgrown the same species on their own roots; in some cases, by at least double the size in the same time. *Verticordia grandis*, *V. venusta*, *V. cooloomia*, *V. chrysostachys* ssp *chrysostachys*, *V. muelleriana* ssp *minor* and *V. dichroma* ssp *dichroma* have all reached 1 x 1 metre in the first two years. Most of the larger plants have been pruned twice and have responded very well, becoming denser and flowering more profusely.

Verticordia muelleriana ssp *minor*

Verticordias in our garden have been completely free of any pest attacks whatsoever. The only problem has been fungal attack on young growth in the winter months, affecting mostly verticordias from the drier regions of WA. Spraying with a fungicide has helped to control this to a certain degree and new growth soon appears in late September, early October, fungus free, with buds and flowers following quite rapidly in the warmer months of the year.

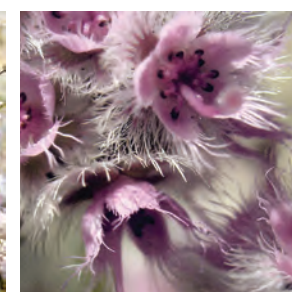
In conclusion, I must say I have enjoyed the challenge and satisfaction of successfully growing these beautiful plants.



Verticordia chrysostachys ssp *chrysostachys*



Verticordia dichroma ssp *syntoma*



Verticordia centipedia



Un-described Helmet Orchids (gen. *Corysanthes*) from South Australia and their hybrids

Robert Bates

Robert J. Bates is author of 'Orchids of South Australia', past president of the Native Orchid Society and botanical consultant.

The super genus *Corybas*, to which helmet orchids of the genus *Corysanthes* belong, has about 200 species ranging from China, south through Australasia to subantarctic islands. All have a single leaf with a single flower sitting on it!

South Australia has species from two different genera: *Anzybas*, the little pelicans, with two species and *Corysanthes* the helmet orchids with at least eight taxa. *Corysanthes* are confined to southern Australia. They require cool, shaded, damp conditions to exist so they either grow only in winter or occur in swamps. All but one species can be found in the Mt Lofty Ranges.

The most common helmet orchid in South Australia (and Australia) is *Corysanthes diemenica* also known sometimes as *C. dilatata*. See image below. It is the largest of the South Australian species but still only grows to about 3 cm tall. Of interest is the fact that pollinated flowers extend their peduncles to some 20 cm tall to aid seed dispersal.

Flowers are pollinated by tiny fungus gnats. The flowers resemble colourful toadstools and have a musty odour which adds to the attraction. Like the fungi they mimic, they appear mostly in the cooler months.

In the 1970's it was thought all helmet orchids in SA belonged to one variable species but since then five more have been named. Recent studies have revealed at least three undescribed taxa. These have been given tag names until they are officially described

***Corysanthes diemenica*, Adelaide Hills**

Cultivation: woodland species are easily grown in shallow pots. The small tubers sprout in early June, the flowers open in July and, if the pot is covered with a plastic dome to keep up humidity, the blooms last for about six weeks. A strange feature of flowers grown this way is that they keep getting larger until they collapse. Another



Corysanthes diemenica Photos by R. Bates unless otherwise indicated.

special feature of helmet orchids is the ability of dried out flowers to resurrect after rain. Not many orchids have this ability. All species do best in a sandy humus-rich potting mix.

The undescribed species:

1: *Corysanthes* sp. 'Silky ti-tree swamps' is known only from a few silky ti-tree swamps along the coast of South Australia's far south-east and also in Victoria. It must have occurred in millions before these swamps were drained and cleared for farming. As is usual for a swamp species, it flowers later than woodland helmets, that is, in September–October.



Corysanthes sp 'Silky ti-tree swamps'
Photo: Cathy Dickson, Piccaninnie

This species was thought to be an un-named species as early as the 1970's but was only collected for the first time in 2008. It has been officially listed as nationally endangered.

Corysanthes sp 'Silky ti-tree swamps' grows in low light situations in permanently damp soil, in moss and leaf litter or on floating rafts of dead vegetation. Of all South Australian species, it is the only one to keep its leaves green for as long as six months.

The species is easily recognised from the deep red boss on the labellum. The species should be easy to grow in a fern house.

2: *Corysanthes* sp 'Fat dwarf' has the smallest of all helmet orchid flowers, being less than 1 cm tall. It was only discovered in 2009 and is restricted to sand dune swales behind coastal headlands. In 2010 it has also been found on Kangaroo Island. This is one of a series of species found only on limestone or calcareous sands.

Like many helmet orchid species it seems to form hybrids with any sympatric species. *Corysanthes* sp 'Fat dwarf' may have previously been confused with the abundant *Corysanthes despectans* which is a very constant self-pollinated species found in some of the most wind-blown stunted coastal heath and up to 50 km inland.



Left: *Corysanthes* sp Fat dwarf, Newland head
Above: *Corysanthes* sp Red-eyed ghost, Waitpinga CP

3: *Corysanthes* sp 'Red-eyed ghost' is a pale flowered species of sand dunes mostly near the coast and very widespread from Eyre Peninsula, Kangaroo Island and the Mt Lofty Ranges but never common. It is distinguished by the red top to the column, the rest of the flower being palest green. The flowers are only 1 cm tall and with a flared labellum. It seems to do well in cultivation in a blend of loose sand, dolomite and humus. Although known since the 1970's, it has only recently been realised that it is a stable form worthy of recognition. It flowers from mid July to early August and forms occasional hybrids with sympatric species.

In addition to the named hybrid *Corysanthes* x *miscellus* several other crosses have been observed including *Corysanthes* sp 'fat dwarf' x *C. x expansus* (see image), *Corysanthes* *expansus* x *C. despectans* and various *Corysanthes* *dentatus* crosses.

It is highly likely that there were other helmet orchid species in South Australia before European settlement but with less than 10% of native bushland left in higher rainfall districts and many habitats and soil types completely lost to farming, we will never know what they were.



Corysanthes *expansa* x *C. despectans*, Newland

Flight 108

Mike Riddell

Passionate Eremophila buff, retired drama teacher, author and poet.

A hustle of honeyeaters hasten across my lawn.
Hurricane-like escaping from Messerschmidts
They loop and barrel roll.
Squadron New Holland
Active and reporting for service!
And there is much to service.
'Nullarbor Nymph' and narcissistic nivea,
Blemish free macdonnellii and spotty maculata,
Curves of calorhabdos, complanata, purpurascens,
Delights of decipiens, densifolia, divaricata
Fly right through the 'Summertime Blue',
The 'Winter Gold' and the 'Thundercloud'
Swing down to the biserrata, glabra yellow, serpens,
Catch up with youngii, weldii – fly proud.

Hey you guys, you with the curved bills,
The fanciful flights and the flights of fancy,
Stop your cheery chatter.
You need sustenance.
Stop your rehearsals for battle.
Get your strength up!

Who said you can't grow eremophilas in the cold
And bleak of the Limestone Coast?
Not my honeyeaters!
In my garden,
No – in their garden,
Lunch is served all year round.



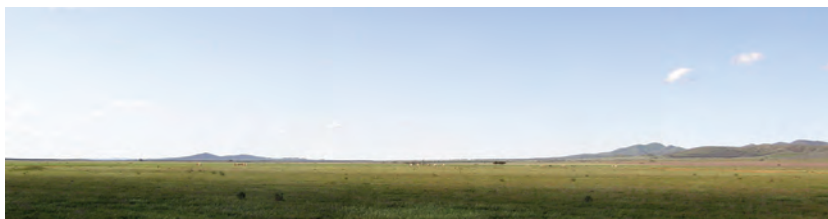
Photo and graphics by
D J & J.Barrie



The Genus *Eucalyptus* [L'Heritier, Sert. Angl. (1788) t. 20 (1792)] and me

Bob Netherton

For many years Bob has been rewarding this genus with absolute passion for its profound influence on his life, his career.



The country around Peterborough where Bob first grew his beloved Eucs. Photos by D J Barrie

What price a gum tree? For me, quite a lot. It all started 50 years ago in the mid-northern S.A. town of Peterborough. I had a wife, two young kids (and counting!) and was rather tenuously employed as a slaughterman-boner in the local meatworks. We bought a broken-down house on seven barren acres of dry grass and we decided to plant some trees on it. This was the time of the English Disease when anything Australian was removed and replaced with good British stuff. Peterborough, (annual rainfall average 1954 to 1973 was 328 mm) is not kind on these plants. When in Adelaide and on a whim, I pulled out some gumtree seedlings from a mud patch in the hills and planted one in Peterborough. To my surprise it grew (it was *E. camaldulensis*). After some discussion with an Orroroo farmer, Des 'Chook' Foulis, I purchased some strange seeds from a supplier in W.A. These included *E. dundasii*, *E. brockwayi*, *E. woodwardii* x *torquata*, *E. kondininensis* and *E. salubris* amongst others.

Initially the small planted seedlings did not survive the bitter cold winter of this high country, but in pots they did survive until the next spring. I then planted them out and watered them in. I watered them a few times, but then I left some without water. When these un-watered ones showed some stress I watered the rest, but again left a few more out. I achieved significant success but never watered more than six times. I even got many through the 150 mm of snow in 1969. (The same day that Armstrong stepped on the moon.)

I also had to put up with several negative comments along the lines that the locals had spent a life time removing gumtrees and I, (flamin' idiot) wanted to put them back again.

Shift to 1973 and I was pricking out seedlings on a bright autumn morning, when up my drive came a big new sedan, black, and two gentlemen stepped out. They were wearing suits, black, and ties and looked seriously 'heavy'. I thought, 'What have I done to deserve this'. In the best of tradition I just kept on potting on. They came up to me and asked what I was doing. I told them and they continued to ask about the 'Eucs.' that I was pricking out, 'what were they' etc. After a while I pulled them up, explaining that I would happily talk trees forever but asked 'Why were they here?' Their reply was to apologise for not introducing themselves earlier. I was actually talking to the Manager of the Northern Division of the Department of Main Roads and the State Government Manager of Roadside Vegetation. They had been trying to grow trees on the roadside but had had no luck and wanted to know how I had succeeded when they hadn't. We talked trees for quite a while and what I had done and then they left. They subsequently managed to establish trees on the harsh Barrier Highway and elsewhere.

When it finally dawned on me that I had done something botanical that the experts couldn't, I was somewhat rattled. At that time I was looking for a more rewarding job than a knife-man in an abattoir and some friends had told me of a new setup at the Flinders University of South Australia that accepted old students and could suit me. Full of bravado after this experience in one-upping the experts and as a direct result, I promptly applied to Flinders University and actually got accepted. With the help of the Whitlam Government, I entered as an undergraduate in the School of Biological Sciences in 1974, aged 38. Eleven years and a PhD in neuro-psycho-pharmacology later, I started on a 23 year graduate career in Public Health, retiring three years ago.

I tell this story in the hope that someone who does not think they are very good at anything (as I considered myself then) can realise that this is not necessarily so. By taking a chance and daring to try, all sorts of strange and wonderful things can happen. It was the 'Eucs.' telling me what to do that dramatically altered my life on that day in 1973 and gave me the subsequent courage to aim high. I hope Ms '*Flora Australis*' can do it for you also.



Some of Bob's career changing Eucs



Correas in suburbia

John Earle

John is a well known, long term and enthusiastic contributor to APS, SA.

Some time ago a relative of ours expressed interest in growing native plants to attract native birds into her garden at Christies Beach, a suburb south of Adelaide, South Australia. There was already a *Correa alba* growing very successfully in her very alkaline garden soil.

This one plant, about 2–3 m both high and wide, was kept trimmed and held its shape very well. On being asked how she kept this correa looking so good, she replied, 'A lot of good afternoon sun and the plant being backed by a wall'. She also 'talks to it', which fascinated me as I do not talk to mine!

In our front garden at Seacombe Gardens, closer to Adelaide, we have nine different correas growing in sandy loam with full to part sun: *Correa* 'Dusky Bells', *C. reflexa*, 'Kangaroo Island form', *C. backhouseana* x *reflexa*, *C. reflexa*, were the ones we found the most successful so suggested she should try these.

C. backhouseana, *C. 'Wins Wonder'* (variegated), *C. 'Mannii'*, *C. pulchella* and *C. decumbens* also grow for us. Once they are established, they get only summer water by hand when we think they need it.

All of our correas propagate quite easily from cuttings taken in late summer to early autumn. Sometimes we are the only grower of the above correas and other native plants we propagate to sell at our Society's autumn and spring plant sales.

We have photos of correas planted at Christies Beach and Seacombe Gardens including this one.



Correa 'Dusky Bells'
Photo by D J Barrie

Growing Waratahs in South Australia

Margaret Lee Photos by Margaret Lee

Margaret Lee is an inaugural member of the Society for Growing Australian Plants, a recipient of the Ivan Holliday Medal and a great contributor to APS.



Telopeas at Piccadilly

After the 50th Anniversary issue of *Australian Plants* with many interesting articles about waratahs, some information about cultivation in South Australia may be of interest.

In 1996 I planted six 'Shady Lady' waratahs at Piccadilly in the Adelaide Hills. Next year I planted more of these and a number of plants from Yellow Rock Nursery – 'Fire & Brimstone', 'Brimstone Blush', 'Cardinal' and 'Corroboree'. In September 2003 seven 'Fire & Brimstone' and seven 'Olympic Flame' were added. Following the Launceston conference one Tasmanian *Telopea truncata* was added, which has been slow to establish. A few newer 'Shady Lady' pink, white and yellow have recently been planted and there are over 50 plants in all.

The soil is a thin layer of grey podsol over clay loam, over quite heavy, slightly acid clay, over deep sandstone on the eastern side of Mt. Lofty. However, it is quite well-drained and receives about 600 mm of mainly winter rain. A drip system has been installed and a limited amount of bore water is applied occasionally during long dry spells in summer to keep the plants alive. The hill is quite steep and slopes to the south-east, which assists with drainage.

The plantation is backed by dry sclerophyll *Eucalyptus obliqua* forest which shields it from wind and from the northern and western sun and increases humidity. The plants only receive sun for a few hours in the morning. This has the added advantage of inducing them to produce long stems which are popular with the florists. I give them a small handful of blood and bone in autumn and another in spring.

All plants have done extremely well; there have been no losses. Some of the first plants are becoming woody and less productive, so I experimented by cutting one back very hard last autumn and removing all old wood. It is now producing healthy new growth.



The Australian Arid Lands Botanic Garden

Michael Anlezark,

Curator, Australian Arid Lands Botanic Garden and South Australian State President of APS, SA Region Inc, 2010.

Influencing change and the wisdom of youth

There is no denying that the young adapt to change far quicker than the old. This statement applies not only to people but to business and also to botanic gardens. The Australian Arid Lands Botanic Garden (AALBG) is indeed a young garden, her gates opening to the public just over 12 years ago. What role today does such a young garden have to play? What wise messages can be learnt from one so young and what are the changes to which this garden can react quickly and that others may struggle with?

For those not familiar with The Australian Arid Lands Botanic Garden, it is situated at Port Augusta on the Stuart Highway, just north of the city's urban edge. The garden covers approximately 250 hectares and extends into the Spencer Gulf. Large sections of the site contain natural vegetation and diverse natural systems, from sand dunes to clay pans and from Chenopod (saltbush) plains to mangrove colonies. It may in fact be unique in the world for encompassing desert and marine plant collections.

The role of this garden is best summed up in its mission statement – 'to provide a facility for the conservation of a collection of Australia's arid zone flora, including threatened species and plant communities. It is to increase popular and scientific understanding of the arid zone environment through education on a regional, national and international level and the promotion of arid zone plants by fostering appreciation and research into their special qualities and horticultural potential'. That



A view of the Flinders Ranges across the Arid Lands Botanic Garden.

All photos by D J Barrie



The forecourt of the Visitors' Center being prepared for replanting, February 2010.

sounds like quite a big job and a fairly important mission for one so young, indeed it is a role that the AALBG is taking on seriously and turning into reality.

The AALBG, in a nutshell, is there to conserve Australia's arid zone flora, to educate about the importance and relevance of this flora and to promote this flora. It is ideally placed to do so in that geographically it is on the edge of the arid regions.

For conservation it is climatically suited to species that require low rainfall and also geologically suited, with its well-drained sandy soils. The AALBG is ideally placed to educate, in that Port Augusta is a crossroad for major tourism and has reasonable proximity to major population bases. It is ideally placed to promote arid plants because of access to arid plant material, the space to do research and the right climate and conditions to produce plants that have both scientific and horticultural potential.

The wise messages that can be learnt from this garden are many and are not just to do with plants. Our award winning Visitor Centre is a fine example of modern environmentally friendly architecture. Features such as rammed earth walls, solar orientation, solar power and rainwater storage combine with low water usage taps and natural internal materials.

Our plant collection reflects arid zones throughout Australia, the areas with rainfall of 250 mm or less. There is a vast wealth of flora in these regions with plants that have developed remarkable adaptations to cope with very little and unreliable rainfall. We would be foolish to ignore



the lessons that such plants can reveal and we would be even more foolish to try to persevere with growing the enormous range of thirsty exotic plants that currently fill our nurseries.

The AALBG recently registered the name 'AridSmart' and this name is being used to promote a new series of water-wise gardens just recently completed. The term 'AridSmart' was coined to start the process of changing the negative perceptions about what we consider arid into something positive and desirable. The word arid means – 1. Having little or no rain, dry parched with heat. 2. Devoid of interest. Obviously not desirable elements within themselves but the plants that are the products of such an environment with low demands for water are of extreme value and certainly not devoid of interest.

Our AridSmart gardens, we believe, are the first gardens in this country to show the public what can be achieved by using purely arid zone plants to achieve a great look in a variety of garden styles and settings. They use a range of water saving features such as various mulches, subsurface irrigation, design techniques and, of course, exploit natural plant adaptations for low rainfall.

There are six gardens in all, with each one covering just over 100 square metres, so visitors can see them as something on a scale with their own gardens. Each garden has a different theme and they cover informal, semi formal and formal styles.

Garden one is the Desert Garden, inspired by red sands and sun-bleached timber with plants generously spaced and ephemerals a feature. Garden two is the 'Mallee Garden' with its swathes of lemon grass (*Cymbopogon ambiguus*) and beautiful mallee eucalypts, designed for those that want their own urban mallee woodland.

Gardens three and four are the formal courtyard gardens complete with benches and classical urn. These gardens will highlight what arid species are suitable for clipped hedges and even topiary.

Garden five is the Flinders Ranges garden, inspired by the natural and rugged beauty of an ancient landscape and designed to attract wildlife.



The AridSmart 'Flinders Ranges Garden'



The AridSmart 'Courtyard Garden' at AALBG

The last garden is the informal 'Coastal Garden', surprising to many that are not aware of Australia's vast stretches of coastline that are classed as arid and semi arid.

All of the plants used in these gardens are available for sale from The Friends of the Australian Arid Lands Botanic Garden, all of the materials used in construction are commonly available and the technology is affordable. The gardens are experimental and the plant material may change as we work towards developing arid species that can become the favourites of the future, a future with a rapidly changing climate.

We are lucky that we are a young garden: just look around at the botanic gardens of all major towns and cities. They are filled with European trees, shrubs and lawns, plants that will not cope with what's to come. The Australian Arid Lands Botanic Garden is striving to change the gardening habits of lifetimes and we can put all of our resources and concentration into influencing the future and not into managing the past.

Sounds pretty wise to me!



Flinders Ranges in drought near Port Augusta, 2009

Pangarinda Arboretum (Ngarrindjeri meaning 'Sunset')

Arboretum Chairman John and Committee member Julie Barrie

Situated at Wellington East near the Murray River outfall into Lake Alexandrina, Pangarinda Arboretum is receiving much favorable attention from plant enthusiasts from across the country.



Pangarinda Arboretum 2010

In 1993 30 hectares of Crown Land was made available to beautify the district. A committee was appointed and a vision and objectives for the site were subsequently developed. Objectives embrace Education, Tourism and Conservation by establishing a genetic bank of threatened species as a resource to aid future revegetation projects. Plant provenance is the highly modified marginal agricultural land from across Southern Australia, particularly our local 'Murray Mallee'.

In 17 years, with the support of the Coorong District Council, and many other organizations including the Australian Plants Society, the Olympic Landcare Project, local businesses and individuals from around the country and aided by volunteers, 12 Hectares of the site has been transformed into a spectacular oasis of plants.

The principal mover and shaker has been Kaye Bartlett from Jervois; the arboretum's inaugural and ongoing secretary. Kaye has guided volunteers with her immense knowledge of Australian plants coupled with her great understanding of gardening principles punctuated by her enthusiasm, commitment, drive and vitality.



Ivan Holliday Medal recipient Kaye Bartlett and APS SA President Michael Anlezark at the award ceremony.

On 21 November 2010 Kaye was awarded the prestigious Ivan Holliday Medal by the Australian Plants Society SA Region, Inc. This acknowledges Kaye's untiring commitment to furthering the study, conservation and growing of Australian plants, particularly through her 17 years of commitment to this Arboretum

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AUSTRALIAN NATIVE PLANTS SOCIETY (AUSTRALIA) INC. (ANPSA)

President: Paul Kennedy: E-mail: hakeaholic@aapt.net.au

Secretary: Carolyn Edwards 765 Lemnos North Road Congupna VIC 3633

Email: jcedwards@mcmedia.com.au

Website: <http://anpsa.org.au>

AUSTRALIAN PLANTS SOCIETY NSW LTD

President: Graeme Ingall

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PO Box 5026, Old Toongabbie NSW 2146 Tel. (02) 9631 4085. Fax. (02) 9631 4293.

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AUSTRALIAN PLANTS SOCIETY, S.A. REGION INC.

President: Michael Anlezark, 25 Victoria Road, Clare, SA 5453. Tel. 0419 838 321, (08) 8641 9118 Email: aalbg@portaugusta.gov.au

Secretary: Linda Gowing, PO Box 304, Unley, SA 5061. Tel. (08) 8303 8055 (w)

(08) 8388 3004 (h) Email: linda@shadygrove.com.au

Email: info@australianplantssa.asn.au Website: www.australianplantssa.asn.au

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Email: wildflowers@ozemail.com.au

Website: <http://members.ozemail.com.au/~wildflowers/>