










DARLINGTON AND SURROUNDS


LOCAL FLORA AND BUSHLANDS




406 LOCAL SPECIES PHOTOGRAPHED

Includes notes on the History of the South-West Botanic Province, Invasive Plants and Native Flora Appreciation.

THIRD PRINTING


RESEARCHED AND COMPILED BY

CLIFF & SHARRON BURNS

SPECIAL ASSISTANCE BY
ANNE TAYLOR and PETER DAY










PREFACE

The Purpose

The Shire of Mundaring, Western Australia, comprises some 20 “villages” of which most are surrounded by bushlands. The purpose of this book is to provide local residents with an opportunity to learn about and appreciate an incredible asset……The Australian bush and its flora.

- It is a place of never-ending beauty and surprise to be thoroughly enjoyed by everyone.
- It also requires a great deal of protection and careful management if we are to preserve it for future generations.

The Authors

Darlington, one of the “villages” in the Shire of Mundaring, has been our home for 36 years. During that time we have spent countless hours walking through and researching the surrounding bushlands. Located so close to our villages’ doorsteps, it is easy to become captivated and enthused about such an awesome asset. These bushlands are packed with a huge range of magnificent native flora. If by providing this book at no cost to residents you also become enthused then we will have fulfilled the task of repaying some of the rewards that these bushlands have provided for us.

The authors on the Bibbulmun Track

We were not surprised to find that the more we observed and learned about our local flora, the more we found we did not know. However, with a great deal of research and the wonderful assistance of several people (mentioned below) who are well credentialed in such matters it is possible to accurately share some of the beauty, benefits and challenges we have discovered.

This publication follows the booklet titled “Darlington and Surrounds – WALK TRAILS AND CIRCUITS” published for local residents in October 2007 (Second edition 2017). Since compiling that publication we have continued our research and have taken many thousands of photographs especially of the local native flora.

At the same time we became very familiar with many of our local environmental challenges such as introduced invasive species (weeds), compromised bio-diversity health and disease, present and past indiscretions, the current poor allocation of resources and a surprising lack of knowledge. It has been our endeavour to share some of these findings and resources within these pages. We trust that you will find the information and photography as interesting, thought-provoking and rewarding as we have. We look forward to seeing you out on the tracks.

Acknowledgements

Although this book is the result of several years of research by the authors it has also been produced with the remarkable support and valuable voluntary contributions from many people and organisations.

In particular we wish to express our appreciation to Anne Taylor, lecturer in conservation and land management and a local Darlington resident, who volunteered many hours of her valuable time assisting with the identification of native flora species. Without the benefit of Anne’s skills, support and wise counsel the book would have been lacking in its information and detail.

We also wish to express our appreciation to Peter Day who is unquestionably the local authority on invasive plants in the Darlington area. Peter has for many years been the driving force in the fight to rid Darlington of unwanted and damaging plants. Our local bushlands have a far healthier environment due to his relentless efforts. He contributed considerable valuable information to the chapter on invasive plants.

On many occasions WA Herbarium Curator Kevin Thiele and the various herbarium staff including Juliet Wege, Andrew Brown, Rob Davis, Ryonen Butcher, Bruce Maslin and Mike Hislop were very generous with their time and quick to share their knowledge and resources. Their guidance regarding plant classification and the correct identification of the species included in the book is very much appreciated.

A special thankyou goes to Una Bell for adding her valuable identification skills and for her excellent advice regarding the book’s publication.

Thanks also to Robyn Rudeforth (Mundaring Garden Centre) for running her very experienced eyes over some of the photographs and to Justin Brown (The Chookman) for sharing his knowledge and website on Orchids (see page 122 for his website details).

As with similar publications authors access information from a very large number of sources and over a very long period. Several excellent references and valuable contacts are listed and acknowledged on page 122.

We also wish to thank the office of the Shire of Mundaring, their Environmental Advisory Committee chaired by Darren Murphy, Environment and Sustainability Officer Toni Burbidge and other dedicated staff for supporting the project and their efforts in seeking funds for its printing and expenses. In particular Bushcare Officer Alison Dugand provided a great deal of encouragement and support during the early stages.

Project Partners

The cost of the second reprint has been mainly funded by the Shire of Mundaring. The Cities of Kalamunda and Swan, and Eastern Metropolitan Regional Council also contributed to the cost of the printing. The authors acknowledge the genuine interest of the Shire, the Cities and the Council in the publication and its objectives. Their decision to underwrite the production costs makes the book available free of charge to local residents, visitors, environmental volunteers, educational institutions and other organisations. The original print was funded by Lotterywest (Gordon Reid Natural Heritage Foundation). The authors received no personal income or commission from the project.

Publication compiled and Published by: ..... Cliff and Sharron Burns
Book Design and Photography by: ..... Cliff and Sharron Burns
First edition: ..... June 2011
Reprinted March 2013
Reprinted (with additional information) December 2018
Copies available: ..... The authors - 9299 6696, cliffburns@iprimus.com.au
Shire of Mundaring, City of Kalamunda, City of Swan and Eastern Metropolitan Regional Council.

ISBN (International Standard Book Number) 978-0-9806454-1-5

This publication is provided free of charge for residents and education purposes. It must not be sold.

FOREWORDS AND CONTENTS

Forewords

Western Australia's wildflowers are amongst the most spectacular and botanically interesting in the world. They are also amongst the best-known and best-loved, growing prolifically as they do within and around our capital city, particularly along the Darling Range and Scarp. There are also many, many of them. A lifetime could be spent and still there would be new and spectacular wildflowers to see. This adds to their attraction. No-one who is interested in wildflowers has ever run out of them!

This wonderful book provides a photographic guide to wildflowers encountered in the area. Its authors, Cliff and Sharron Burns, got the wildflower bug while walking and photographing in some of the many bush reserves in the district, and felt that sharing their wonder would help their community. The fact that they have distributed this book for free, supported by funding for printing, is an indication of both their enthusiasm and their sense of community spirit. I congratulate them on both.

The book is also scientifically rigorous and professional. Scientific names and an indication of where each species fits into the system by which botanists classify them will help readers get a sense of relationships among wildflowers and where they fit into the great scheme of life. The photographs are excellent, and it will be possible to identify many species accurately using this simple and attractive guide.

While many wildflowers are common, many others are rare and becoming more so as a result of weeds, feral animals and other threats. If this book helps engender a greater affection for and knowledge of wildflowers in the community, as I expect it will, it will have played a large role in helping conserve our natural heritage for future generations of wildflower lovers.

Associate Professor Kevin Thiele (Curator, Western Australian Herbarium)

Charles Fraser (Botanist on board the HMS *Success*) whilst undertaking a detailed examination of the Swan River and eastward in 1827 described, what we now refer to as "The Hills", the view "magnificent", the timber "stupendous" and the plants to be "beautiful". Why then do we often alter much of what we see, when it is already magnificent, stupendous and beautiful?

Biodiversity is a term that describes all kinds of organisms such as animals, fungi and plants, the diversity of the ecosystem processes that enable species to thrive, the genetic diversity within species, and the diversity of their habitat. It is the most important, yet underrated aspect of the environment. This book focuses on components of that biological diversity and its vast array of unique wildflowers in an area located within the Darling Scarp.

The book also reveals the desire of very dedicated locals to share its intrinsic natural values. I am constantly inspired by such individuals, and it is for this reason, I do what I do.

Alison Dugand (Biodiversity – Bushcare Officer)

Contents

THE SOUTH-WEST REGION OF WESTERN AUSTRALIA

Definition

Many researchers of Western Australian native flora (wildflowers) define the boundaries of the south-west region differently. However in general terms the botanic region known as the South-West Botanic Province is an area south and west of a roughly drawn line between Shark Bay and Esperance as shown on the map below.

Internationally Recognised Biodiversity "Hot-spot"

Australia is home to around 10% of the world's total biodiversity. It has an estimated 20,000 species of native vascular plants of which 16,000 are not found anywhere else in the world. The South-West Botanic Province, an area of no more than 5% of Australia's total land mass, is home for about 9,000 of those plant species and represents at least 200 plant families.

With its unique native flora the Province, "is considered amongst the world's 25 biodiversity hotspots". (WA Herbarium website) To appreciate why the south-west of Western Australia is so blessed with such an amazing array of native plants and is so recognised world-wide we take a brief look at the origins of the area and the associated conditions it has experienced over a very long period. (For more information regarding biodiversity hotspots see the "Native Flora Appreciation" chapter, page 116)

A Matter of Age and Isolation

Since the formation of Earth 4,600 million years ago the movement of its continental plates has produced massive changes to its surface. For only about 45 million of those years Australia has been completely isolated from other land masses.

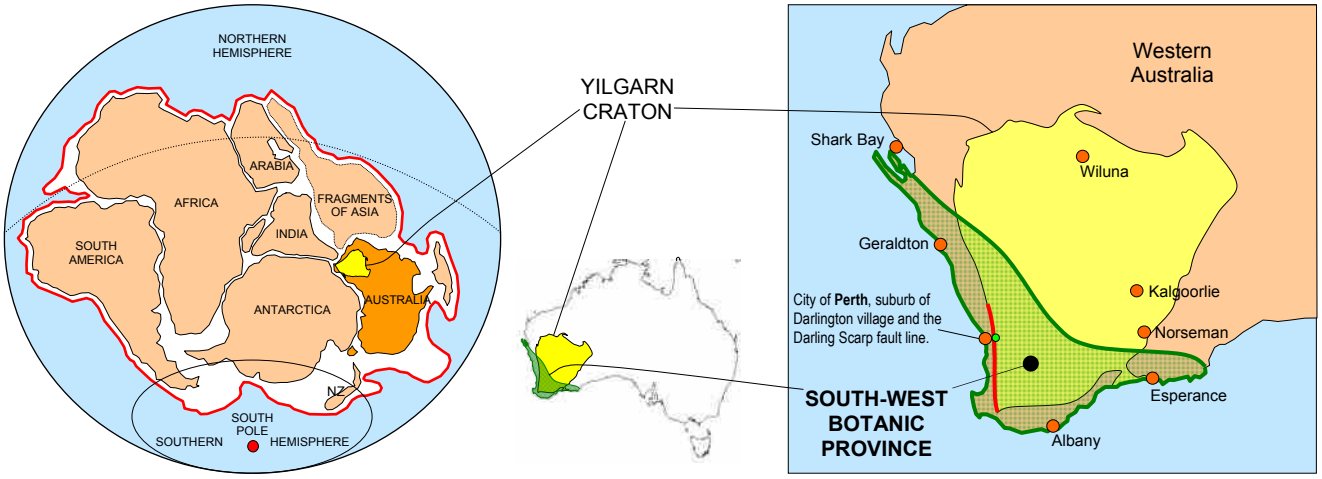
In particular the south-west region has a unique set of conditions that has fostered new and unique flora and fauna species.

ISOLATION For at least 30 million years the region has been totally isolated from the rest of Australia as well as other continents. It is like an island isolated by oceans to the south and west, and deserts to the north and east.

POOR SOIL Underpinning part of Western Australia is a massive granite shield called the Yilgarn Craton. Having been above sea level for more than 200 million years the craton has become one of Earth's very old land surfaces. It has been subjected to a long period of leaching and as there has been no major seismic activity to replenish soil fertility for at least 160 million of those years the soil has become nutrient poor.

CLIMATE Since breaking from Gondwana Australia has crept northward becoming hotter, drier and more fire prone.

STABILITY Over tens of millions of years the stable nature of the region has allowed many ancient species to survive without severe interruption, but due to the gradually changing conditions already mentioned a large number of new and unique flora and fauna species not found anywhere else on Earth have been forced to develop.



GONDWANA 140–440 million years ago

THE SOUTH-WEST REGION OF WESTERN AUSTRALIA

The Research Area and the Darling Scarp

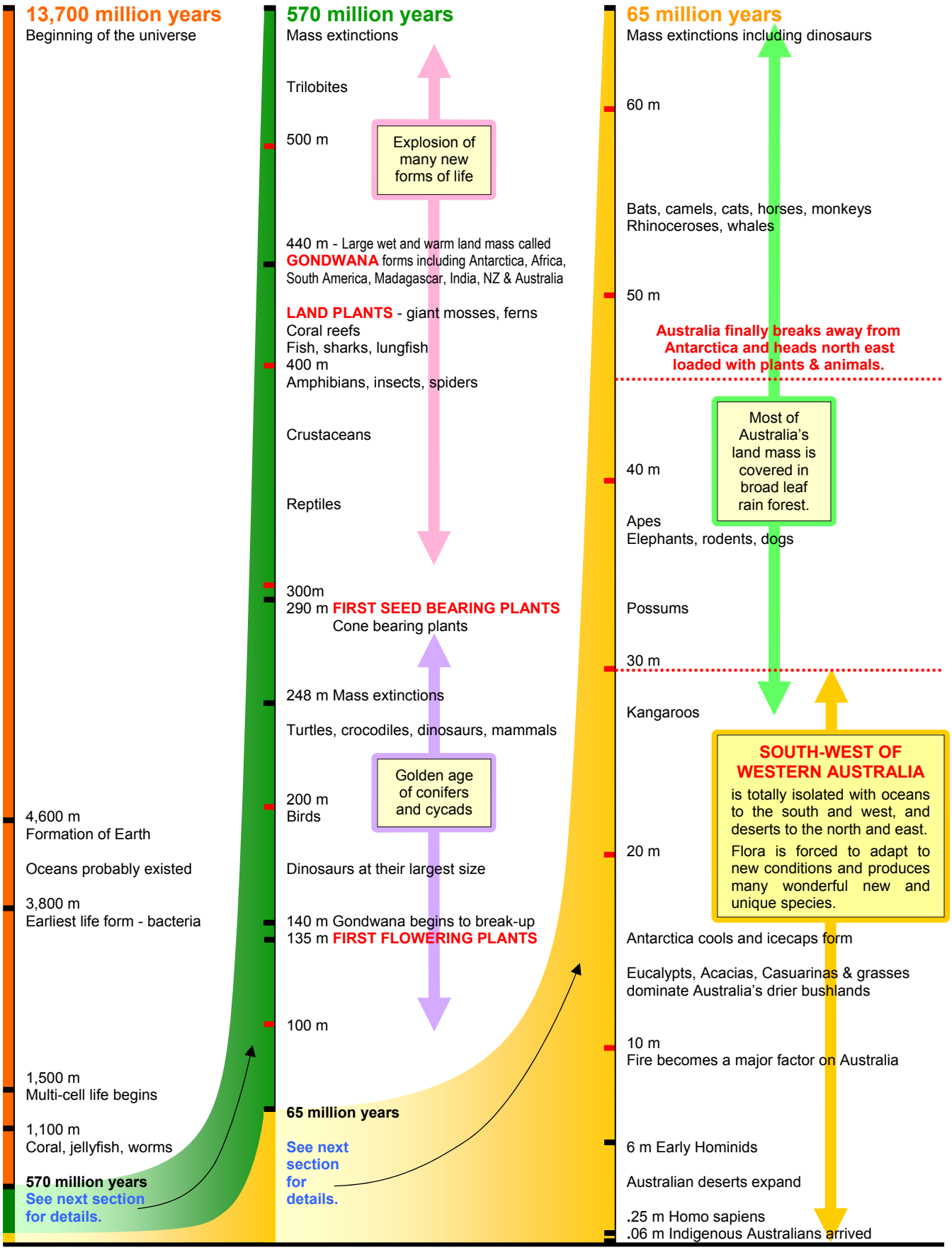
The research for this book was carried out in the 20 square kilometres of bushland that surrounds the Darlington "village". These bushlands are located at the western edge of the Yilgarn Craton and at a height of between 100 and 300 metres above the sandy coastal plains of Perth. This edge is called the Darling Scarp. Over tens of millions of years the local land surface has been slowly landscaped by the effect of warmer temperatures, ever diminishing rainfall, declining seasonal creeks and rivers, and prevailing winds. Today these hills are a picturesque bush environment dotted with naturally sculptured granite rock formations which were formed more than 2,500 million years ago, long before the craton was part of Gondwana. Considering its ancient history it is remarkable how our bushlands have become so diverse in flowering plants.

Every year, especially during spring, a local bush walk will provide a wildflower spectacle as good as any throughout Australia. The bushlands are home to hundreds of species, some with stunning flowers like the Native Fuchsia (*Grevillea wilsonii*), some delicate like the tiny carnivorous Wheel Sundew (*Drosera leucoblasta*), some curious like the Bird Orchid (*Pterostylis barbata*), some majestic like our great Jarrah trees (*Eucalyptus marginata*), some fascinating like the Hakea species and some unusual like the amazing Triggerplants (*Stylidium*).

However, while we enjoy this wonderful privilege, we must continue to be mindful that during the past 180 years the Darling Scarp has suffered much from the often destructive activities of European settlement. Perhaps, if we are more caring and vigilant, our native flora and bushlands will continue to perform again every year without fail.

Timeline for an Ancient Landmass

Depending on which scientist's conclusions we read the dates and the major events differ somewhat. However this graphic provides a simple timeline of our Earth and of Western Australia's origins. It is not provided as a definitive version of events.



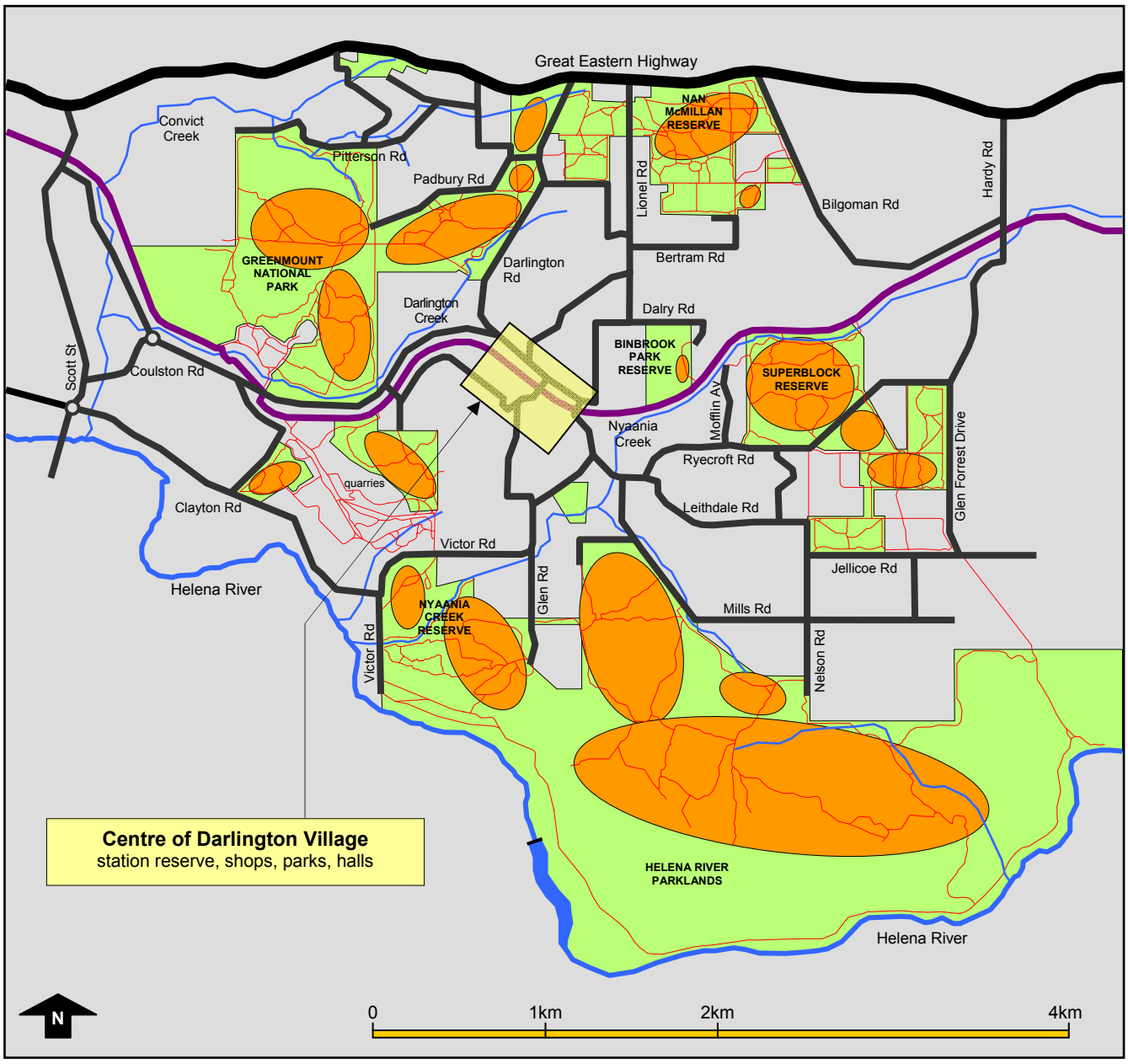
LOCATION OF THE RESEARCH AREA

Where to Find Local Native Flora

There are many locations within the research area, as shown on the map below, where native flora can be viewed in abundance. Because soils and environmental conditions vary each location offers its own special botanic features. Not all species are found in every location and some species are dominant in others.

Access and Walking Trails to Primary Native Flora Areas

Refer to “Darlington and Surrounds - WALK TRAILS AND CIRCUITS”, a booklet by the same authors, for more details about the tracks and trails.



Map Key

- Accessible natural bushland
- Primary native flora location
- Road
- Bush trails and tracks (refer to booklet “Darlington and Surrounds - WALK TRAILS AND CIRCUITS”)
- Railway Heritage Trail
- Creek or river

NATIVE FLORA FOUND, PHOTOGRAPHED AND IDENTIFIED

This chapter is not intended to be a complete catalogue on local flora. It is a simple guide to our "village" bushlands which are home to an amazing variety of native plants (wildflowers). It is estimated that between 550 and 650 different native plant species grow in the researched area of which 406 have been identified, photographed and included in this book.

To ensure that readers may find each species displayed all photographs (except for one species) have been taken within the areas shown on the native flora location map. However, when looking for flowers it is important to note that all flowering plants are subjected to seasonal conditions. Generally the season that provides us with the most prolific displays is spring (mid July – mid November). Even then flowers may be early or late depending on climatic conditions such as early or late seasonal rainfall, sunshine and temperature. Other seasons bring their own special viewing such as Banksia, Jarrah, Christmas tree and Mistletoe blossoms during summer, and Marri and Wandoo tree blossoms in autumn.

For those interested of photographing our flora you do not require expensive, fancy and sophisticated cameras. Our digital camera with a 10 X zoom lens and a simple macro facility only cost $310. With a little practice and work cropping images on the computer anyone can produce very good quality photographs. It is so inexpensive, convenient and easy these days.

Scientific Names

Current scientific names and family classifications are used in accordance with Florabase (WA Herbarium website) at the time of printing. Plants are listed alphabetically under their scientific family names and common names are included if they are known. Alphabetical indexes for scientific names and common names appear at the end of the book for easy reference.

Key to: PLANT HEIGHT
The widest range or maximum height of each plant is shown. Plants vary greatly depending on local conditions. Height shown may not be a true indicator of local plants.
Eg: 0.3-1m , 20-40cm , up to 3m , climber etc.

Key to: 5 METRE HIGH TREES
To indicate those plants that can grow to a height of at least 5 metres a purple highlight has been placed around the photographs and text.

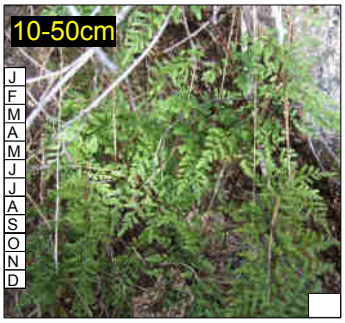
January	J
February	F
March	M
April	A
May	M
June	J
July	J
August	A
September	S
October	O
November	N
December	D

Key to: FLOWERING TIMES
The left hand edge of each photographed species displays a graphic indicating the months during which that particular plant is most likely to flower. Also there is a box to tick when you discover the plant in the bush.

Orange indicates the flowering period

ASPLENIACEAE, DENNSTAEDTIACEAE, PTERIDACEAE (syn. ADIANTACEAE) Some Fern families

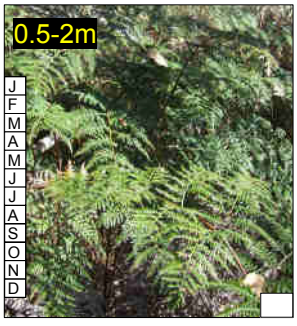
Usual family characteristics: Ferns are some of the earliest land plant families on Earth evolving some 430 million years ago. They are not flowering or seed producing plants. Their survival depends upon the production of spores and root spread which is determined by seasonal rains. Ferns are very common in our bushlands particularly in damp areas around rocky outcrops and crevices (Rock, Blanket and Bristly Cloak ferns), and damp creek beds or swampy areas (Bracken).



Cheilanthes austrotenuifolia (PTERIDACEAE)
Rock Fern

Cheilanthes distans (PTERIDACEAE)
Bristly Cloak Fern

Pleurosorus rutifolius (ASPLENIACEAE)
Blanket Fern

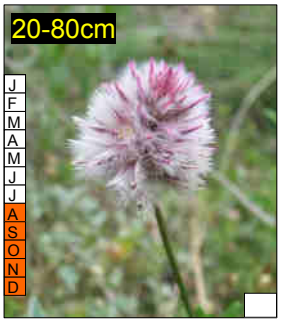


Pteridium esculentum (syn. *Pteridium esculentum*) (DENNSTAEDTIACEAE)
Bracken

AMARANTHACEAE — Amaranth family

Usual family characteristics: These plants are mostly herbs with fluffy globular flower heads surrounded by dry prickly bracts. Australia has about 150 species mainly in drier inland areas.


Ptilotus declinatus
Curved Mulla Mulla





Ptilotus drummondii
Narrowleaf Mulla Mulla


Ptilotus esquamatus

BUSHWALKING - HELPFUL HINT

One of our great treasures is our bushland and one of our great pleasures is to walk through it.

There are a few simple things that all of us can do to help protect this treasure for future generations. **Minimum impact is the way to go.**

- Keep to the existing trails and tracks. Avoid taking 'short-cuts'.
- Retain your rubbish and dispose of it correctly.
- Never pick wildflowers or destroy native plants.
- Help reduce the weed problem as demonstrated in the Invasive Weeds chapter in this book, page 116.
- At all times keep dogs on a lead.
- Never attempt to feed or catch fauna of any type.
- Avoid moving rocks and fallen vegetation. They are habitat for fauna.
- Do not light fires.
- Take photographs and memories and leave only footprints.

These specimens are all of the same species. *Ptilotus* species display many variations. For instance the leaves in these plants differ a great deal. The top variety has spinach-shaped red-veined leaves and the lower variety has narrow leaves.

Ptilotus manglesii

Rose-tipped Mulla Mulla or Pom Poms

APIACEAE — Carrot family

Usual family characteristics: This is a large family mostly of weedy herbs with about 3,000 species world-wide. The leaves have an aromatic carrot smell when crushed. Australia has around 200 species. They can be highly toxic plants.

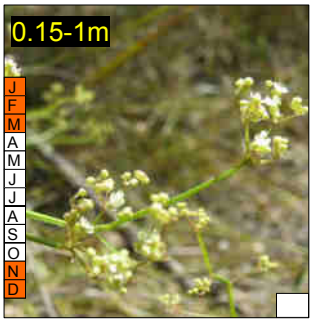
Actinotus leucocephalus

Flannel Flower

Eryngium pinnatifidum

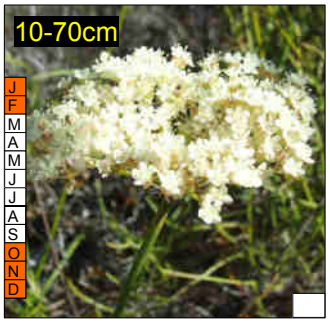
Blue Devils


Pentapeltis peltigera (syn. *Xanthosia peltigera*)



Platysace compressa (syn. *Trachymene platyptera*)

Tapeworm Plant




Platysace juncea (syn. *Platysace kochii*)


The authors have not seen this species within the location map area but other local wildflower enthusiasts claim that it has been sighted in the Superblock area. These 3 photographs were taken in Mahogany Creek.

Xanthosia atkinsoniana


Xanthosia huegelii (syn. *Xanthosia pusilla*)

ARALIACEAE — Ginseng family

Usual family characteristics: Until recently these species were part of the APIACEAE family. They can be shrubs, climbers and herbs of which some have an aromatic carrot smell when crushed.



underside of flower

Trachymene coerulea

Blue Lace Flower

ASPARAGACEAE (syn. ANTHERICACEAE) — Asparagus family

Usual family characteristics: These plants are mostly perennial herbs usually with rhizomes. They usually die back during the drier months and shoot again with winter rains. They often have glossy or waxy leaves.


found in most bushlands

found on a rocky outcrop amongst moss
This species has more than 2 basal leaves.

seed pods forming on same plant

Chamaescilla corymbosa

Blue Squill

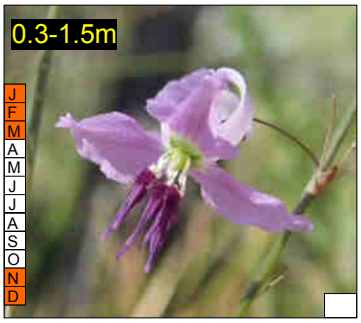

This species has 2 basal leaves.

Chamaescilla versicolor (syn. *Chamaescilla corymbosa* var. *latifolia*)

WHAT TO PLANT - HELPFUL HINT

In your garden plant local native plants for the following reasons:

- Local animals, reptiles, insects and birds have for millions of years developed a co-dependency with certain local flora species. That link is vital for a healthy and natural local eco-system.
- Local flora is naturally adapted to local conditions.
- It is important to protect and promote our local flora heritage.
- Introduced species often dominate, becoming a threat to local flora.
- Some local flora species are depleted and need extra planting.
- Introduced species generally support far fewer important insects.
- In combination local species have a special local beauty.





leaves often wither before flowering occurs

Dichopogon capillipes (syn. *Arthropodium capillipes*)

Nodding Lily

Laxmannia ramosa

Branching Lily

PYGMY POSSUM

Laxmannia sessiliflora

Laxmannia squarrosa (syn. *Laxmannia morrisii*)

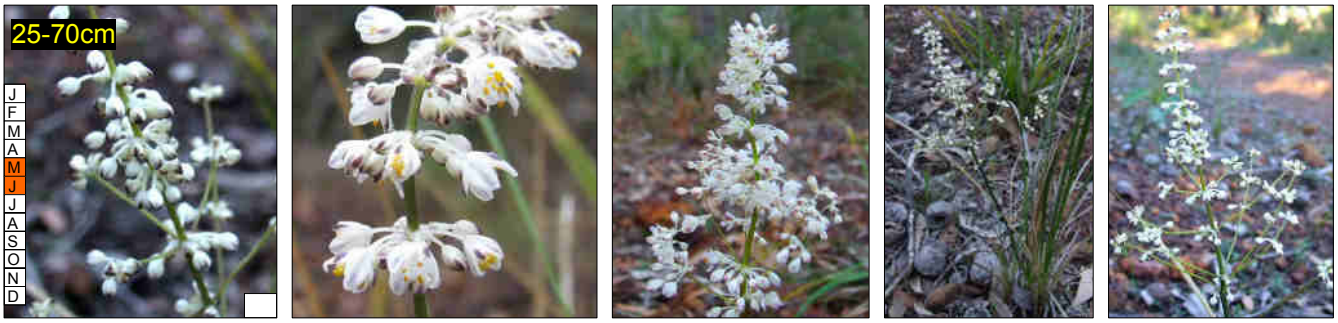
False Borya

Lomandra caespitosa

Tufted Mat Rush

Lomandra micrantha

Small Flower Mat Rush



Lomandra nigricans (syn. *Lomandra endlicheri*)

As with many species size and height may vary considerably. In photographs 1 & 2 the flower heads were 3mm x 20mm located at the top of 250mm stalks and the leaves were 250mm x 4mm. In photographs 3, 4 & 5 the flower heads were 10mm x 100mm at the top of 400mm stalks and the leaves were 600mm x 10mm. As these plants are monoecious (single sex plants) it is possible that size may vary depending on its sex.

Lomandra preissii
Preiss's Mat Rush

Lomandra purpurea
Purple Mat Rush

Lomandra sericea
Silky Mat Rush

Lomandra suaveolens

Sowerbaea laxiflora
Purple Tassels

flat stems

This is a rare plant. (Priority 3 – Dept of Environment and Conservation). It is not currently considered as an endangered species but it is in need of further survey.

Thysanotus anceps

Two-sided Fringed Lily

Thysanotus dichotomus

Branching Fringed Lily

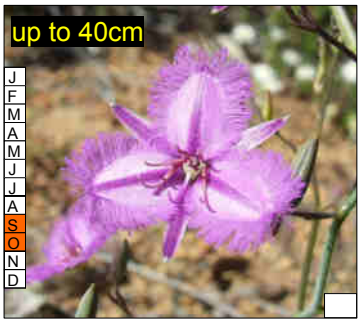
The usual flower colour for this spectacular species is purple as shown in the first row of photographs. Occasionally the same species produce some odd and beautifully coloured varieties as shown in the second row.

The flowers of this species seem to have a curious tendency to open mid morning following a period of direct sun light exposure and then close early afternoon when it has had enough exposure for that day. It does not seem to be typical of all Fringed Lily species but can be observed in other plant families.

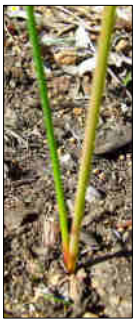
Thysanotus multiflorus

Many-flowered Fringed Lily


Thysanotus patersonii
Climbing Fringed Lily

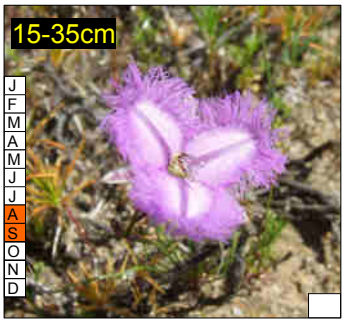




uncommon white variety long cylindrical basal leaf

Thysanotus scaber
Rough Fringed Lily



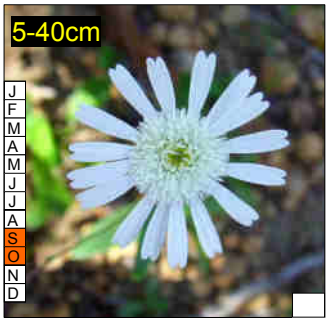


Thysanotus sp. (possibly *Thysanotus gracilis*)
Slender Fringed Lily


Thysanotus sparteus
Broom Fringed Lily

ASTERACEAE Daisy family

Usual family characteristics: This is one of the world's large plant families with about 25,000 species with about 1,000 of those native to Australia. The flower heads appear daisy-like but the actual flowers are usually tiny and compact and are surrounded by bracts (modified leaves) that appear like petals. They are small to large herbs with bitter tasting leaves.

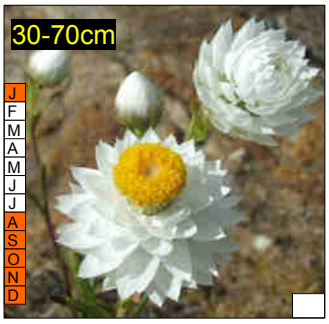


Asteridea pulverulenta
Common Bristle Daisy

Brachyscome iberidifolia
Swan River Daisy

Craspedia variabilis (syn. *Craspedia glauca*)
Billy Buttons

ROCKY OUTCROP, WINTER POOLS, MOSS & LICHEN





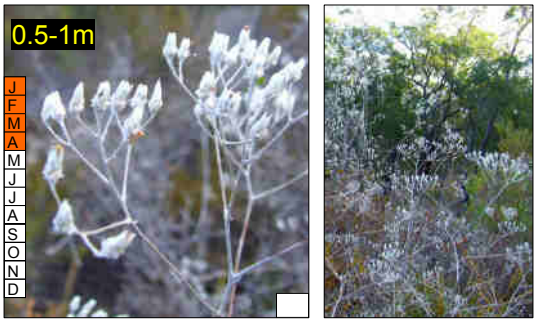
Helichrysum macranthum
Everlasting Daisy

Hyalosperma cotula (syn. *Helipterum cotula*)
Everlasting Daisy

Lawrencella rosea (syn. *Helichrysum roseum*)

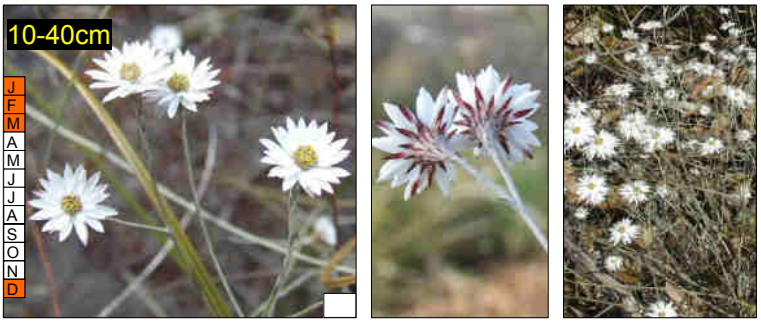
Millotia myosotidifolia

Olearia paucidentata
Autumn Scrub Daisy



This is a rare plant. (Priority 3 – Dept of Environment and Conservation). It is not currently considered endangered but it is in need of further survey.

Pithocarpa corymbulosa



underside of the flower

Pithocarpa pulchella (syn. *Pithocarpa achilleoides*)
Beautiful Pithocarpa

Podolepis lessonii

Pterochaeta paniculata (syn. *Waitzia paniculata*)

Senecio hispidulus
Hill Fireweed


Senecio pinnatifolius (syn. *Senecio lautus*)
Variable Groundsel

Siloxerus multiflorus (syn. *Rutidosis multiflora*)

BOBTAIL LIZARD



Trichocline spathulata (syn. *Amblysperma spathulatum*)
Native Gerbera

BORYACEAE

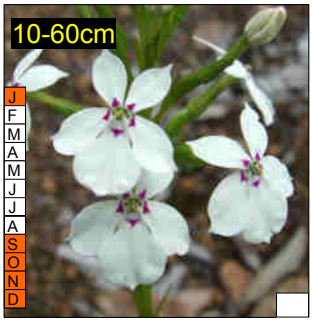
Usual family characteristics: These are mostly small plants which die back to brown with dry summer soils but have the ability to quickly regenerate with rains. They are common on moist and mossy rocky outcrops and appear in open bushland.



Borya sphaerocephala
Resurrection Plant or Pin Cushions

CAMPANULACEAE (syn. LOBELIACEAE) Bellflower and Lobelia family

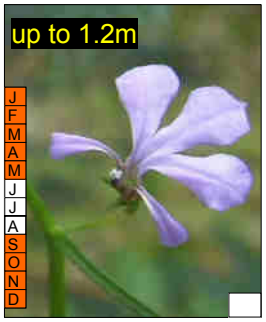
Usual family characteristics: These plants are mostly small annual or perennial herbs. The flowers have 5 petals and in some species they unite to form a tube. Australia has about 50 species.



The leaves usually wither before flowers appear.

Isotoma hypocrateriformis

Woodbridge Poison



Lobelia anceps (syn. *Lobelia alata*)

Angled Lobelia

The leaves and stem usually wither and die while the plant is in flower.

Lobelia gibbosa

Tall Lobelia

Lobelia rhombifolia

Tufted Lobelia

Lobelia rhytidosperma

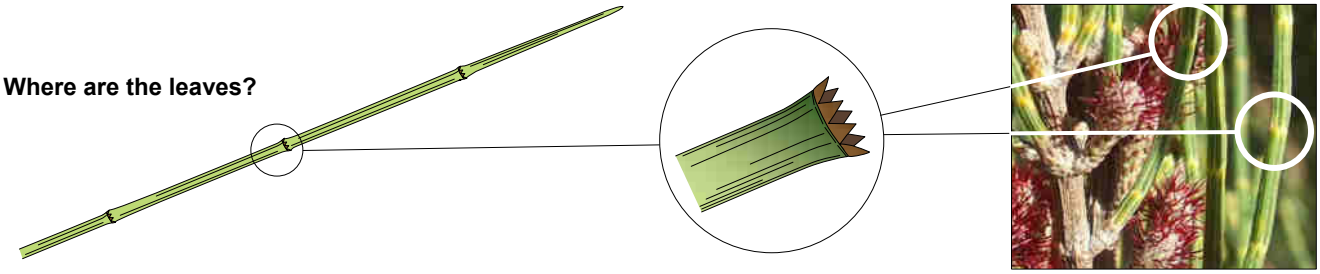
Wrinkled-seeded Lobelia

QUENDA (BANDICOOT)

CASUARINACEAE — Sheoak family

Usual family characteristics: Sheoaks are a small family of ancient plants which existed well before most other Australian flowering plant species. They have separate male and female trees. Male trees produce clouds of pollen from orange coloured flowers towards the ends of their branchlets (needles) which wind-pollinate the small red flowers attached to the woody stems of female trees standing close by. The female tree then produces woody seed cones.

Where are the leaves?



These trees and shrubs usually have a drooping appearance with needle-like branchlets which are not leaves. If you examine the nodes along the branchlets through a magnifying glass you will see miniature brown teeth-like scales as shown in the illustration. These are the leaves.
Each species has a different number of leaves. Usually the Forest Sheoak has 6 leaves, the Rock Sheoak has 8-15 leaves and the Dwarf Sheoak has 5 leaves.

typical bark of a mature tree

With trunks to a diameter of up to 60cm or more Forest Sheoaks have a robust appearance. The bark has shades of grey and brown with a reddish tinge. It is a very common species growing mainly in laterite soils throughout the Jarrah forests. These female (left) and male (right) trees are located near the closed section of Padbury Rd.

male tree flowers

female tree flowers and seed cones

Allocasuarina fraseriana (syn. *Casuarina fraseriana*)
Forest Sheoak

male tree flowers and foliage

female tree flowers and seed cones

This is a slender tree with a trunk usually no more than 15cm across. The bark displays more grey than brown and has a dark longitudinal fissure-like appearance to it. The branchlets (needles) are dark green. Rock Sheoaks are a common tree and are often seen around granite outcrops

Allocasuarina huegeliana (syn. *Casuarina huegeliana*)
Rock Sheoak

male shrub and flowers

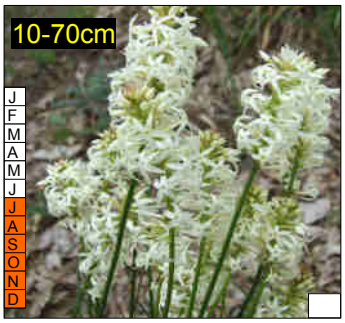
female shrub, flowers and seed cones

This species has a woody shrub appearance. It has grey-green branchlets sometimes with shades of pink. It is quite common in bushlands around Darlington.

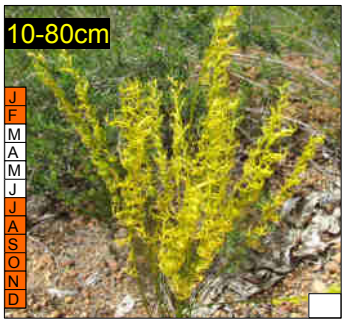
Allocasuarina humilis (syn. *Casuarina humilis*)
Dwarf Sheoak

CELASTRACEAE (syn. STACKHOUSIACEAE) — Staff Tree family

Usual family characteristics: This is a small family with Australia being home to 25 of the world's 27 species. They are annual or perennial herbs with flowers that usually have 5 petals that unite to form a throated tube.



Stackhousia monogyna (syn. *Stackhousia georgei*)
White Candles



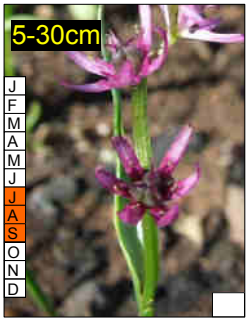
Tripterococcus brunonis (syn. *Stackhousia brunonis*)
Winged Stackhousia

COLCHICACEAE

Usual family characteristics: These are herbs appearing annually from rhizomes. They have flowers that usually appear waxy and white. The fruit is a capsule with three segments.


Tall seed stalks remain in the bush for long periods.
Burchardia congesta (syn. *Burchardia umbellata*)
Milkmaids


Burchardia multiflora
Dwarf Burchardia




Wurmbea dioica (syn. *Wurmbea humilis*)
Early Nancy

Wurmbea pygmaea

CRASSULACEAE — Stonecrop family

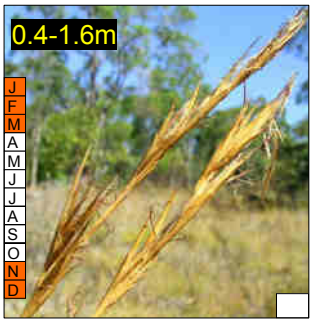
Usual family characteristics: These plants are small herbs usually with succulent leaves and very small flowers.

Crassula colorata (syn. *Crassula intricata*)
Dense Stonecrop

CARNABY'S BLACK COCKATOO

CYPERACEAE — Sedge family

Usual family characteristics: Sedges are very common throughout the bush. They often have sheathing leaves on their long upright stems. They are perennial herbs and are often difficult to identify separately. Below are some example species.



Cyathochaeta avenacea
Grass Sedge

Gahnia aristata
Saw Sedge

Lepidosperma sp.

WESTERN GREY KANGAROO

Lepidosperma sp.

Lepidosperma sp.

Lepidosperma sp.

flat stalks

Lepidosperma squamatum

Sword Sedge

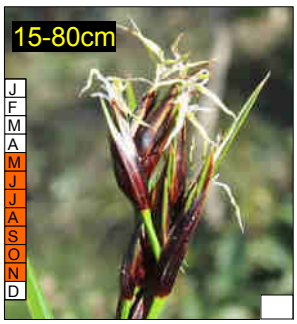
round stalks

Lepidosperma tenue

Sword Sedge

Mesomelaena tetragona

Semaphore Sedge

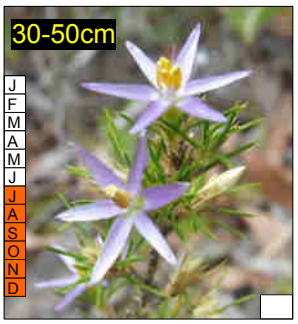


Tetraria octandra (syn. *Tetrariopsis octandra*)

Eight-anthered Sedge

DASYPOGONACEAE — Dasypogon family

Usual family characteristics: There are about 65 species found in Australia mostly in the South-West Botanic Province. They appear as small perennial herbs or large grasstrees.

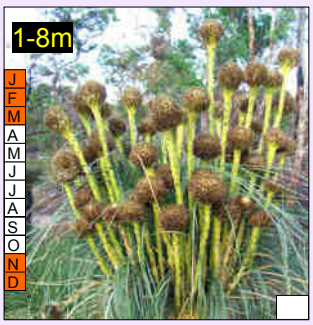




The colour of the stamens on this species change from yellow to red with age.

Calectasia narragara

Blue Tinsel Lily






At first glance *Kingia Australis* appears similar to *Xanthorrhoea* species however the two species are from two completely different botanic families and are not even closely related. Their growth rate is very slow at around 1.5cm annually but can grow to heights of 8m and live more than 400 years. They usually have a single trunk and rarely divide into more. Unlike *Xanthorrhoea* which usually has a single flower spear *Kingia* can have up to one hundred drumstick shaped flower stalks.

Kingia australis

Drumsticks or Grasstree

DILLENIACEAE Hibbertia family

Usual family characteristics: The obvious usual characteristic of this family is their prominent bright yellow buttercup flowers with 5 petals, often notched. Usually they are small to medium sized woody shrubs with tough leaves. They are commonly known as buttercups or guinea plants and are found throughout Australia.

Hibbertia amplexicaulis (syn. *Hibbertia bracteosa*)

The stamens on this species are arranged to one side of the centre of the flower.

Hibbertia aurea

Golden Hibbertia

This species has smaller flowers with stamens arranged in three groups.

Hibbertia commutata

Hibbertia huegelii

Narrow-leaved Buttercup

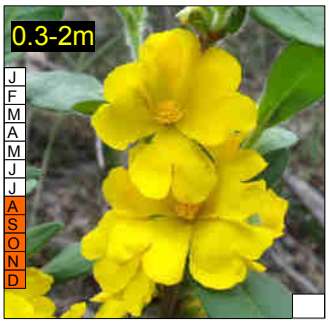

The stamens on this species are arranged to one side of the centre of the flower.

Hibbertia hypericoides

Yellow Buttercup


Hibbertia ovata


Hibbertia pachyrrhiza





Hibbertia serrata

Serrate Leaved Guinea Flower

Hibbertia subvaginata

DIOSCOREACEAE — Yam family

Usual family characteristics: These plants are twining vines with narrow leaves and wing-shaped fruit. There is only one species in the South-West Botanic Province. Its tubers (yams) provided a food source for Aboriginal people.

Dioscorea hastifolia
Native Yam or Warrine

DROSERACEAE — Sundew family

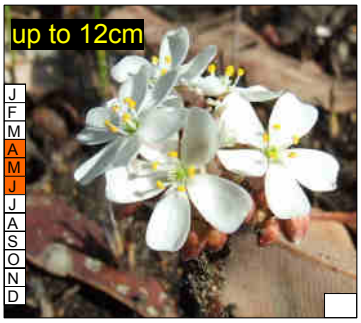
Usual family characteristics: This is a very commonly found family of about 70 species in Australia. Most species are easily located in moist areas like shallow-soiled mossy granite outcrops appearing each year after winter rains. Known as carnivorous plants Sundews capture small insects using a sticky secretion (liquid droplets) from glandular hairs on their leaves. Other hairs then close over the insect which is then digested with the aid of other chemicals. The flowers are usually white, pink or yellow.

Drosera bulbosa
Red-leaved Sundew

HOW TO DESCRIBE OUR BUSHLANDS – HELPFUL HINT

When describing the local bush in the South-West Botanic Province it is handy to think of it in the following general terms.

FOREST	An area where the canopies of trees continually touch or overlap.
WOODLAND	An area where there are continuous gaps between the canopies of trees.
LOW FOREST	Same as above except the canopy is less than 10 metres high.
LOW WOODLAND	Same as above except the canopy is less than 10 metres high.
SCRUB	An area with no trees and where plants are taller than 2 metres.
HEATH	An area with no trees and where the plants are less than 2 metres tall.





The rosette colour can vary a great deal – green, yellow-green, green and red, bright red.




fig. a fig. b fig. c fig. d

Usually the rosette first appears small and almost flat (fig. a), gradually growing to around 10cm across. Sometimes the plant produces a small covered arrangement (fig. b), which gradually opens (fig. c) and flattens to form a rosette (fig. d).

Drosera erythrorhiza

Red Ink Sundew



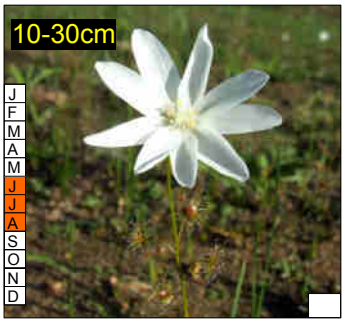
Drosera gigantea

Giant Sundew

Drosera glanduligera

Pimpernel Sundew

STICK INSECT





This species has kidney shaped leaves and 8 or 9 petals (12 is uncommon).

Sticky droplets glistening in the sunlight.

Drosera heterophylla

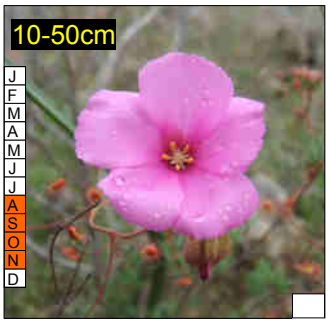
Swamp Rainbow Sundew


Drosera leucoblasta

Wheel Sundew


Drosera macrantha

Bridal Sundew





Drosera menziesii

Climbing Sundew or Pink Rainbow



These photographs were taken in mid-September.
Drosera sp. (probably *Drosera menziesii* subspecies or a variation)



Drosera microphylla
Golden Rainbow Sundew








Occasionally when walking in the bush you come across some plant oddities. Leafy Sundews normally have round stems and leaf stalks as shown in the top photographs but the 4 photographs on the bottom row are of a specimen which had a flat stem (20mm x 4mm at the top and 8mm x 4mm at the base) with bunches of leaf stalks growing on opposite sides of that stem.

Drosera stolonifera
Leafy Sundew

ELAEOCARPACEAE (syn. TREMANDRACEAE) — Elaeocarpus family

Usual family characteristics: This is a very small entirely Australian family. The shrub's lengthy stems are often supported by growing amongst other shrubs. They have regular bell-shaped flowers usually at the end of short stalks.


Tetratheca hirsuta (syn. *Tetratheca viminea*)
Black Eyed Susan

Tetratheca nuda
Grass Tetratheca

MOSS ON GRANITE ROCK

ERICACEAE (syn. EPACRIDACEAE) — Heath family

Usual family characteristics: This is a very common and widespread family with about 360 species across Australia. They are mostly woody shrubs of which many grow up to about 1m high. The leaves are usually small, tough and pointed, and the flowers are often tubular or bell-shaped with some opening wider than others.

Andersonia aristata
Rice Flower

SERGEANT ANT



Andersonia lehmanniana


Astroloma ciliatum
Candle Cranberry


Astroloma pallidum
Kick Bush


Leucopogon capitellatus
Clustered Heath


Leucopogon nutans
Drooping Heath

Leucopogon propinquus
Common Forest Heath

Leucopogon pulchellus
Bearded Heath

Styphelia tenuiflora
Common Pinheath

EUPHORBIACEAE — Spurge family

Usual family characteristics: This family often has separate male and female plants or may display male and female flowers on the same shrub. In some species scars and broken stems will release a milky latex sap like tropical rubber trees.

male flower female flower

Ricinocarpos glaucus
Wedding Bush


Stachystemon vermicularis
Wormflower

FABACEAE (syn. CAESALPINIACEAE) — Cassia family

Usual family characteristics: Recently re-classified as part of the FABACEAE family these are mostly shrubs and small trees. The fruit is a legume appearing like a bean pod.



Labichea lanceolata
Tall Labichea


Labichea punctata
Lance-leaved Cassia or Lance Leaf Labichea

MICRO-CLIMATES - DID YOU KNOW?

As you walk through the bushlands you become aware that the density and the variety of plants changes considerably. This depends on the type of soil in which the plants grow, the amount of rainfall, plant protection and other factors such as the angle of the sunlight to which the area is exposed. These factors can produce a variety of micro-climates.

Generally, the north and west-facing sides of valleys are exposed to a more directly angled sunlight producing a hotter and moisture depleting micro-climate. A good example is the north-facing slopes of the Helena River valley parklands where there is a lower density of plants.

In contrast, the south and east-facing sides of valleys are far more protected due to a lower, less severe angle of sunlight, thus creating a far more moisture retaining micro-climate. Two examples include the south and east-facing slopes within the Helena River catchment area and the area between Padbury Rd and Saw Drive which display higher plant densities.

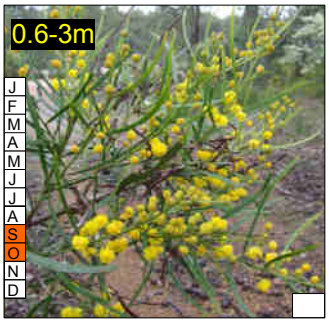
FABACEAE (syn. MIMOSACEAE) **Wattle family**

Usual family characteristics: Recently re-classified as part of the FABACEAE family Australia has about 750 Wattle species which are found widely distributed throughout. There are more than 200 species of Wattle (*Acacia*) in the Western Australian Jarrah forests alone. Wattles start life as a seedling with leaves but most species quickly discard them and are replaced by phyllodes (modified leaf-stalks) which retain plant moisture more efficiently. Prickly Moses is one of the notable exceptions. Mostly trees and shrubs they have many tiny white, yellow or gold coloured flowers which form into tight fluffy spherical or cylindrical (sausage-shape) heads. The fruit is a legume (pod).

Acacia alata
Winged Wattle

Acacia applanata

Acacia barbinervis





The photograph at far right shows small “teeth” at the junction of the phyllode (leaf) and stem, hence its name.

Acacia dentifera

Toothed Wattle


Acacia drummondii

Drummond’s Wattle


Acacia extensa

Wiry Wattle

Acacia lateriticola

LADYBIRD or LADY BEETLE


Acacia nervosa
Ribbed Wattle

Acacia obovata
Wavy-leaved Wattle

RED-TAILED BLACK COCKATOO



Close examination reveals phyllodes (modified leaf-stalks) with 3 rib-like nerves and hooks at their tip from which the species derives its name. The curious curled bark is called 'minni-ritchi' bark.

Acacia oncinophylla
Hooked-leaf Wattle

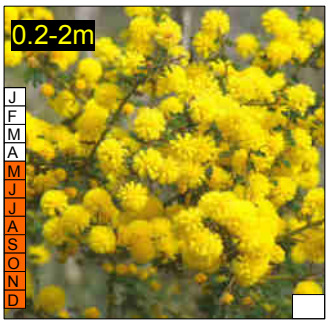





fig. 1 fig. 2 seed pods

Prickly Moses can grow to at least 2m (fig. 1). Fully-grown, dwarf-like variants also grow to only 20-30cm high (fig.2).

Acacia pulchella
Prickly Moses







Because of its extremely variable appearance this species of Wattle is one of the most interesting and yet one of the most frustrating to readily identify. This very common species can appear as a bushy shrub with long slender phyllodes (not true leaves), a new plant with broad phyllodes, a well-shaped tall tree (even to 9m) or any of those combinations. It can be found in most bushlands surrounding Darlington and will often colonize areas that have been disturbed like road-sides. Ants take the seeds of the Orange Wattle to their nests where they eat the seed stalks. In turn the seeds readily germinate often with several plants growing in one location.

This species offers plentiful food and is home to a very large number of insects, birds and small reptiles. On occasions it is prone to attack by a rust fungus resulting in rusty looking globular swellings (galls) on the branches. Also it is prone to attack by a mite which causes the plant to develop dense twisted-looking mazes (commonly called 'witches' brooms') at the end of branches. If these attacks are severe it can shorten the life of the plant.

Acacia saligna (syn. *Acacia cyanophylla*)
Orange Wattle or Golden-Wreath Wattle


Acacia sessilis
Spiny Wattle


Acacia sp. (probably *lasiocarpa* var. *sedifolia*)


Acacia teretifolia


Acacia urophylla

Net Leaved Wattle



Belonging to the same family as the *Acacia* species this is a graceful tree which does not look as if it belongs in the South-West Botanic Province. It is a common species in some southern coastal areas, along many rivers in the Darling Scarp and wet areas of the western coastal plain. It can grow to heights of 10m and has cream coloured bottlebrush shape flowers.

Paraserianthes lophantha (syn. *Albizia lophantha*)

Albizia

DID YOU KNOW?

DIEBACK DISEASE IS ONE OF THE MOST SERIOUS THREATS TO OUR BUSHLAND ECO-SYSTEMS

40% or more than 4,000 of the native flora species of the South-West Botanic Province are susceptible to **Phytophthora Dieback**. Pronounced Fy-tof-thora (meaning 'plant destroyer' in Greek) it is a not a fungus as first thought. It is an introduced species of water mould which spends its entire life in the soil and in plant tissue. It attacks the roots of plants causing them to rot. This limits the plant's ability take up water and nutrients resulting in its eventual demise.

The mould's microscopic spores spread easily with the movement of water above and below the surface of the bush floor. In favourable conditions it can spread naturally at a rate of around one metre per year. Human activities such as logging, road construction, earth moving, driving on bush roads and stock movement have all greatly contributed to its spread at a far more rapid rate throughout the region. The disease is deadly to many common species including Jarrah, Banksia, Xanthorrhoea (grass trees), Hakea, Grevillea, Isopogon, Snottygobble trees, Melaleuca, Verticordia, Allocasuarina, Boronia, Hibbertia, many pea plants, Hovea, Dampiera and many, many others. All of these plants are important contributors to the local eco-systems and if they are depleted by the disease small native animals and birds will also be threatened by the loss of local habitat.

BUSHWALKERS: It is helpful to spray footwear with methylated spirits before and after walking through local bushlands.

When bushwalking help prevent its spread by keeping to existing bush tracks. Avoid bush-bashing.

FABACEAE (syn. PAPILIONACEAE) **Pea family**

Usual family characteristics: Recently re-classified as part of the FABACEAE family this is a very large family of herbs, shrubs, trees and climbers. Australia is very well represented with more than 1,100 species. The obvious irregular pea-shaped flowers have one large standard petal at the back (sometimes looking like 2 petals) and 2 smaller wing-like petals that project forward enclosing 2 other fused petals which form into a keel beneath the 'wings'. They are leguminous plants with a nitrogen-fixing ability which improves the soil.



Bossiaea eriocarpa
Common Brown Pea


Bossiaea ornata
Broad leaved Brown Pea


Bossiaea pulchella


Bossiaea spinescens

Chorizema cordatum
Heart-leaf Flame Pea

FUNGUS

Chorizema dicksonii
Yellow-eyed Flame Pea

Cristonia biloba (syn. *Templetonia biloba*)
Horn-leaved Bossiaea

Daviesia angulata


Daviesia cordata

Bookleaf Pea





seed pods that rattle, hence the name

These photographs, all taken in August, may depict more than one variation or subspecies.

Daviesia decurrens

Prickly Bitter-pea or Rattle Pods


New regenerated growth after fire

LIGNOTUBERS - DID YOU KNOW?

As you walk through the bush you will often notice significant new “sucker” growth around a stump of an old-growth tree that has been destroyed. There are 2 interesting points about this type of tree growth.

- New seedlings of many Australian trees develop a swelling at the base of their stems called a lignotuber. As the plant develops the lignotuber will send out a number of young stems forming a low shrub. This may continue for 10-20 years until the lignotuber is about 10cm thick at which time it will send a single shoot which will dominate and develop into a ‘pole’ sapling. Eventually it will shed its lower branches and grow into a mature tree.
- Following the destruction of a tree by logging, fire or breakage lignotubers will provide regenerated growth. Often you will see several new stems developing from one lignotuber.

Because Jarrah (*Eucalyptus marginata)* was the favoured tree by loggers during the early settlement years it is quite common to see new lignotuber regrowth of the species especially in the bushlands east and south of Darlington. Many other Australian tree and shrub species produce lignotubers. Some include other Eucalypts, some members of the Banksia family, Hibbertia, Adenanthos and Hakeas.

Daviesia hakeoides

LICHEN ON GRANITE ROCK

Daviesia horrida
Prickly Bitter-pea

Daviesia preissii

Daviesia rhombifolia

CHRISTMAS (JEWEL) SPIDER


Dillwynia laxiflora (syn. *Dillwynia* sp. A Perth Flora (R. Coveny 8036)

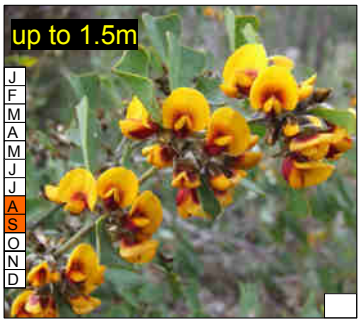
Gastrolobium species and 1080 poison

The name *Gastrolobium* roughly translates as “poison pea”. There has been a great deal of interest in these species for 2 reasons.

- About 40 *Gastrolobium* species contain a poisonous salt called sodium fluoroacetate in their leaves and seeds. Although banned in many countries, in Western Australia where the species grow naturally, local native fauna has developed a tolerance to the poison. Introduced animals such as dogs, cats, foxes and farm animals can die if they ingest the plant or eat a creature that has eaten the plant. In recent years scientists synthesized the salt and developed poisonous meat baits. These baits called 1080 (ten-eighty) are used in the very successful pest control programme called Western Shield to cull foxes, feral cats and dogs. Due to the programme local native population numbers have substantially improved. 1080 was the poison’s catalogue number hence the common name.
- Initially similar non-poisonous pea plants were classified under the genus of *Nemcia* and the poisonous pea plants *Gastrolobium*. It all became too confusing when some Nemcia species were found to contain sodium fluoroacetate and so very recently all these plants were re-classified under the genus of *Gastrolobium.* Classification changes have been adopted by the WA Herbarium.


Gastrolobium capitatum (syn. *Nemcia capitata*)

Bacon and Eggs





Gastrolobium dilatatum (syn. *Nemcia dilatata*)

Wedge-leaved Oxylobium

NAMING OF PLANTS - DID YOU KNOW?

The scientific naming of plants is an ongoing and in many ways a never-ending process. Rules for the naming of plants (nomenclature) are set by the International Code of Botanical Nomenclature. Botanists from all over the world meet at approximately six yearly intervals to make consensus decisions about the botanical names of plants.

Before changes or additions are considered by this international group of scientists a detailed description of the plant satisfying the requirements of the Code must be published in a recognised journal or similar and a specimen lodged with a recognised herbarium. Sometimes differences of opinion and intense debate between Botanists occur during the process.



hairy under the leaf

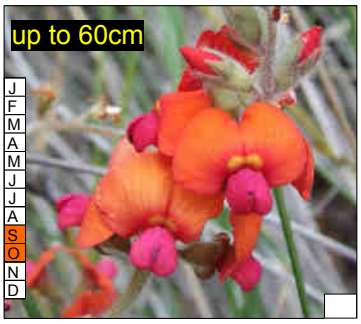
smooth top of leaf

Gastrolobium ebracteolatum (syn. *Oxylobium lineare*)

River Pea


Gastrolobium spathulatum (syn. *Nemcia spathulata*)

Poison Bush

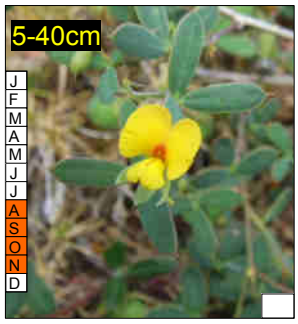




Gastrolobium villosum

Crinkled-leaved Poison

Gompholobium knightianum

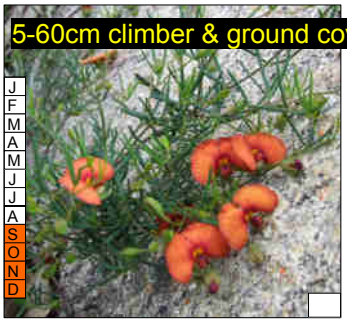


Gompholobium marginatum




usual colours uncommon colour variation typical pea pods

Gompholobium ovatum (syn. *Gompholobium amplexicaule*)





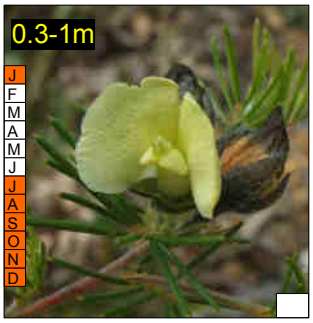

This species has considerable variations, hence its name.

Gompholobium polymorphum

Variable Gompholobium


Gompholobium preissii


Gompholobium shuttleworthii (syn. *Gompholobium asperulum*)





After the petals have fallen hairy red/brown sepals remain, hence its name.

Gompholobium tomentosum

Hairy Yellow Pea


Hardenbergia comptoniana

Native Wisteria


Hovea chorizemifolia

Holly-leaved Hovea


Hovea pungens

Devil's Pins

rarely seen albino variety (white and purple on separate plants)

Hovea trisperma

Common Hovea

front of flower (veins do not usually show) back of flower (veins do show)

Isotropis cuneifolia

Granny Bonnets or Lamb Poison

Jacksonia alata

Winged Jacksonia

Jacksonia restioides

Rush Jacksonia


This plant has long weeping branches with green pointed branchlets (phyllodes). Appropriately named Stinkwood the burnt timber smells like an uncleaned public toilet.

Jacksonia sternbergiana
Stinkwood


Kennedia coccinea
Coral Vine


Kennedia prostrata
Scarlet Runner or Running Postman


Mirbelia spinosa


Pultenaea ericifolia
Woolly-heads



colour variations

flower buds

Sphaerolobium medium

This is a rare but not threatened species (Priority 4 - Dept of Environment and Conservation). It requires regular monitoring.

Templetonia drummondii

MOTORBIKE FROG


This plant has a similar appearance to Stinkwood but does not grow as tall. On its long weeping branches it has 30cm long thin phyllodes (not leaves). The name Swishbush refers to the sound made by the wind blowing through the branches.

Viminaria juncea
Swishbush

GOODENIACEAE Leschenaultia family

Usual family characteristics: Almost all of the approximately 400 species of this family are native to Australia. They are mostly herbs with flowers (locally white, blue or purple) usually appearing like fans or wings and having short tubular throats (often cream, gold or white).

This species is identified by its flattened (two-winged) stems.
Dampiera alata (syn. *Dampiera epiphylloidea*)
Winged-stem Dampiera

This species is identified by its flattened (three-winged) stems.
Dampiera coronata (syn. *Dampiera cauloptera*)
Wedge-leaved Dampiera

uncommon white variation

Dampiera linearis
Common Dampiera

These photographs were taken in late October.
Dampiera sp.


Goodenia coerulea (syn. *Goodenia caerulea*)


Goodenia drummondii

PLANTS AND THEIR FOOD - DID YOU KNOW?

Plants are often fussy about the type of soil in which they grow. For instance, the Forest Sheoak and the Bull Banksia like to grow in laterite soils. These reddish coloured gravely soils are a product of heavy weathering and are rich in iron and aluminium oxides. Others plants such as Granite Featherflower, Granite Petrophile and the Darling Range Ghost Gum love to grow around granite outcrops. Some prefer deeper soils like most large trees and others like certain orchids, some Triggerplants and Pin Cushions enjoy the shallow top soil on granite slopes. Many, like the Christmas Tree will grow in a very wide range of soils.

Goodenia fasciculata (syn. *Scaevola fasciculata*)

Bristly Goodenia



Lechenaultia biloba

Blue Leschenaultia

POLLINATION - DID YOU KNOW?

Insects are attracted by flower colours such as violet, blue and white, while birds are attracted by colours such as red, yellow and orange. This is one of the many interesting factors in the plant pollination process.

Insects (including beetles, flies, bees, butterflies and wasps), birds and small mammals are all essential participants in the life cycle of the various flowering plant species. All these creatures have a co-dependency with certain flora species hence the importance of maintaining and planting local native plants. Wind and water are also important contributors to pollination.


Scaevola calliptera
Royal Robe



Scaevola glandulifera
Sticky Fanflower


Scaevola pilosa
Hairy Fanflower


albino specimen

Scaevola platyphylla
Broad-leaved Fanflower

HAEMODORACEAE Kangaroo Paw & Bloodroot family

Usual family characteristics: Australia has about 90 species with many of these native only to the South-West Botanic Province. They are herbs usually with flat strap-like (sometimes round) basal leaves. Usually they have long stems with flowers appearing at their top. Some have short stems and even no stems. Flowers are often woolly but some are hairless.

This species has smaller, more slender flowers, smaller anthers and longer filaments than *A. manglesii*

Anigozanthos bicolor

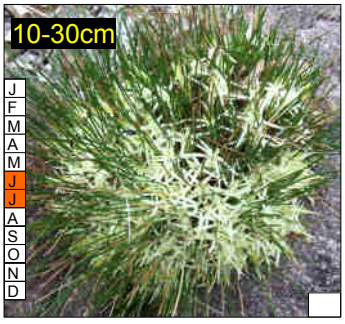
Little Kangaroo Paw

GARDEN ORB-WEAVING SPIDER

The Red and Green Kangaroo Paw is the floral emblem of Western Australia.

Anigozanthos manglesii

Red and Green Kangaroo Paw



Conostylis androstemma

Trumpets

Conostylis setigera

Bristly Cottonhead

Conostylis setosa

White Cottonhead

This species has small papery bracts on the flower stalks

Haemodorum laxum

Broad-leaved Haemodorum

round leaves

Haemodorum simplex

Scented Bloodroot

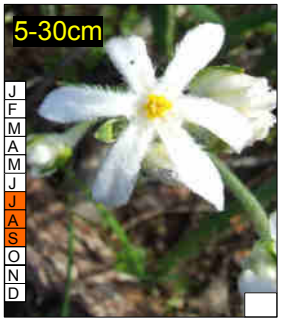
Haemodorum simulans

This species usually has a single branchless stem.

Haemodorum spicatum

Mardja

Tribonanthes brachypetala
Yellow Tribonanthes



Tribonanthes longipetala (syn. *Tribonanthes uniflora*)
White Tribonanthes

HALORAGACEAE — Raspwort family

Usual family characteristics: These are mostly annual and perennial aquatic or terrestrial herbs with small warty fruit.

Glischrocaryon aureum (syn. *Loudonia aurea*)
Common Popflower

SHELF FUNGUS

HEMEROCALLIDACEAE (syn. PHORMIACEAE) — Day Lily family

Usual family characteristics: These are mostly perennial herbs with fibrous rhizome roots. Leaves can be absent or long and pointed. The flowers have a regular star-shaped appearance of various colours. The plant's berry-like fruit contains lots of black seeds.

Agrostocrinum hirsutum (syn. *Agrostocrinum stypandroides*)
False Blind Grass

COMMON BRONZEWING PIGEON

VIEWING PLANTS – HELPFUL HINT

One of the most valuable tools you can carry while walking through the bush is a good quality magnifying glass and /or a jeweller's loupe (magnifier). Viewing flowers at very close range can be new and rewarding experience.

The trigger mechanism of a tiny Trigger Plant, the sticky hairs of a Sundew, the intricate structures of Orchids, the striking beauty of a Native Fuchsia, the delicate petals of a Fringed Lily, or the clusters of Grevillea flowers are all absolutely fascinating.

Caesia micrantha (syn. *Caesia parviflora*)
Pale Grass Lily

Dianella revoluta (syn. *Dianella divaricata*)
Blueberry Lily

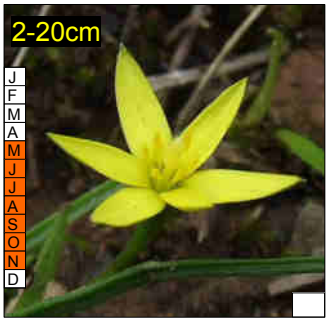
blue variety white variety

Stypandra glauca (syn. *Stypandra imbricata*)
Blind Grass

Tricoryne elatior
Yellow Autumn Lily

HYPOXIDACEAE

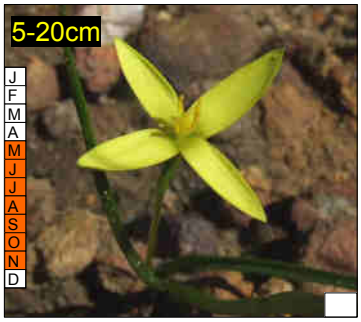
Usual family characteristics: With conspicuous flowers these small perennial herbs number only about 12 species in Australia. They have well developed underground rhizome stems.



6 petals

Hypoxis glabella (syn. *Hypoxis hookeri*)

Tiny Star



4 petals

Hypoxis occidentalis

5 petals

Hypoxis sp.

IRIDACEAE — Iris family

Usual family characteristics: This is a large family of perennial herbs well represented throughout the world. Leaves are usually rough and sword-shaped. The scented flowers are delicate, quickly die and are replaced by new flowers. This family includes many invasive weeds including Freesia, Gladiolus (white and pink), Cape Tulip, Guildford Grass and Watsonia.

Orthrosanthus laxus

Morning Iris

FUNGUS

Patersonia babianoides

Rib-leaved Patersonia

Patersonia juncea

Rush Leaved Patersonia


Patersonia occidentalis
Purple Flag


Patersonia pygmaea
Dwarf or Pygmy Patersonia



Patersonia rudis (syn. *Patersonia sericea*)
Hairy Flag

JUNCAGINACEAE — Arrow-grass family

Usual family characteristics: These are mostly perennial herbs with very small flowers often found close to or in water.

Triglochin sp. (probably *Triglochin linearis* (syn. *Triglochin procerum*))
Water Ribbons

MOTORBIKE FROG (YOUNG)

LAMIACEAE (syn. CHLOANTHACEAE) Mint family

Usual family characteristics: This is a large family of aromatic herbs or shrubs such as mint, rosemary and thyme. Australia has about 250 native species. Its irregular pink-white flowers are usually tubular and the leaves are often sharp.


Hemiandra glabra (syn. *Hemiandra pungens* var. *glabra*)
Snakebush

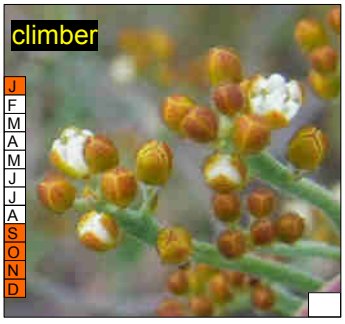

Hemigenia incana
Silky Hemigenia

Microcorys longifolia

TINY FUNGUS & LICHEN

LAURACEAE Laurel family

Usual family characteristics: These plants are parasitic perennials that attach and climb over host plants. They attach themselves by means of a pad through which they gain their nutrition. They have very tiny scales which are their much reduced leaves. They usually have white or pale coloured flowers.





Cassytha flava
Dodder Laurel


fruit

Cassytha glabella
Tangled Dodder Laurel

LENTIBULARIACEAE — Bladderwort family

Usual family characteristics: These small herbs are usually found in wet areas. They have small underground hollow sacs (or bladders) with hinged lids. When activated they capture and digest tiny creatures such as insect larvae and worms.


Utricularia multifida (syn. *Polypompholyx multifida*)
Pink Petticoats

LORANTHACEAE — Mistletoe family

Usual family characteristics: These species are parasitic or semi-parasitic plants. Aerial Mistletoes (*Amyema*) grow on other plants and do not have contact with soil. Mistletoe birds swallow the seed which they extract from the Mistletoe's pink berry. They then deposit the seed onto a host plant where it eventually germinates, attaches itself to its host plant and becomes a parasite. The host plant often dies. The Christmas Tree is the one and only terrestrial Mistletoe (*Nuytsia*).




Host plants for Broad-leaved Mistletoe are usually Gum Trees. The leaves often appear similar to those of the host plant. The Marri (far right) is threatened by several Mistletoe plants.

Amyema miquelii
Broad-leaved Mistletoe

FIRE AND SMOKE - DID YOU KNOW?

It is not unusual to see massive regeneration of plants in the Australian bush 1-4 years following a hot-burning summer or autumn fire. Research conducted in Western Australia has shown that for many plants heat and smoke are important factors in this regeneration. Seeds from many of our native plants are released onto the fire ash. This ash and the soils beneath the ash contain 'smoke' chemicals. When the seasonal rains begin it is these naturally occurring chemicals that help to trigger the germination process.

However, bushlands that are subjected to fire too frequently suffer massive environmental damage causing it to regenerate at a far slower rate and with significant eco-system changes and damage.

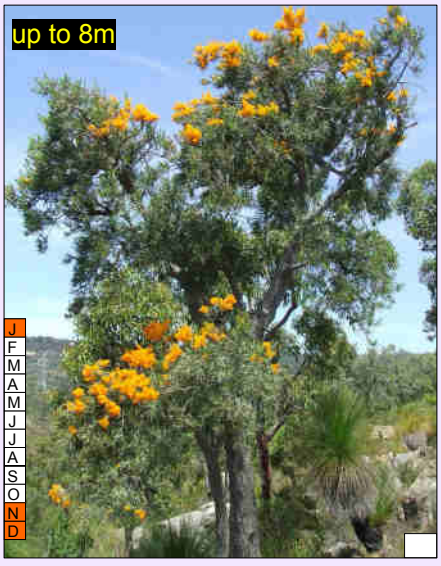




Host plants for Wireleaf Mistletoe are usually Wattle species. Locally it seems to have a liking for Queensland Silver Wattle which is an invasive pest in our local bush. The photograph (left) shows a Silver Wattle riddled with Mistletoe plants. The middle photograph shows two magnificent plants that have all but killed a large old Silver Wattle. The photograph (right) is of a Flinders Range Wattle (also an invasive pest) under grave threat. If the host plant dies then the Mistletoe also dies.

Amyema preissii

Wireleaf or Narrow-leaved Mistletoe






The Christmas Tree is a most unusual plant. In fact it is in a genus entirely by itself and is unique to the South-West Botanic Province. It is the largest parasitic plant on Earth. More accurately it is only partially reliant on host plants for its nutrition and it has been reported that its “roots” have attached themselves to plants up to 150m away.

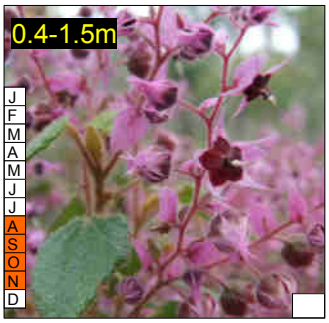
Seedlings remain shrubby for 7-20 years until they grow into a single stemmed tree. The thick but weakly structured trunks and branches are not true wood but a starch-like tissue which are easily broken often giving trees a stunted and emaciated appearance. The branches tend to have a downward curve and often break off under their own weight. Its bark is grey with brown and often with black fire damage. The massive heads of flowers which appear around the Christmas festive season are some of the most striking in our bushlands. Its heavy honey scent attracts insects such as ants, bees and beetles, birds such as honeyeaters, wattlebirds and cuckoo-shrikes, and small mammals which rely on Christmas Trees for its rich source of nectar and pollen.

Nuytsia floribunda

Christmas Tree

MALVACEAE (syn. STERCULIACEAE) Hibiscus family

Usual family characteristics: Most of Australia's 160 species are concentrated in the South-West Botanic Province. The shrubs, which are covered in hairs, usually have rough, lobed leaves. The flowers usually have a velvety appearance.





A feature of this plant is the pink triangular bract at the base of each flower as shown in the second photograph. It is a rare but not threatened species (Priority 4 - Dept of Environment and Conservation). It requires regular monitoring.

Lasiopetalum bracteatum

Helena Velvet Bush

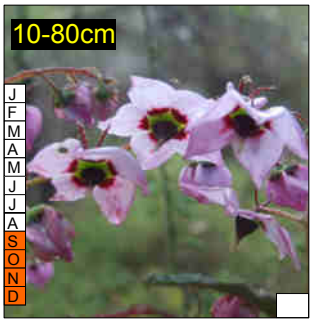

Rulingia cygnorum (syn. *Rulingia malvifolia*)




The lower photographs are of a plant that is probably a variation of *Thomasia foliosa*. The flowers have a distinctive pink/purple colour and seem to wither without the petals opening as shown in the white variety above. The plant has similar leaves but appears to grow taller than the regular white variety.

Thomasia foliosa

ORB-WEAVER SPIDER





Thomasia glutinosa
Sticky Thomasia

MYRTACEAE — Myrtle family

Usual family characteristics: This is a large family with species mainly native to Australia and South Africa. They are woody trees and shrubs. The leaves have oil glands and when crushed release strong aromatic scents. The flowers are usually found in showy clusters. Its fruit is a woody nut or capsule containing copious small seed. The family includes most of Australia's large trees such as Marri, Jarrah and Wandoo.


Babingtonia camphorosmae
Camphor Myrtle


Baeckea crispiflora var. *tenuoir*



Beaufortia macrostemon

Beaufortia purpurea
Purple Beaufortia

This species is one of only two true bottlebrush species (*Callistemon species*) in the South-West Botanic Province. The other species is the Albany Bottlebrush (*Callistemon glaucus*). It has striking bright red large flower heads and blue-green leaves. During the flowering season it is a magnificent sight along the Helena River and can be a wonderful addition to any home garden. Local trees usually grow to heights of around 4m.

Callistemon phoeniceus
Lesser Bottlebrush

Calothamnus quadrifidus
One-sided Bottlebrush

Calothamnus sanguineus (syn. *Calothamnus blepharantherus*)
Pindak or Silky-leaved Blood Flower


Calytrix acutifolia (syn. *Lhotskya acutifolia*)


Calytrix depressa (syn. *Calytrix stowardii*)


Calytrix glutinosa
Sticky Starflower


Calytrix variabilis

WONDERFUL WORLD OF FUNGI AND ECOSYSTEM HEALTH – DID YOU KNOW?

Ecosystem health is a matter of delicate co-dependant balances. Fungi are excellent examples of vital players in helping to keep that balance. It is suggested that there are 10 times more fungi species than plant species on Earth. Although an accurate number of fungi species in the South-West Botanic Province is not known, it is estimated to be somewhere in the vicinity of 140,000. Fungi perform such simple but essential tasks as recycling leaf litter and redistributing soil nutrients. As mentioned in the Orchid family pages fungi have important co-dependant relationships with many orchids and act as a supplier of nutrients necessary for plant growth. Many other native plants also enjoy similar relationships. Amongst other features like providing food and habitat for many animals and insects, providing protection against soil erosion, providing protection for other plants from diseases they are an excellent source of raw ingredients for the development of medicines. In fact there are countless ways that fungi contribute to the health of bushland eco-systems.

For more information on the wonderful world fungi go to the Perth Urban Bushland Fungi Website: www.fungiperth.org.au . There, you can access a field book called “Fungi of the Perth Region and Beyond” by N. L Bougher.








Marri trees are the tallest and most common of our local trees. The bark is generally rough and segmented, and is often characterised by streaks of dark red gum. The flowers are cream and appear in big clusters. The top right hand photograph shows the bud caps pushed open by the compacted stamens. The nuts known as honkey nuts are 3-4cm across.
This wonderful specimen is not far from the sub-station on Victor Rd (on the way to the quarries). The largest Marri tree that we have found in the Darlington area can be located on the south side of the closed section of Padbury Rd (on the way to Greenmount hill lookout).

Corymbia calophylla (syn. *Eucalyptus calophylla*)

Marri or Red Gum


Darwinia citriodora

Lemon-scented Darwinia


Darwinia thymoides

EUCALYPTUS AND EUCALYPTS – DID YOU KNOW?

The name *Eucalyptus* means 'well-covered' referring to the cap on the flower buds. As the stamens grow inside the buds they eventually force off the caps allowing the flowers to open. As the dominant Australian tree species Eucalypts are primary providers of food and shelter for a wide range of insects, birds, reptiles and mammals. In countless ways the flora and fauna are co-dependent relying on each other for their very existence. It is essential to preserve and improve existing eco-systems that allow that dependency. For thousands of years Eucalypts have provided such things as blossom for honey, essential oils for their therapeutic and antiseptic values, shade and shelter, quality hardwoods for construction, furniture, artefacts and implements.







Preferring areas with laterite soils this graceful tree is mainly found east of the Jarrah forests (the eastern parts of the Darling Range) but can be found in several locations in the local Darlington area. At first appearances this tree resembles the Wandoo but is more closely related to the Butter Gum (Darling Range Ghost Gum). When it sheds its old bark the new smooth bark is more apricot than cream in colour and like the Butter Gum it will leave a powder on your hands if you rub its surface. Its leaves have a slightly blue shade and are dull on both sides. Its cream coloured flowers appear in summer and autumn. The nuts are 7-8mm across and have 4 valves. These trees were photographed in the Greenmount National Park.

Eucalyptus accedens

Powderbark





This species is not common in the area but can be found in a few secluded locations south of Darlington. It is a graceful tree often like a miniature ghostly Wandoo, however it is not closely related to that species. Often it is found growing to a height of around 8-10m but can grow much taller. Its new bark is smooth and buttery-cream which turns powdery-white each season before it eventually sheds. If rubbed it will leave a white powder on your hands. Its leaves have a slightly blue shade. Its flowers are creamy-white and seem to have a variable flowering period (mainly summer and autumn). The nuts are 5mm across and have 3 valves. This excellent small cluster of Darling Range Ghost Gums is found next to a track leading from Nelson Rd to Helena River. It is one of only a few small clusters in the district.

Eucalyptus laeliae

Darling Range Ghost Gum or Butter Gum

Probably the most famous of our hard woods, the timber from the Jarrah tree is highly sought after for its excellent building and magnificent furniture making qualities. Originally known as Swan River Mahogany its dark red colour is a wonderful feature. It has long streaky grey coloured bark, its flowers are white and its nuts are 1cm across with 3 valves. Jarrah trees often fall victim to dieback disease. Before the area was intensely logged some jarrah trees had massive 2m thick trunks and were more than 400 years old. Today, most of the Jarrah trees in the region are subsequent regrowth forest.

This magnificent old Jarrah, one of the biggest in the district, is on one of the bush trails in the Helena River Parklands.

Eucalyptus marginata

Jarrah

Note the caps on the flower buds being pushed off by the compacted stamens

These trees are mostly found in wet areas such as creek beds. The bark on its trunk is generally rough and grey while the upper branches appear smoother and lighter in colour. The flowers are light cream and the leaves often appear to have a slightly blue tinge. The protruding nuts (as shown) are only 5mm across and have 4 valves.

These specimens can be found near the picnic and parking area to the Mountain Quarry, off Coulston Rd.

Eucalyptus rudis

Flooded Gum

mature tree

young tree

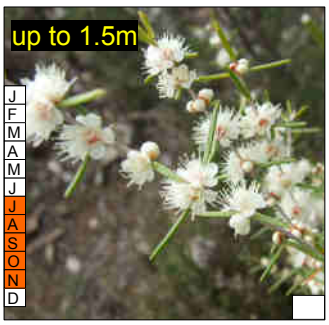
Oblique tunnel scar left by Wandoo Longhorn Borer. It can ringbark stems and branches.

Wandoo trees can appear huge and majestic but also stunted and contorted. Termites often attack the tree's softer woody core causing large limbs to shed. This provides many hollow nesting opportunities. On the ground the dead hollow logs then become very hard, termite resistant animal habitats. The new growth often gives the tree its contorted shapes. Vegetation beneath these trees is often sparse due to chemicals leached into the soil from its dead leaf mulch. The bark has many appearances, smooth and often patchy with the colour ranging from grey-white (old) to cream (new). The old rough bark sheds each year revealing smooth new surfaces. The flowers are creamy-white and nuts are only 4mm across with 3 valves.

In early years Wandoo timber was highly prized for its strength and durability. Darlington has many majestic Wandoo trees some which may be well over 30m high with 1m thick trunks. Those photographed are near the south end of Nelson Rd.

Eucalyptus wandoo

Wandoo or White Gum



Hypocalymma angustifolium

White Myrtle

Hypocalymma robustum

Swan River or Pink Myrtle

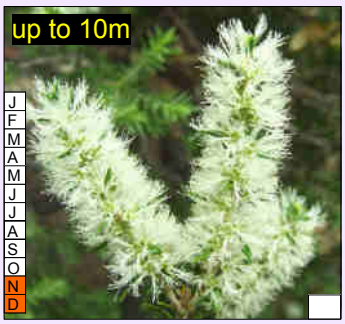

Kunzea recurva


Leptospermum erubescens
Roadside Teatree



Melaleuca aspalathoides


Melaleuca parviceps
Rough Honeymyrtle










Darlington has a few trees of this species in the creek bed near Bilgoman Well, off Darlington Rd. Its layered paper-like bark traps pockets of air which allows its submerged roots to breathe. The flattened leaves are approximately 10mm x 1-2mm and its creamy-white flowers are arranged near the end of its branches and usually at the very top of the tree. Its fruit/nuts are approximately 4mm x 4mm.

Melaleuca preissiana

Stout Paperbark or Moonah


flowers group at the end of the branches

flower buds




This tree is common in the creek beds of Darlington but is usually limited to heights of only 3-4m due to the massive increase in fire frequency during the past 180 years. Despite this there is an 8-9m high specimen growing in a creek bed at the side of Oakleigh Rd. First appearances and the growing environment of the Swamp Paperbark can be quite similar to that of the Stout Paperbark. Differences include the needle-like leaves which are approximately 30mm x 1mm, and its fruit/nuts which are approximately 6mm x 6mm and appear in groups.

Melaleuca rhaphiophylla

Swamp Paperbark


very light coloured specimen

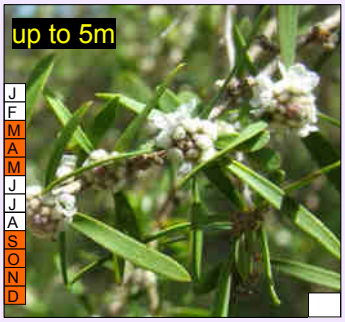
Melaleuca radula

Graceful Honeymyrtle


This species has a seed pod (nut) with a long narrow spike.

Pericalymma ellipticum (syn. *Leptospermum ellipticum*)

Swamp Teatree

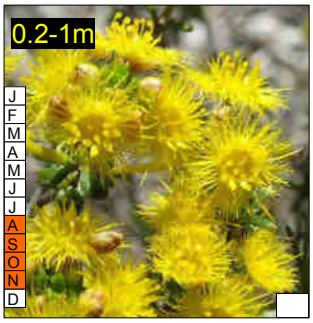




Usually described as a large shrub, in favourable conditions the Swamp Peppermint can grow into a densely packed small tree. Due to its strong rootstock it proves to be a very hardy plant which can survive fire, flood and land clearing better than most plants. Found mostly along creek lines it provides valuable protection, habitat and food (nectar) for small mammals, insects and small birds such as wrens. It can flower at various times throughout the year.

Taxandria linearifolia (syn. *Agonis linearifolia*)

Swamp Peppermint





The flowers of this species first appear bright yellow then turn orange, red, and eventually brown with age.

Verticordia acerosa

Bristly Yellow Featherflower

The flowers of this species have a style that protrudes well beyond the petals.

Verticordia densifolia

Compacted Featherflower

The flowers of this species first appear white quickly turning pink with age.

Verticordia huegelii

Variegated Featherflower

Verticordia pennigera

The flowers of this species appear pink and mauve and bloom for a long period. Eventually they dry, turn white and remain.

Verticordia plumosa

Granite Featherflower

ORCHIDACEAE Orchid family

Not surprisingly, the overwhelming number of questions about flowering plants seem to be about orchids. Consequently the family's characteristics are explained more fully in this section than in other plant families.

Much of the following information is derived from the excellent publication "Orchids of South-West Australia" (third reprint 2011) by Noel Hoffman and Andrew Brown. We are grateful for their consent.

Usual family characteristics:

Distribution:
With about 25,000 species the Orchid family is one of the three largest groups of all flowering plant families world-wide. While the greatest number of orchids grow in the world's tropical climates, the South-West Botanic Province is home for almost 400 species.
Basically there are two types of orchids, epiphytes (tree-dwelling) and geophytes (soil-dwelling). Australia has about 1,700 species, the soil-dwelling species growing in the temperate southern regions, and the tree-dwelling species growing in the northern and north-eastern regions. All South-West Botanic Province orchids are soil-dwelling (terrestrial).

Flower Structure:
Being one of our most spectacular and intriguing plants they are perennial herbs with flowers that have complex structures and differing shapes. Basically the flowers have 3 sepals and 3 petals usually with the front petal considerably modified to form a labellum (a landing platform for insect pollinators). The stamens and style are fused to form a central column sometimes with a covering hood. The flower's pollen bundles are located near the top of the column. The sticky stigma is located immediately below the column.

Pollination:
Orchid flower shapes vary a great deal from species to species, but their structures are shaped to guide pollinating insects along a set path that will ensure fertilization. Generally insects will collect pollen from the column of one plant and deposit it on the stigma of another plant thus completing the pollination process. Some species do not require insects to assist with pollination as they have the ability to self-pollinate. The pollen simply falls from the column onto the stigma.
Generally the flowers attract wasps, gnats, flies and bees by satisfying the insect's desire for nectar and pollen. Sometimes visual stimulus and sexual desire are used to attract pollinators. For instance, some orchids mimic the shape of female wasps and release chemical pheromones similar to that produced by the female wasp. Of course this attracts the male wasp which may, in the course of his sexual activities, have visited several plants and carried pollen from one plant to another, again completing the pollination process.

Plant Germination and Growth
Once the plant's ovules have been fertilized, seeds develop, the flower withers, the ovary breaks open and hundreds or thousands tiny dust-like seeds are released and distributed by the wind.
Like many plants orchids have an essential co-dependant (symbiotic) relationship with fungi. Selected fungi provide nutrients which help to germinate the seed and enable leaf and root growth. A small tuber then develops at the end of the root which in turn produces a small plant during the following season. Each season the plant produces a larger tuber until it is large enough to produce a flower. This process can take three or more seasons.
Some orchids develop more than one tuber each season which helps to produce a colony of plants.

Leaves:
Orchids produce a great variation of leaf shapes. A common belief is that all our South-west Province orchids produce one flat leaf. While most do have one leaf, this belief needs a little clarification. For instance, Spider Orchids generally have one long narrow hairy leaf, but Leak Orchids have a hollow, onion-like leaf, Hammer Orchids have a small, ground-hugging, heart-shaped leaf and many Greenhood Orchids have a rosette of leaves or several leaves up the flower stem.

Size of Plants:
The height of mature orchids vary greatly. For instance, a Little Laughing Leek Orchid rarely grows to more than 15cm. At the other extreme, some Leek Orchids can grow as tall as 2 metres and produce up to 100 or more flowers in a dense spike.

Habitat and Fire:
Some orchids have very particular environmental requirements and only grow in limited areas, but some are vary adaptable and can be found in several different regions. Such factors as temperature, the type of soil, sunlight, rainfall and moisture retention and seasonal differences all play a part on habitat preferences. However in general terms orchids, depending on the species, grow in all parts of the South-West Botanic Province. They can be found in winter-wet swampy areas, the sandy coastal plain, the drier wheatbelt region, dense south-west forests, the jarrah/marri hills region and so on.
The effect bushfires have on orchids has been well observed but not well understood. It seems that fire has a role in forcing orchids to flower. Immediately after a fire it is common to see many species of orchid producing large numbers of flowers but this rate diminishes rapidly in subsequent seasons.

Here are a couple of interesting habitat snippets:
- Due to the destruction of large areas of natural orchid habitat since European settlement there has been a massive decline in the orchid population throughout the South-West Botanic Province.
- Due to this and other factors orchids are a very easily threatened family. Currently more than 60 species are either very rare or endangered. It is essential that orchid habitats are protected and that we never pick the flowers.

There are known to be 28 genera in the South-West Botanic Province. Brief descriptions of 10 of those genera (found in the region) are included in the orchid section. Again, much of this information is derived from the excellent publication "Orchids of South-West Australia" (third reprint 2011) by Noel Hoffman and Andrew Brown.

CALADENIA species (Spider Orchids)

This is the largest orchid group in the S.W. represented by more than 150 species. *Caladenia* species have a single hairy leaf and a hairy stem. Most have a fringed or toothed labellum on which can be found small projections called calli. Some species employ bizarre techniques to attract pollinators. Their labellum mimics the size and shape of a flightless wasp thus attracting male wasps. Others species are highly scented or/and brightly coloured attracting certain native bees and beetles.

Caladenia falcata

Green Spider Orchid or Fringed Mantis Orchid

Flower colours of this species can vary from completely yellow, cream or white while others have strong dark markings.

Caladenia flava R.Br. subsp. *flava*

Cowslip Orchid

Caladenia footeana

Crimson Spider Orchid

Caladenia hiemalis (syn. *Caladenia varians* subsp. *hiemalis*)

Dwarf Common Spider Orchid

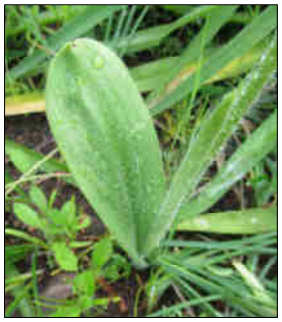


Although intergenic hybrids are extremely rare occasionally freaks of nature are produced. This quite spectacular hybrid was found growing in shallow soil on a flat granite outcrop. It is a cross between a *Pheladenia* plant and a *Caladenia* plant, but other combinations appear from time to time. These photographs were taken in August.

Caladenia hiemalis x Pheladenia deformis

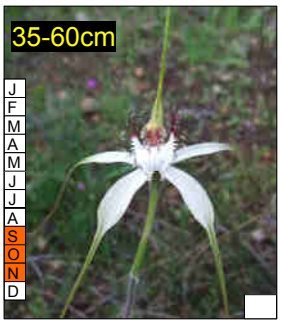
Dwarf Common Spider Orchid x Blue Fairy Orchid (Blue Beard)





Caladenia hirta

Sugar Candy Orchid






Caladenia longicauda Lindl. subsp. *longicauda*

Common White Spider Orchid



Caladenia macrostylis

Leaping Spider Orchid

Caladenia reptans Lindl. subsp. *reptans*
Dwarf Pink Fairies

CYANICULA species (Blue Orchids)
This is a genus of 11 species, all occurring in the S.W. “Cyanicula” refers to the small blue coloured flowers, but the genus includes a yellow and a white flowering plant. Brightly coloured, the widely opened flowers attract native beetles and bees.

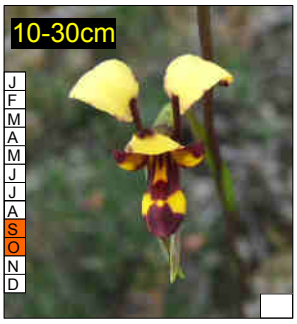
Cyanicula gemmata (syn. *Caladenia gemmata*)
Blue China Orchid

Cyanicula sericea (syn. *Caladenia sericea*)
Silky Blue Orchid

DIURIS species (Donkey Orchids)
There are 22 species in the S.W. “Diuris” means double-tailed, referring to the hanging sepals, but the species is commonly recognised by their ear-like petals giving it the common name Donkey Orchid. They have grass-like leaves and predominantly yellow flowers with red, brown or purple markings. Some species will not flower until their habitat is burnt during the hot summer months. The tubers are not harmed as they lie dormant in the soil.

Diuris brumalis
Winter Donkey Orchid


Diuris corymbosa
Common Donkey Orchid or Wallflower Orchid






Diuris laxiflora
Bee Orchid



Diuris longifolia
Purple Pansy Orchid

Diuris magnifica
Pansy Donkey Orchid

Diuris sp. ‘Darling Range’
Darling Range Donkey Orchid

ELYTHRANTHERA species (Enamel Orchids)

There are only 2 species and they are only found in Western Australia. However they are quite common and wide-spread throughout the S.W. They have a most attractive flower and are admired for their glossy, enamel petals and sepals which gives them their common name of Enamel Orchids. The flowers include a hooded column and small membranous labellum with 2 large black calli. The underside of the petals and sepals usually display a speckled appearance.

under side of flower

Elythranthera brunonis
Purple Enamel Orchid

under side of flower

Elythranthera emarginata
Pink Enamel Orchid

ERIOCHILUS species (Bunny Orchids)

Ten of Australia's Bunny Orchid species are found in the S.W. The various species have adapted to diverse environments ranging from wet swampy areas and moist moss-covered granite outcrops to drier inland woodlands. "Eriochilus" means "woolly-lip" and refers to the dense woolly labellum typical in all the species. Most species have a single smooth leaf and appear well up the flowering stem. Most usually flower during the autumn months which is different to most other orchids which flower later in the year.

Eriochilus dilatatus subsp. *multiflorus*
Common Bunny Orchid

CORAL FUNGUS

LYPERANTHUS species (Rattle Beak Orchid)
There are four species in this genus which are indigenous to Australia, and only one which can be found in the S.W. It has one long, narrow, leathery leaf and a dull-coloured but interesting flower. Unlike many native species, including orchids, this species does not require fire to encourage flowering.

Lyperanthus serratus
Rattle Beak Orchid

PHELADENIA species (Blue Fairy Orchid)
There is only one species in this genus. The flowers are usually blue and have a prominent bearded labellum. The plant has one narrow and hairy 10 cm leaf.

rare albino specimen

Pheladenia deformis (syn. *Cyanicula deformis*)
Blue Fairy Orchid or Blue Beard

PRASOPHYLLUM species (Leak Orchids)
There are approximately 100 species in this genus world-wide and most of those are endemic to Australia. Of those, 61 are found in Western Australia. They are commonly known as Leek Orchids due to their hollow, onion-like leaf. The heights of Leek Orchids vary greatly, from about 15 cm (Little Laughing Leek Orchid) to more than 2 metres (Giant Leek Orchid). Some Leek Orchids can produce more than 100 flowers on a single flower stem. Most produce a very strong fragrance which attracts pollinating insects such as flies, bees, wasps and beetles. Many of the species require a summer fire to encourage flowering.

Prasophyllum elatum
Tall Leek Orchid

Prasophyllum fimbria
Fringed Leek Orchid

BRACKET FUNGUS

Prasophyllum giganteum
Bronze Leek Orchid

These plants were tiny at around 10cm high. The colours varied, some green and some green with brown.
Prasophyllum gracile (syn. *Prasophyllum antenuatum*)
Little Laughing Leek Orchid

Prasophyllum hians
Yawning Leek Orchid

note white insect feeding on nectar

Prasophyllum parvifolium
Autumn Leek Orchid

PTEROSTYLIS species (Greenhood Orchids)

World-wide there are some 300 species of Greenhood Orchids and most of those are found in Australia. In Western Australia there are more than 70 species but many of those are yet to be given a proper botanic name. The name Pterostylis refers to the winged column found on all species. However most of the species are characterized by their united dorsal petal and sepals which form a hood over its column thus suggesting the name Greenhood. Different to most other Western Australian orchids which produce one leaf, Greenhoods have a rosette of leaves or several leaves on the flower spike. These orchids produce a very large quantity of seed and are often found in large colonies. Greenhoods are a most adaptable orchid with species found in most habitats, and are widespread throughout the S.W.

Pterostylis barbata (syn. *Plumatichilos barbatus*)
Bird Orchid

seed capsule

Pterostylis recurva
Jug Orchid

dark flowering variety

green flowering variety

It is not uncommon to find plants with green or brown flowers growing alongside one another.

Pterostylis sanguinea (syn. *Oligochaetochilus sanguineus*)

Dark Banded Greenhood

In the past, the name *Pterostylis nana* has been used to describe Snail Orchids but the name, 'nana', is not current. There are many species of Snail Orchid yet to be properly named. They differ slightly and known by their location or their shape.

Pterostylis species

Snail Orchid

SPICULAEA species (Elbow Orchid)

This is a genus of one species endemic to Western Australia. It flourishes in very hot conditions. When the flower opens, the soil's moisture has gone, the leaf has shrivelled, the tuber is dormant and the base of the stem is dead. The flower survives on the moisture and nutrients stored in the upper stem. It produces a wasp-like lip at the end of its labellum and produces a sexual pheromone to attract male wasps to achieve pollination.

This is a most interesting orchid in that the flowers and subsequent seed production feed off the succulent stems which gradually die from the base upwards as shown in photographs 4 and 5. The basal leaves die well before it flowers.

Spiculaea ciliata

Elbow Orchid

THELYMITRA species (Sun Orchids)

This is a large genus with more than 70 species of which most are endemic to Australia with 40 of those occurring in W.A. Commonly known as Sun Orchids they remain closed at night and during cool, cloudy weather. During warm sunny days the floral displays can be quite spectacular. Several species are self-pollinating. “Thelymitra” refers to the hooded column.

Thelymitra antennifera

Lemon-scented Sun Orchid or Vanilla Orchid

Thelymitra crinita

Blue Lady Orchid

Thelymitra macrophylla (syn. *Thelymitra nuda*)

Scented Sun Orchid

PHILYDRACEAE — Philydraceae family

Usual family characteristics: These annual or perennial herbs are often found on moist and mossy granite outcrops.

Philydrella pygmaea

Butterfly Flowers

PHYLLANTHACEAE — Spurge family

Usual family characteristics: Mainly herbs and shrubs this family often has separate male and female flowers.



female flowers (10-11mm across) | male flowers (4-6mm across)

Phyllanthus calycinus

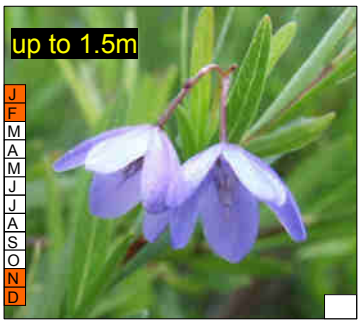
False Boronia

PITTOSPORACEAE — Pittosporum family

Usual family characteristics: Mostly native to Australia these are climbing, twining plants which attach themselves to their host usually by means of a sticky resin. They have white, mauve or yellow flowers with petals that form a bell-shaped tube. Their fruit is a fleshy capsule. Some species appear as a shrub rather than a climber.


Billardiera fraseri (syn. *Pronaya fraseri*)

Elegant Pronaya

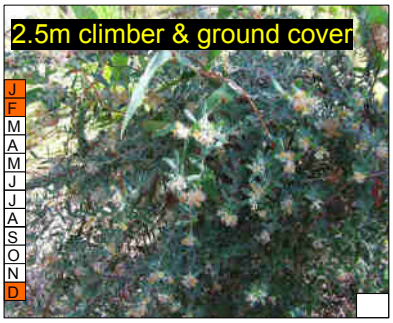




usually appears as a shrub | also has climbing tendencies | seed capsules

Billardiera heterophylla (syn. *Sollya heterophylla*)

Australian Bluebell





Billardiera variifolia (syn. *Billardiera gracilis*, syn. *Billardiera sericea*)

Variable Billardiera

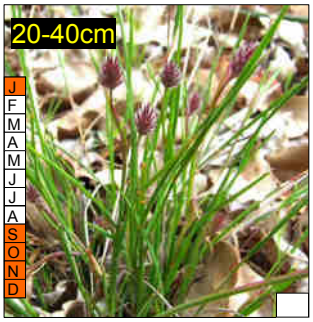


Marianthus candidus (syn. *Billardiera candida*)
White Marianthus


Marianthus drummondianus (syn. *Billardiera drummondiana*)
Drummond's Billardiera

POACEAE — Grass family

Usual family characteristics: Most people may not recognise grasses as being flowering plants, but they certainly are. Wind pollinated the flowers are generally small and do not have petals. World-wide there are more than 9,000 grass species of which many provide animals with their food source and humans with important grains such as rice, wheat, barley and oats. It even includes bamboo and sugar cane. The South-West Botanic Province is home to approximately 140 native species but sadly this number has been eclipsed by introduced grasses of which many are harmful invasive weeds.



Amphipogon amphipogonoides
Little Amphipogon

Austrodanthonia acerosa (syn. *Notodanthonia acerosa*)
Needle Wallaby Grass

Austrodanthonia caespitosa
(syn. *Notodanthonia caespitosa*)
Common Wallaby Grass

branches are feathery

Austrostipa elegantissima (syn. *Stipa elegantissima*)

Feather Speargrass

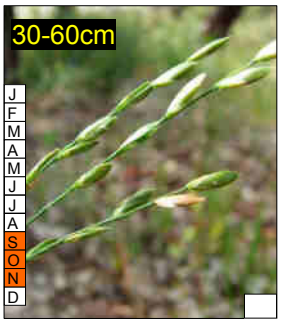
Austrostipa sp. (syn. *Stipa* sp.)
Speargrass or Stipa

FLORA HERITAGE – HELPFUL HINT

Despite the enormous pressure placed upon our bushlands by industrial, urban and agricultural pursuits (logging, housing, mining, orchards, farming, water catchment etc) some precious links with past pristine forests, woodlands, scrub-lands and heath-lands still exist. Here and there some grand old trees, many well over 250 years old and alive well before European settlement, have survived. Also a vast array of understorey still thrives in most bushland areas. Not only is it important that we preserve and restore the existing flora for eco-system reasons, it is essential that we preserve the surviving bush simply to honour our irreplaceable flora heritage.

Cymbopogon obtectus
Native Lemon Grass

Neurachne alopecuroidea
Foxtail Mulga Grass



Tetrarrhena laevis
Forest Ricegrass

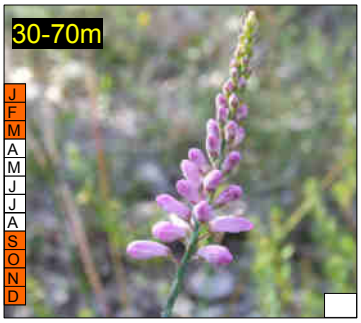
Themeda triandra (syn. *Themeda australis*)
Kangaroo Grass

POLYGALACEAE — Milkwort family

Usual family characteristics: These are herbs or shrubs some with twining, climbing tendencies. The flowers are pea-like but with the large standard back petal missing. They are crowded along the end of the long stems or spikes. If broken the plant will ooze a milky sap, hence its name.

Comesperma calymega
Blue-spike Milkwort


Comesperma ciliatum
Love Creeper





Comesperma virgatum
Milkwort

POLYGONACEAE — Knotweed family

Usual family characteristics: These are climbers with small flowers and flat fruit. The plant dries reddish-brown.



Muehlenbeckia adpressa
Climbing Lignum

PROTEACEAE — Banksia family

Usual family characteristics: This is a large family of woody shrubs and trees with about 900 species native to Australia. The roots have adapted to the poor soils often feeding close to the forest floor for their nutrition. The individual tubular flowers can appear singularly or packed together as cones and clusters. The leaves are often stiff, prickly and leathery but can vary like the long needles on some Hakea species. The seeds are housed in strong woody cones/nuts or weaker pods.

Adenanthos barbiger
Hairy Jug Flower

RED WATTLEBIRD

Banksia/Dryandra species
There are about 90 Dryandra species all endemic to the South-West Botanic Province. In 2007 following extensive studies scientists at the WA Herbarium decided that all Dryandra species would be re-classified as Banksia species.

Banksia armata (syn. *Dryandra armata*)
Kangaroo Thorn or Prickly Dryandra

Banksia bipinnatifida (syn. *Dryandra bipinnatifida*)
Ground Dryandra

This seems to be the only large Banksia tree species growing in the Darlington area. It grows much more slowly under a heavy canopy than in the open. Its rounded and woody cones are typical of many other Banksia tree species. The hundreds of small flowers in each cylindrical flower head are an excellent food source providing nectar for insects, birds and small possums. Its seeds are enjoyed by the Carnaby's Black Cockatoo and red-capped parrots. Unfortunately it succumbs easily and quickly to Dieback disease.

Banksia grandis
Bull Banksia

Banksia dallanneyi (syn. *Dryandra lindleyana*)
Couch Honeypot

Parrot Bush can be described as a large shrub or a small tree. It is prolific in the Darlington area providing an excellent food source for honey-eaters, parrots, cockatoos, various insects and small mammals over a long period. It is killed by fire but produces seed in large quantities ensuring its survival. It is of enormous value to Western Australia's bee-keepers.

Banksia sessilis (syn. *Dryandra sessilis*)
Parrot Bush

Conospermum huegelii
Slender Smokebush

Grevillea bipinnatifida
Fuchsia Grevillea

Grevillea diversifolia
Variable-leaved Grevillea

Grevillea endlicheriana
Spindly Grevillea

Grevillea manglesii
Smooth Grevillea

Grevillea pilulifera
Woolly-flowered Grevillea



Grevillea pimeleoides (syn. *Grevillea drummondii*)

Grevillea quercifolia
Oak-leaf Grevillea

TWENTY-EIGHT PARROT


Grevillea synapheae
Catkin Grevillea


Grevillea wilsonii
Native Fuchsia

Hakea species……...Flowers and Fruit
Photographs of the local Hakea species have been divided into 2 sections. Immediately below are photographs of the plants and their respective flowers. Following is a section devoted to the amazing world of their fruits (follicles).

Hakea amplexicaulis
Prickly Hakea

This species exists in a relatively limited area. Avon Valley – Kalamunda (35km) x Swan View – The Lakes (25km)
Hakea cristata
Snail Hakea

Hakea cyclocarpa
Ramshorn Hakea

Hakea erinacea
Hedgehog Hakea


Hakea incrassata
Marble Hakea


Hakea lissocarpha
Honey Bush





Hakea myrtoides
Myrtle Hakea

DOGS AND THE BUSH - HELPFUL HINT

While it can be a great joy to have a faithful and obedient dog there are some important things that owners should know. In bushlands where dogs are allowed please ensure that they are on a leash at all times, for 2 very good reasons.

- 1080 (ten-eighty) poison baits which are designed to kill foxes and other feral animals are often distributed throughout much of our bushlands. They are harmless to native animals but will definitely kill your dog.
- Roaming and inquisitive dogs are a real threat to defenceless tiny native creatures that hunt on the bush floor.

Please note that dogs are prohibited from our National Parks and Conservation Areas.

Hakea petiolaris (syn. *Hakea crassinervia*)
Sea Urchin Hakea

The odd thing about this species is its scientific name. *Hakea prostrata* suggests that it grows along or close to the ground. In the hills around Darlington the plant grows strong and upright. The species was first collected along the south coast of Western Australia where its branches often grow along the ground protecting itself from the salty south-west winds, hence its name. The common name, Harsh Hakea, is appropriate as it is a very prickly plant indeed. Unfortunately, due to the large increase in the fire frequency Harsh Hakeas like many other plants rarely have an opportunity to reach their full height and seed producing maturity.

Hakea prostrata
Harsh Hakea

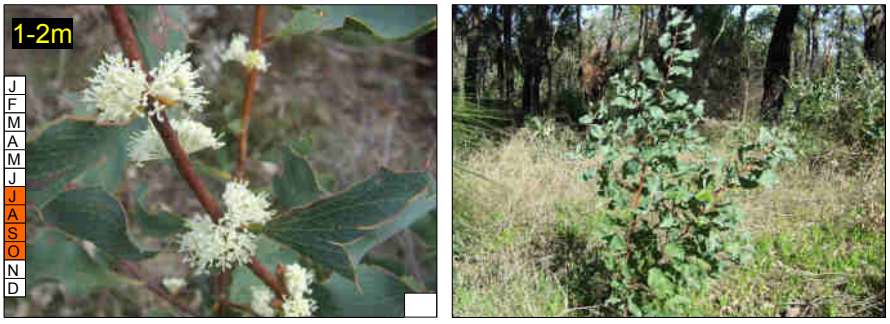
Hakea ruscifolia
Candle Hakea

Hakea spathulata

Hakea stenocarpa
Narrow Fruited Hakea

As with many local plants this species rarely has an opportunity to reach its full size mainly due to the large increase in fire frequency imposed during the past 180 years. It has two distinct leaves. One needle-like and the other shaped very much like its fruit. It is thought that this is a clever attempt to camouflage its fruit and so protect it from seed eating birds. It can grow to heights of 5m but it often grows wider than its height. Its fruit is a favourite of the Carnaby's Cockatoo and parrots such as the Red-capped Parrot. Locally it grows almost everywhere.

Hakea trifurcata
Two-leaf Hakea



Hakea undulata
Wavy-leaved Hakea

RACEHORSE GOANNA

new fruit (30mm x 15mm) old fruit - seed dispersed

Hakea amplexicaulis (Prickly Hakea)

new fruit (45mm x 35mm)

previous year's fruit

old fruit

old fruit - seed dispersed

Hakea cristata (Snail Hakea)

new fruit (35mm x 30mm)

previous year's fruit

old fruit - seed dispersed

Hakea cyclocarpa (Ramshorn Hakea)

new fruit (15mm x 5mm)

old fruit - seed dispersed

Hakea erinacea (Hedgehog Hakea)

As a general rule Hakea species' fruit (follicles) display many different shapes but all open as 2 valves with 2 papery-winged seeds. Hakeas have a reputation of being prickly leaved plants. While that is often true others like *Hakea cyclocarpa* are not prickly at all. The fruit is persistent for long periods of time on most species.

new fruit (25-30mm across)

old fruit

old fruit - seed dispersed

Hakea incrassata (Marble Hakea)

new fruit (20mm x 10mm)

old fruit

old fruit - seed dispersed

Hakea lissocarpha (Honey Bush)

new fruit (8mm x 5mm)

old fruit - seed dispersed

Hakea myrtoides (Myrtle Hakea)

new fruit (35mm x 20mm)

old fruit – some seed dispersed

Hakea petiolaris (Sea Urchin Hakea)

new fruit (30mm x 15mm)

old fruit - seed dispersed

fruit often have spikes on surface

Hakea prostrata (Harsh Hakea)

new fruit (18mm x 8mm)

old fruit - seed dispersed

Hakea ruscifolia (Candle Hakea)

All native to Australia there are about 150 different species of Hakea, with the largest number in the South-West Botanic Province. Hot burning fires open the fruit/nuts releasing seed for germination ready for seasonal winter rain. Most can regenerate from lignotubers after fire, but if fire is too frequent Hakeas suffer a great deal.

new fruit (25mm x 20mm)

old fruit - seed dispersed

Hakea spathulata

The name Hakea was given in honour of a German botany enthusiast Baron Christian Ludwig von Hake. Several species have been introduced into many countries where they thrive in both private and public gardens. They can also grow to pest proportions (invasive weed) as experienced in South Africa.



new fruit (25mm x 5mm) old fruit - seed dispersed

Hakea stenocarpa (Narrow Fruited Hakea)



new fruit (20mm x 5mm) old fruit - seed dispersed

Hakea trifurcata (Two-leaf Hakea)



new fruit (20mm x 10mm) previous year's fruit old fruit - seed dispersed

Hakea undulata (Wavy-leaved Hakea)


flower



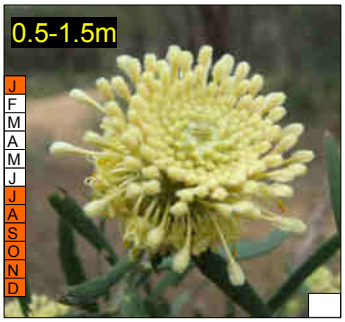

before flowering fruit/seed pod

Isopogon asper (syn. *Isopogon scaber*)

Flat-topped Coneflower



Isopogon dubius
Pincushion Coneflower





seeds and new leaf growth

Isopogon sphaerocephalus
Drumstick Isopogon


Lambertia multiflora var. *darlingensis*
Many-flowered Honeysuckle


Persoonia angustiflora
Shrub Persoonia

ANCIENT LINKS ON OTHER CONTINENTS – DID YOU KNOW?

One of the ways that scientists prove that Australia was once a part of a greater super-continent called Gondwana is that some plant families which are native to Australia are also native to other continents.

For example large plant families such as MYRTACEAE (Myrtle) and PROTEACEAE (Banksia) are present on the landmasses of South America, Africa, India and Madagascar proving that Australia and these other landmasses must have, at one time, been joined together as one giant landmass. These families must have been present on Gondwana well before it broke up. Since that time each landmass has developed its own species. Australia is heavily represented in both families.


Despite its odd shapes the Spreading Snottygobble can sometimes grow to a reasonable height. It is easy to recognise with its bright green foliage which stands out amongst the duller greens, browns and greys of our bushlands. It is thought that when the fleshy fruit (photograph far right) falls to the ground animals such as emus, kangaroos and wallabies swallow it. The seed is eventually deposited in their droppings and subsequent germination occurs, ensuring a wide distribution of the species. This is probably the reason why Snottygobble trees are often found without other Snottygobbles close by. It is generally thought that its seeds need to pass through the gut of an animal to enable them to germinate. It can be found mainly in the eastern and southern bushlands surrounding Darlington.

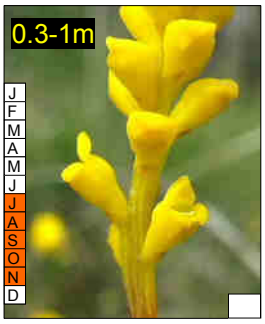
Persoonia elliptica
Spreading Snottygobble


Petrophile biloba
Granite Petrophile


Petrophile seminuda

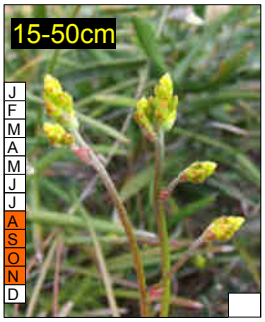

Petrophile striata
Sticky Petrophile

Synaphea species
In Western Australia *Synaphea* species are restricted to the South-West Botanic Province. There are many different species of which several are rare and threatened. Identifying some species is a difficult task. Locally the common species are *Synaphea acutiloba* which has deeply divided and very pointed leaves, *Synaphea gracillima* with thicker textured divided leaves and much less sharply pointed and *Synaphea pinnata* which has long spear-shaped leaves.





Synaphea acutiloba
Granite Synaphea





Synaphea pinnata
Helena Synaphea

Synaphea sp. (probably *Synaphea gracillima*)
Synaphea

MUDLARK

RANUNCULACEAE — Buttercup family

Usual family characteristics: This is a family mostly of herbs and some twining vines. The flowers are white or yellow.




the vigorous twining vine — flower — in seed

Clematis pubescens (syn. *Clematis aristata*)
Old Man's Beard

Ranunculus colonorum (syn. *Ranunculus hirtus*)
Common Buttercup

RHAMNACEAE — Buckthorn family

Usual family characteristics: These are small to large woody shrubs with leathery leaves. The flowers have a tubular and often waxy appearance.

Cryptandra arbutiflora
Waxy Cryptandra

Cryptandra sp. (possibly *Cryptandra myriantha* or *Cryptandra nutans* (syn. *Cryptandra tomentosa*))

Trymalium angustifolium

Trymalium ledifolium

Locally this species is widespread but the thickest concentration is in the south Darlington area on the northern slopes of the Helena River valley. Most appear to be about 1-4m high and display masses of tiny flowers particularly in late spring. Some grow much taller in the moist cool gullies.

Trymalium odoratissimum (syn. *Trymalium floribundum*)

Karri Hazel

RUBIACEAE — Bedstraw family

Usual family characteristics: These are herbs with small flowers with reduced-petals.

Opercularia echinocephala

Bristly Headed Stink Weed

Opercularia vaginata
Dog Weed

WELL USED LOG HABITAT

RUTACEAE — Boronia family

Usual family characteristics: This is a large family with about 320 species across Australia. The leaves which are dotted with oil glands give off a pleasant, citrus fragrance when crushed. The flowers can be pink, white or blue with 4 or 5 petals. Unlike the Scented Boronia (not local) the local Boronias do not have the same strong flower scent.



Asterolasia pallida (syn. *Urocarpus pallidus*)


Boronia cymosa
Granite Boronia


Boronia ovata
Heart-leaved Boronia

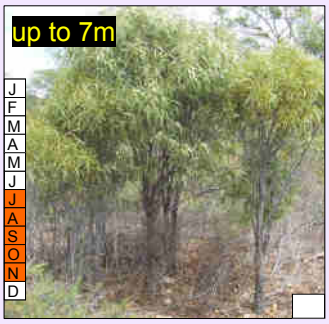
Boronia sp. (possibly *Boronia ramosa*)

SHELF FUNGUS


Philotheca spicata (syn. *Eriostemon spicatus*)
Pepper and Salt

SANTALACEAE (syn. VISCACEAE) Sandalwood family

Usual family characteristics: This family of trees, shrubs and herbs are partially parasitic. The green-brown flowers are usually small, and the green-red fruit fleshy.






From existing rootstock it takes about 20 years for this species to form a well-developed attractive small tree. However frequent fires burn the tree to ground level severely restricting local trees from growing to their seed-producing mature size. Consequently most trees in the Darlington area only grow to a maximum of 2-3m. The Sandalwood family has parasitic tendencies similar to that of the Christmas Tree and can ensure its survival by producing new shoots from underground runners.

The strongly scented flowers are only 2-3mm across and appear in clusters. Despite producing a reasonable number of flowers it rarely sets any fruit.

Massive quantities of a different *Santalum* species with attractively scented wood and oils was exported during the late 1800s and earlier 1900s.

Santalum acuminatum
Quandong

SAPINDACEAE — Soapberry family

Usual family characteristics: This is a family of trees, shrubs, climbers and ground covers often found in arid to semi-arid areas. Its leaves usually have a milky sap and the fruit is usually small and papery with wings.



Diplopeltis huegelii
Pepper Flower

STYLIDIACEAE — Triggerplant family

Usual family characteristics: Australia's best representation of this intriguing family of herbs is in the South-West Botanic Province (about 150 of 230 species). It is characterised by a clever strap-like pollination mechanism called a stylar column on which the plant's anthers and stigma are attached. When the flower is visited by an insect it triggers the stylar column which quickly springs from under the flower, taps the insect, and deposits pollen usually on its back. Taking around 20 milliseconds (0.02 seconds) it is one of the fastest movements of all plants. The insect then transfers the pollen to the next flower that it visits. The stylar column takes 8-10 minutes to re-set and around an hour in preparation for the next insect.

typical stylar column



Photograph far right shows plant in fruit, not in flower.
Levenhookia pusilla
Midget Stylewort


Levenhookia stipitata
Common Stylewort

Stylidium affine (syn. *Stylidium caricifolium*)
Queen Triggerplant

Stylidium amoenum
Lovely Triggerplant

The photograph at the far right shows a flower closing for the night like a book, hence its name.
Stylidium androsaceum
Book Triggerplant

note fluffy red tip to stylar column unusual 3 lower petals stem has golden glandular hairs, hence its name
Stylidium ciliatum
Golden Triggerplant








The interesting feature about this species is that the flower colours can vary a great deal even to the extent of having 2 colours on the same plant as shown in the lower right photograph (lemon and white).

Stylidium dichotomum

Pins and Needles

Stylidium ecorne

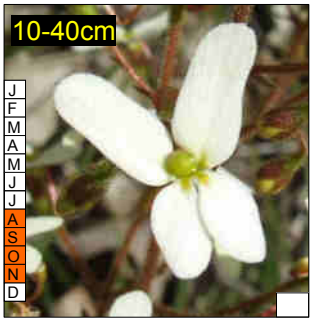
Foot Triggerplant

NYAANIA CREEK WATERFALL


Stylidium emarginatum

Biddy Four Legs


Stylidium eriopodum
Boomerang Triggerplant

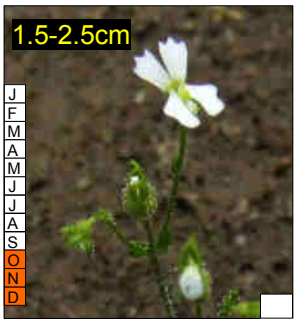





stylar column set to spring

the lower portion of the flower stem is hairless

Stylidium hispidum
White Butterfly Triggerplant





This species is one of the smallest of all of our local wildflowers. The flower petals are about 2mm long. They are sometimes found in damp creek beds.

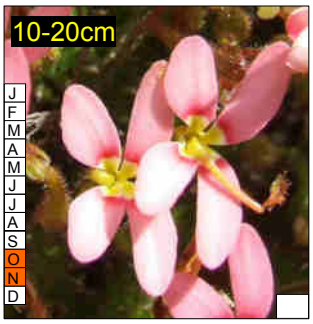
Stylidium perpusillum
Tiny Triggerplant

Stylidium petiolare
Horn Triggerplant

NATURAL ROCK 'ART'



Stylidium pycnostachyum
Downy Triggerplant





possibly a pale variety

Stylidium recurvum
Circus Triggerplant

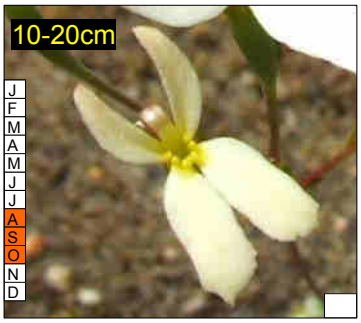

Stylidium repens
Matted Triggerplant


Stylidium scariosum
Reed Triggerplant


stylar column after being triggered | stylar column reset

Stylidium schoenoides

Cow Kicks





Stylidium sp. Cormaceous ephemeral (F. Hort, J. Hort & J. Shanks 2382)


Stylidium sp. Darling Range (H. Bowler 371)

Pink Fountain Triggerplant

THYMELAEACEAE — Daphne or Rice Flower family

Usual family characteristics: Mostly shrubs and herbs this family is dominated by the *Pimelea* species. The small tubular flowers are usually clustered into heads at the ends of the stems.


The flowers on this species are on separate male and female plants.

Pimelea argentea

Silvery Leaved Pimelea

Pimelea ciliata
White Banjine

Possibly two variations of *Pimelea imbricata* are shown in these photographs.

Pimelea imbricata
Hairy Pimelea

Pimelea suaveolens
Scented Banjine

NATURAL BUSHLAND 'ART'

VIOLACEAE — Violet family

Usual family characteristics: World-wide this is a large family, but Australia only has about 26 species. The South-West Botanic Province has only one genus that being *Hybanthus* with only about 8 species. Mostly small herbs with narrow leaves an obvious feature is their delicate violet-shaped flowers with the lowest petal usually being the largest.

Hybanthus floribundus
Showy Hybanthus

XANTHORRHOEACEAE — Grasstree family

Usual family characteristics: This is a small but distinctive Australian family with its single *Xanthorrhoea* genus. They are slow-growing perennial plants often with a resin impregnated trunk but not of wood like that of other trees (note that not all have trunks). The soft core inside the trunk transports moisture and the plant's nutrition. The leaves are narrow, pointed and stiff rising from the crown of the plant. As they die they become the core-protecting trunk. The flowers form on tall spikes.



This species is not widespread as other Grasstrees. Unlike other *Xanthorrhoea* species but similar to *Kingia australis* there is a distinct division between the green leaves and the dead brown/grey skirt which hangs close to the trunk. It has much shorter flower spears than *Xanthorrhoea preissii.* When broken its leaves show a 4 sided square shape.

Xanthorrhoea acanthostachya





This species has no trunk. When broken its leaves show a 3 sided shape.

Xanthorrhoea gracilis

Slender Balga or Graceful Grasstree






very odd and rare flower spear

The Blackboy's growth rate is very slow, at around 1.5cm annually, but they often live for more than 300 years. Their single trunks may divide several times providing us with some curious shapes. Its broken leaves show a 4 sided or diamond shape.

Xanthorrhoea preissii (syn. *Xanthorrhoea reflexa*)

Balga, Grasstree or Blackboy

XANTHORRHOEA AND FIRE

These comments are appropriate for all *Xanthorrhoea* species and *Kingia australis*.

It is often reported that Grasstrees need to be burnt at regular intervals in order to thrive and propagate effectively. This myth may have been promoted because they appear to be one of the first to regenerate after fire and often throw flowering spears during the following season. This is no more than a natural reaction in the aftermath of fire. Many Australian plants have adapted to occasional fire and react in this way. It is simply a matter of survival and not a requirement by the plant.

There are several reasons why we should question the burning of these species. It is true that due to their structure Grasstrees have developed considerable protection but each time this protection is burnt the trunk becomes more exposed and many old plants (100-300 years old) die unnecessarily. Grasstrees survive and propagate very well without the artificial intervention of fire.

Of great importance unburnt Grasstrees are an essential part of the eco-system. They provide old leaf thatches (skirts) which hang down to the ground or under the green growth providing some of the best habitat for animals, birds, reptiles, spiders and insects in our bushlands. Once burnt these thatches take a very long time to re-form. This has a destructive consequence on the local eco-system and habitat.

Partly due to the increase in fire frequency during the past 180 years there has been a dramatic reduction in the number of Grasstrees. This is also true for many species from other flora families.

ZAMIACEAE — Zamia family

Usual family characteristics: The species in this family are cycads, one of the most ancient plant groups on Earth. First appearing some 290 million years ago they are not related to palm trees which they tend to resemble. Conifers (which include pine trees) and cycads (which include Zamia) are classed as Gymnosperms which means that they are plants with naked seeds and are not flowering plants. Flowering plants, on the other hand, have seeds enclosed in ovaries and are classed as Angiosperms. See the chapter on 'The Kingdom of Plants – Classification' for more information.

female plants with developing cones

mature fruit

male plant

This Zamia species is a regular feature in our local bushlands and grows only in Western Australia's South-West Botanic Province. It has separate male and female plants. The photographs of the male and female cones were taken in February and the photograph of the bright orange coloured fruit was taken in late March.

Photographs 1 and 2 are of Zamia throwing fruit after a hot-burning summer fire. Photograph 3 shows a soft woolly fibre often used by Aboriginals as tinder for fire.

Macrozamia riedlei
Zamia

NATIVE FLORA APPRECIATION

A Matter of Preservation and Restoration

It has been said many times and for at least 40 years that;

> Without a very strict permit any one of us breaks the law if we pick a single wildflower from a park, reserve or government owned land, yet many land-based businesses, developers and authorities still allow vast areas of native flora to be cleared often with little regard for the preservation and restoration of our natural environment.

We all appreciate the need for agriculture, industry, water and housing, however ever since European settlement in the South-West Botanic Province the people who set about trying to satisfy these basic needs, on behalf of the population, could have been far more informed, caring and responsible. There is little doubt that our world famous flora has been and continues to be subjected to enormous pressures sometimes resulting in the extinction of some species and often resulting in many species being threatened or massively depleted.

Here are some interesting facts which highlight the extent of the Province's environmental changes:

- Government scientific documents show that in about 65% of the Province's area less than 20% of the native flora remains. Of the other 35% around 30-70% remains, depending on the area. This is attributed to massive land clearing and significant bushland alteration (including early logging and grazing). Within the huge wheatbelt region 90% of the land has been cleared of all native vegetation.
- The definition of a biodiversity "hotspot" is where a region has at least 1,500 endemic species and where that region has lost more than 70% of its original habitat. About 50% of the species in the Province are classed as endemic which in worldly terms is a huge representation, but sadly only 30% of the Province's original habitat remains today. Only 11% of the region has some sort of protection. (see Conservation International, an organization that tracks Earth's biodiversity "hotspots" - www.biodiversityhotspots.org)
- 40% of our native plant species (at least 4,000) are susceptible to Dieback Disease introduced soon after European settlement. Called Phytophthora, this water mould is having a massive impact on the region's flora and biodiversity.
- Invasive weeds are still a major problem continuing to threaten native species in open bushlands as well as choking wetlands and water courses. For more information about Invasive Plants (Weeds) refer to the next chapter of this book.
- During the past 180 years of European settlement there has been a massive reduction in natural seed production mainly due to land clearing and the huge increase in the frequency of fires.

With the exception of some isolated areas of reasonably pristine bushlands and native forests the South-West Botanic Province bears little resemblance to the original bushlands before European settlement. "Conservation International" clearly state that, "immediate action is necessary to ensure the survival of the region's unique and highly threatened flora and fauna".

Although we have more preservation and restoration programmes than ever before there are many challenges that people in decision making positions (whether they be from Governments at all levels, mining companies, agricultural pursuits and other land-based businesses) need to address. Perhaps the greatest of all challenges are the political and economic wills to allocate far more resources to programmes that are urgently needed. Some of those bushland threats, challenges and programmes include:

- Increased research and programmes designed to control and combat Dieback Disease. Already this most serious threat has caused significant damage. Potentially it may have devastating and irreversible consequences on bio-diversity health in the future.
- Better bushland management in regard to urban, agricultural, mining, and infrastructure expansion, and other land-based development. Why not demand that every developer, whether they be private or government, be accountable for regeneration programmes of at least equal size and complexity somewhere else to compensate for the damage caused? Continual land clearing is a most serious threat.
- Continual education based programmes and information for Mr & Mrs Public that encourage bushland appreciation, good environmental habits and local knowledge.
- Extensive, thorough and independent scientific research regarding the history and the consequences of fire.
- Significantly larger programmes designed to arrest, control and eradicate invasive plants.
- Stricter limitations on the harvesting of native forests and woodlands and the associated understorey destruction.
- A whole range of local need-based, small scale programmes at the ground level designed to preserve and restore. Local governments (especially based in the hills) conduct some important local small programmes but often lack the resources to make a significant and lasting impact. Consequently local threats may continue to grow. They are well placed to undertake far more activities that are designed to tackle many of the local problems mentioned above. The health of our local bushlands often depends upon local involvement.

Important Comments and Considerations Regarding the Use and Frequency of Fire

It is understandable that we humans are cautious about bushfires and quite rightly so. They can be devastating and whenever threatened we react in a way that we feel appropriately protects our lives and property. However, let us also consider the bushland's health from the bushland's perspective and the fact that we all have another valuable and remarkable asset that we should also protect, improve and enjoy.

It is often assumed that the systematic, regular, 'cool' and frequent burning of our bushlands is an essential requirement and that it also benefits the bush. This may well be a simplistic and flawed approach that may not take into consideration the many complexities of a healthy, sustainable bushland environment.

There is a mountain of information available for the public to read on this subject. However, much of it is conflicting and much of it is heavily biased in favour of various sector interests and points of view. Consequently, trying to decide what is genuine, factual research and what is largely cleverly-worded propaganda is a very difficult task indeed. Admittedly it is a subject far too big to discuss on one page, however here are some facts which should always be considered and on which further thorough and independent research is urgently required.

History and frequency of fire:

- For tens of millions of years our bushlands have been subjected to hot-burning fires at the frequency of one to three times every 150 years. (studies by B. Lamont and S. Downes of Curtin University on the longevity, flowering and fire history of grasstrees and quoted on p. 141 in 'Managing Your Bushlands' by B. Hussey and K. Wallace (reprinted 2003) – Dept of Conservation and Land Management)
- During the past 180 years of European settlement in the South-West Botanic Province fire frequency has increased dramatically by a factor of between 12 and 22 times depending on the area. Fire frequency is now once every 7-12 years. (p. 141, 'Managing Your Bushlands' by B. Hussey and K. Wallace)

- The consequence is that this large increase in fire frequency (including summer fires and prescribed burns) may have damaged bushland bio-diversity more than we realise. Added to the consequences of intensive logging (our region was thoroughly logged during the early settlement years), weed infestation, land clearing, 25 years of diminishing rainfall and other probable climate changes, and the ever spreading Dieback Disease these combined factors may be having an ever deteriorating effect on health of our bushlands.

Flora:

- The Province's fire history extends for tens of millions of years during which time flora was forced to adapt or change at an extremely slow rate. Regular and more frequent fires especially out of season (i.e. winter and spring) may cause additional problems for the health of our flora. It is a sudden, very recent and artificial condition to which the bush is not accustomed and has had virtually no time to adapt.
- Naturally decomposing forest floor leaf-litter used by plants for seasonal growth and nutrition (essential plant/root food) is destroyed by fire. If fires are too frequent soil health may be heavily compromised resulting in poorer plant health and an increased risk of disease.
- Fire exposes and damages surface growing roots typical of many plants and may make them far more susceptible to Dieback Disease.
- It takes several years for many native species to grow to the mature seed producing level necessary to sustain a healthy plant population. Frequent fires may well be one of the main causes of denying plants the opportunity to reach that level of maturity thus causing a significant reduction in seed production. An example of far too frequent bushland fire devastation is the area between Gooseberry Hill and Helena River. This area hardly ever gets a chance to regenerate properly.
- The flora species that usually re-establishes the quickest after fire are invasive grasses (weeds). Frequent fires dramatically promote their proliferation causing fuel loads to increase to dangerous levels. (p.151, 'Managing Your Bushlands' by B. Hussey and K. Wallace)
- Frequent fires can alter bushland species composition by promoting certain species to unnatural domination over other species. This imposition can over time threaten the survival of some species. (p. 145, 'Managing Your Bushlands' by B. Hussey and K. Wallace)

Fauna:

- For many species the cooler months are when fauna prepares for reproduction and the rearing of their young. Fires, out of season, especially during winter and spring, may have a devastating effect on the life cycle of many animals, birds, reptiles, amphibians, invertebrates, insects and other bushland wildlife.
- Recent studies regarding the effects of fire upon the masses of extremely important invertebrates, fungi and bacteria question whether prescribed burning should be carried out at all. These living organisms break down and recycle masses of dead material thus improving and protecting the soil. It is also nature's way of reducing forest fuel loads while at the same time promoting a healthy ecosystem. (see paper titled 'Fire: Biological Problems with Control Burning' by Ted Edwards, CSIRO Entomologist)
- It has often been claimed that 'cleaning up the untidy dead forest floor by fire' is a good thing. This is a claim that is highly questionable. An increasing number of reports make it very clear that this practice is in fact disastrous resulting in long term damage for both flora and fauna. (p. 48, 99, 100 & 160, 'Managing Your Bushlands' by B. Hussey and K. Wallace) Understorey and forest floor debris provides essential habitat for fauna (eg hollow logs, leaf litter and stick debris), rotting plant matter essential for healthy soil and healthy native vegetation, important components for the prevention of erosion and a home for an amazing larder of food for native creatures.

Overall:

- The observation is that there seems to be a conflict (of interests) between our methods of self protection and our methods of bushcare.
- Highlighted by the issues raised above there are 2 fundamental questions which need to be addressed;
  1. Are we trying to solve one problem (security) but in so doing creating another problem (devastation)? Have we created another "cane beetle-cane toad solution" with its creeping, disastrous consequences and its associated dreadful lack of thorough research?
  2. Is it as simple as saying, "Oh, the bushlands and wildlife always bounce back after fire"? Will they really recover if we continue to pound them too frequently especially during cooler months? Where is the conclusive scientific research that deals with this question?
- Additional to the consequences of increased fire frequency have we researched the likely consequences of future climatic changes? Already changes in the local weather seem to have had an impact resulting in a significant decrease in rainfall and far drier soils. Will this compound the problem of compromised bushland health and biodiversity and do we really know how the bushlands are responding?
- If authorities believe it is absolutely necessary to reduce fuel loads in order to ease the threat of fire to property can it be carried out with a far greater regard for bushland health and with far more knowledgeable and accurate bushland management information?
- Regrettably extensive research and interviews for this chapter found that, far too often, people in decision making positions do not appear to be as well informed as they could be (or should be) regarding the use and consequences of fire. As there are many important under-answered questions and other important considerations (some listed above) there seems to be an urgent need and a very strong case for further thorough, independent scientific research on the use and consequences of fire during the past 180 years and strategies for the future. Hopefully such research will determine a far more knowledgeable and ultimately beneficial approach for all concerned.

Things We Can Do to Improve Our Knowledge and Appreciation

Below is a list of things that you may wish to consider.

- Be a family that makes a concerted effort to appreciate local and Western Australian native flora. What do our children know?
- Never pick or destroy wildflowers.
- When establishing gardens plant trees and plants that are native to our local area. Use this book as a guide.
- Actively oppose any avoidable destruction of any Western Australian flowering plants (trees and understorey) on properties, roadsides, recreation areas and government owned land.
- Find out how our local government can assist with the provision of free local plants and information. Contact details on page 122.
- Insist that governments at all levels only plant tree and plant species that are native to our local area.
- Join a wildflower organization. Contact details on page 122.
- Learn the art of native flora propagation.
- Attend a course on Western Australian flora and/or related subjects like biodiversity, conservation and the environment.
- Read other books and documents on Western Australian native flora.
- Lobby at every level of government for a far better provision of resources for the preservation and restoration of our flora heritage.
- Join a team working on the eradication of invasive plants in your local area. Contact details on page 122.
- Be more aware of plants with weed potential that are growing in your home garden. Ensure that they do not 'escape' into neighbouring properties, road verges, down watercourses and into adjacent bushland.
- With advice (and possibly permission) from the Shire's Bushcare Co-ordinator eradicate invasive weeds from your section of road verge or a small section of adjacent bushland. Replace with local native plants.
- Go for bushwalks using the map booklet "Walk Trails and Circuits". Take this book with you to identify various species.
- Promote at every opportunity the necessity for proper research into the whole subject of bushland preservation and restoration.

INVASIVE PLANTS (WEEDS)

Much of the following valuable information regarding invasive plants was kindly written and contributed by Peter Day (see chapter on Valuable Contacts, page 122, for details).

Definition of a Weed

A weed can be defined as a plant out of place or growing where it is not wanted. So any plant can be a weed. Here, we restrict ourselves to local environmental weeds, those which represent a threat by modification or displacement of the area's native flora. That threat depends on many factors such as the weed's growth habit, adaptation to soil and climate, ability to block out light and so on. Weeds which produce copious quantities of readily germinated seed, or seed which is rapidly dispersed by water, wind or birds, are particularly troublesome. A weed's response to fire is also a major factor in our landscape.

Where Are They and Why?

The information included in this chapter refers to the area outlined on page 5 map.

Virtually all of the developed area and importantly most of the bushland reserve margins adjacent to developed areas, be they quarries, roads or residential boundaries are suffering some degree of weed invasion. All water courses are significantly degraded with only a few minor segments in natural (original) condition.

Weeds move around and arrive in our bushlands by 'deliberately' sending their reproductive material off into the environment by a variety of carriers such as wind, water, animals and birds. On top of this is added the now very major effect of human activity, where weeds are transferred, sometimes deliberately (planting) but often incidentally as a result of other activities (construction of buildings, roads, power & water lines, drainage, rubbish disposal). Virtually all the invasive plants referred to below have originally arrived in the area by human activity of one sort or another, and then been (and continue to be) spread around the area by both human and non-human means.

Identification and Eradication of Invasive Plants

Many weeds with the above characteristics could be included here but, in keeping with the purpose of the book, the list has been restricted to those for which readers are able to take some simple and worthwhile action, or for which awareness is valuable. Others, such as most of the grasses, which can be difficult to identify and to control, and many small bulbs such as freesia, are not included even though they are serious environmental threats.

Just as this book's main aim is to facilitate enjoyment of our bushland native plants by providing information on what to look for and where, this small section on weeds aims to raise awareness, and suggest simple actions that bushwalkers can take to reduce the weed threat in, and adjacent to, bushland. For walkers who regularly take a particular route, a small effort repeated each time can have a surprisingly large and beneficial overall result. Similarly, local residents can assist by being more aware of plants with weed potential growing in home gardens, and ensuring they do not 'escape' into neighbouring properties, road verges, down watercourses and into adjacent bushland.

The notes next to each of the following photographs will enable local residents to identify weed threats and assist in maintaining the health of local bushland.

IMPORTANT: Be very careful not to confuse native grasses with introduced grasses. They often have similar appearances. There are many local native grasses so seek expert advice before destroying plants. See page 122 for expert contacts.

Lupin (Narrowleaf, WA Blue)
Lupinus angustifolius, consentinii
Mediterranean

- Bright blue flowers in Spring
- Prolific seeder, modifies soil conditions, rapidly dominates if left
- Easily pulled before seed pod forms, but watch for small plants
- Can be eliminated in 2-3 years


Spanish Lavender
Lavandula stoechas
Mediterranean
- Strong seeder
- Small plants easily pulled, best before/at flowering
- Replace with non-weedy varieties in gardens


Veld Daisy
Dimorphotheca ecklonis
South Africa
- Strong seeder, often transferred down drainage lines
- Ensure contained if in gardens, don't allow on verges
- Easily pulled before seed set
- Unpleasant smell when handled


Tree Lucerne or Tagasaste
Chemaecytisus palmensis
Canary Islands
- Larger trees have cream-white flowers in early Spring followed later by black pods with copious seed
- Easily pull out smaller plants, cut down or ringbark larger ones


Arum Lily
Zantedeschia aethiopica
South Africa
- Big problem along streamlines; should not be introduced in gardens with watercourses
- Specialized control required but easy removal of seed pods after flowering very worthwhile to prevent propagation


Tangier Pea
Lathyrus tingitanus
West Mediterranean, Azores
- Vigorous, smothering annual pea creeper, prolific seeder
- Easily controlled with consistent pulling before seed pod form


Watsonia (3 or 4 species)
Watsonia bulbillifera, etc
South Africa
- Vigorous seeder, dominates soil space with multiplying corms
- Now mostly eliminated or controlled in Darlington (except north-west parts and extreme south-east parts near Helena River), but remain alert and don't introduce in gardens


Queensland Silver Wattle
Acacia podalyriafolia
Queensland, NSW
- Larger bushes/trees prolific seeders with major germination after fire
- Ensure garden plants do not escape
- Pull small seedlings or bushes, cut or ring bark larger trees


Flinders Range Wattle
Acacia iteaphylla
South Australia

- Larger bushes/trees prolific seeders with major germination after fire
- Ensure garden plants do not escape
- Pull small seedlings or bushes, cut or ring bark larger trees
- Flowers earlier in the season than most other Wattles (April)


Tambookie Grass
Hyparrhenia hirta
Africa, Mediterranean

- Tall course clump grass (do not confuse with Kangaroo Grass, page 85)
- A real menace, now quite prolific elsewhere but contained in Darlington so far
- Identification and control probably specialized, but alertness essential



Flax-leaf Broom
Genista linifolia
Mediterranean

- Another menace, bright yellow flowers in spring, often in older gardens
- Shrub to 2m, prolific seeder and quick growing
- Pull out then keep pulling seedlings before they are able to flower until eliminated
- Preferably don't allow in gardens, but at least ensure contained


Pink Gladiolus
Gladiolus caryophyllaceus
Africa, Mediterranean

- Easy to see and pull at flowering; sometimes bulb will come away, but will at least prevent seeding
- unpleasant smell if used as a vase flower


Wonga Wonga Vine
Pandorea pandorana
Eastern Australia, New Guinea, Kimberley

- Climbs to top of trees, wide spread of seed on wind, especially bad in damp areas, an emerging big local problem, pull out when small, don't plant anywhere near bushland watercourses
- Some vines produce very little seed in some years
- Unfortunately (for hills communities) promoted by the nursery industry, though mostly cultivars

General List of Invasive Plants

The list below is not a catalogue of invasive plants but is provided simply to give readers an indication of the large number of locally more significant troublesome weeds which can be found in our bushlands and neighbourhoods.

African Cornflag
African Love Grass
Agave
Arum Lily
Babiana
Bamboo (Giant Reed)
Blackberry
Blackberry Nightshade
Blue Morning Glory (Dunny Creeper)
Blue Periwinkle
Brazilian Pepper
Bridal Creeper
Cape Weed
Castor Oil Plant
Cotton Bush
Cotoneaster
Dolichos Pea
Eastern States Wattles (many)
Fountain Grass
Freesia
Flax-leaf Broom
Italian Buckthorn
Kikuyu
Kurrajong
Lemon Scented Gum
Lucerne Tree (Tagasaste)
Lupin
Mile-a-Minute
Myrtle leafed Milk Weed
Nasturtium
Olive Tree
One Leaf Cape Tulip
Onion Weed (3-cornered Garlic)
Paspalum
Paterson's Curse
Pink Gladiolus
Plantain
Red Natal Grass
Spanish Lavender
Tambookie Grass
Tangier Pea
Veld Daisy
Victorian Teatree
Watsonia
Wavy Gladiolus
Wild Passion Vine
Wild Turnip
Wonga Wonga Vine
Wormwood

THE KINGDOM OF PLANTS - CLASSIFICATION

Not all scientists agree on one definitive classification system.

Basically there are 5 Kingdoms of living organisms, of which one is called Plantae (Note: Monera may be split into 2 Kingdoms)

For those interested in the subject this simplified illustration shows how the plant kingdom is structured and where flowering plants sit in the grand plan.

KINGDOM OF ANIMALIA (animals)

KINGDOM OF MONERA (eg bacteria)

KINGDOM OF PROTISTA (eg *Amoeba*)

KINGDOM OF FUNGI

KINGDOM OF PLANTAE (plants)

Are there roots and stems?
NO YES

Are there leaves?
NO YES

Some green algae

bryophytes (eg. mosses)

Are there seeds? (first appeared 290 million years ago)
NO YES

pteridophytes (eg. ferns)

Are there flowers? (first appeared 135 million years ago)
YES NO

CLASS
Angiosperms
(plants with seeds enclosed in ovaries)
commonly known as flowering plants

CLASS
Gymnosperms
(plants with naked seeds)
(eg. cycads, conifers, zamia)

ORDER
Plants which have developed their differences from a common ancestor.

FAMILY
Plants with many common botanical features and similarities often easily recognised. The highest classification usually used.
eg. **PROTEACEAE** (Banksia family)
eg. **MYRTACEAE** (Myrtle family)

GENUS
The usual name given to a group of plants whose parts are most familiar.
eg. ***Grevillea*** (one section of the **PROTEACEAE** family)
eg. ***Eucalyptus*** (one section of the **MYRTACEAE** family)

SPECIES
This is the classification that defines individual plants. Colour, size, leaf shape, location or the discoverer's name may often influence the species name. Each plant is identified by using the genus and species names.
eg. *Grevillea* ***wilsonii*** or Native Fuchsia (belongs to the ***Grevillea*** genus)
eg. *Eucalyptus* ***marginata*** or Jarrah (belongs to the ***Eucalyptus*** genus)

If you take a walk along certain tracks around Darlington you may find that somebody has added an interesting and some might say an amusing attraction to our bush. We have been told that it has been created by a young person who has a flare for this kind of 'natural' expression……Now that's imaginative, and it certainly beats graffiti.

VALUABLE LOCAL CONTACTS

- Friends Groups for Various Reserves and other similar organisations
  Throughout the Mundaring Shire there are many Friends Groups attached to various parks and bushlands close-by our "villages".
  These groups are active in protecting and regenerating native bush, and weed eradication. We encourage residents to participate in your local group.
  Telephone Shire of Mundaring Bushcare Officer 9290 6685 for contact details of each group.

- Shire of Mundaring Bushcare Co-ordinator 9290 6685
  General information website: www.mundaring.wa.gov.au/residents/residents_yourenviron.asp#vegetation
  Free tree canopy and understorey plants for residents.

- Weed Infestation & Eradication
  General Darlington area, Peter Day 9299 6649

- Greenpage Newsletter
  Recommended reading - Excellent publication for information regarding local issues, contacts and events.
  Available online: www.mundaring.wa.gov.au/residents/pdf/Greenpage.pdf Available in hard copy: mail@emrc.org.au or 9424 2222

- Wildflower Society of WA – Eastern Hills Branch 9295 4249, Octagonal Hall, 52 McGlew Rd, Glen Forrest WA
  Appreciation and awareness of nature through preservation, propagation and revegetation of WA wildflowers.

- Helena River Catchment Group 9424 1256, Octagonal Hall, 52 McGlew Rd, Glen Forrest WA
  Tree conservation, environmental education, noxious weeds, pollution control, environmental action.

- Darlington Residents and Ratepayers Association 9252 1256
  To safeguard and promote the interests of ratepayers and residents of the area. To preserve the character of the area and the surrounding countryside.

VALUABLE REFERENCES

- FloraBase of Western Australian Flora
  Department of Environment and Conservation, Website: http://florabase.calm.wa.gov.au

- Orchids of South-West Australia (Third edition - 2011)
  By Noel Hoffman and Andrew Brown

- Wildflowers of the Northern Bibbulmun Track & Jarrah Forests – A Walker's Guide (2003)
  By Anne Ireland and Kim Macey, Dept of Conservation and Land Management (now Dept of Environment and Conservation)

- Wildflowers of the West Coast Hills – A Field Guide (2002 edition)
  By members of the Darling Range Wildflower Society of Western Australia, Quality Publishing Australia

- A Photographic Guide to the Flora of Kalamunda National Park (2009) – Compact Disc
  By Ken Patterson (kennethpatterson5@bigpond.com)

- Leaf & Branch – Trees and Tall Shrubs of Perth (2009 edition)
  By Robert Powell, Dept of Environment and Conservation

- Perth Plants – A field guide to bushland and coastal flora of Kings Park and Bold Park, Perth, Western Australia (2005)
  By Russell Barrett and Eng Pin Tay, published by Botanic Gardens and Parks Authority.

- Common Native Grasses of South-West WA (2008)
  By Una Bell, copies available from Shire of Mundaring

- Hakeas of Western Australia – A Field and Identification Guide (2006)
  By J. A. Young, self published

- Guide to Wildflowers of South Western Australia (1998)
  By Simon Neville & Nathan McQuoid, Simon Neville Publications

- Terrestrial Orchids of South-West Australia (website)
  By Justin Brown (The Chookman), Website: http://www.orchids.chookman.id.au

- Managing Your Bushland (1993, reprinted 2003)
  By BMJ Hussey & KJ Wallace, Dept of Environment and Conservation

- Environmental Weeds – Eastern Plains & Hills Region (2004)
  By the Wooroolloo Brook Land Conservation District Committee and the City of Swan

- Bringing Back the Bush: The Bradley Method of Bush Regeneration (2002)
  By Joan Bradley, published by Reed New Holland

- Various publications and pamphlets
  By the Dieback Working Group, www.dwg.org.au

- Conservation International – An organization that tracks biodiversity "hotspots" of international importance. (website)
  Website – www.biodiversityhotspots.org

- Shire of Mundaring - Private Landowner Information Package
  Prepared by Eastern Metropolitan Regional Council, copies available from the Shire of Mundaring

- Geology of Western Australia's National Parks – 2nd edition (2004)
  By Peter Lane

- Gondwana Timeline – Geological History and Australian Flora by Dr. Keith Corbett – Geologist
  Australian Plants Society Tasmania: http://www.apstas.com/gondwanatimeline.html

ADDITIONAL INFORMATION

- Walk Trails and Circuits – Darlington and Surrounds (2nd edition 2017).....By Cliff & Sharron Burns, available from the authors by telephoning 9299 6696

- Mundaring, a History of the Shire (1983).....By Ian Elliot (Shire of Mundaring)

INDEX OF NATIVE FLORA – SCIENTIFIC NAMES

INDEX OF NATIVE FLORA – COMMON NAMES

THE AUSTRALIAN BUSH

The Australian Bush is a place of striking contrasts.

It can be the same and yet it is always different.
It can be severe but has astounding beauty.
It can be unforgiving and yet it is generous.
It can be brutal but it is also peaceful.

It fascinates, charms and captivates us.
It is a gift for us to ponder, play in and protect.
It is our bush, the Australian bush.