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My Local Native Garden

A planting guide to promote biodiversity in Tweed Shire

TWEED SHIRE COUNCIL

Acknowledgements

Tweed Shire Council recognises the generations of the local Aboriginal people of the Bundjalung Nation who have lived in and derived their physical and spiritual needs from the forests, rivers, lakes and streams of this beautiful valley over many thousands of years as the traditional owners and custodians of these lands.

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Disclaimer

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Spinifex
Illustration: Andy Erskine

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Introduction

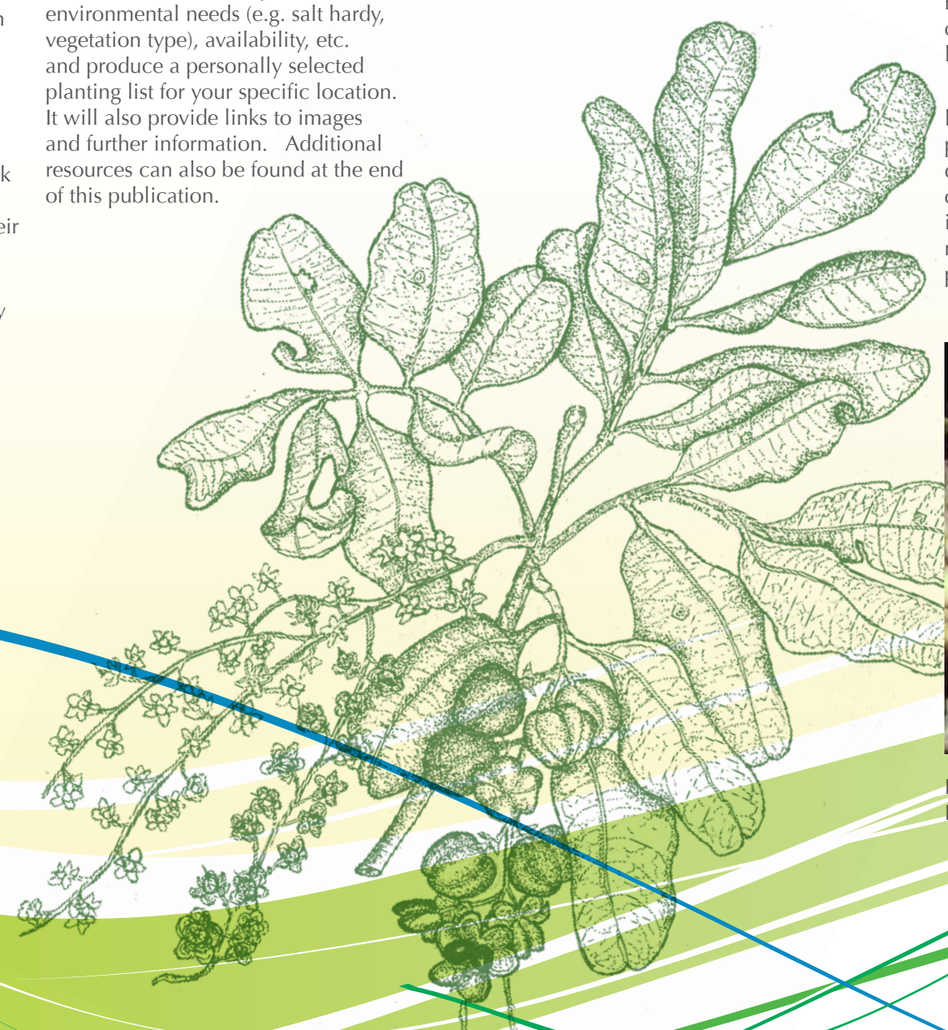
WELCOME TO MY LOCAL NATIVE GARDEN – A PLANTING GUIDE TO PROMOTE BIODIVERSITY IN THE BYRON SHIRE.

This publication hopes to inspire local residents and new arrivals to learn a little more about our spectacular environment. Most importantly we want you to invite the natural world into your own backyard - to share some space with our native plants and animals.

Specifically this guide will assist you to design, plant and maintain your own garden with species that are local to your area. By following our basic planting guide, your garden will not only be easier to grow and maintain, but it will also integrate into the surroundings, linking with a range of natural habitats to help support the great diversity of local wildlife. Central to this idea is to work with nature, after all our native plant communities have already proved their success to be here through millennia of evolution.

My Local Native Garden is an entry point to introduce you to just some of the incredible variety of local native plants. Ideally we want you to ignore the exotic species and focus on endemic species as these will have food value for native fauna and are less likely to become a bushland weed.

For those wishing to explore further, you can find out more detailed plant selection information by consulting the companion online resource to this publication, **The Native Species Planting Guide for Tweed and Byron Shires** www.tweed.nsw.gov.au/NativeSpeciesPlantingGuide. This interactive online resource will enable users to select local native species from options that meet size, flower colour and location requirements, environmental needs (e.g. salt hardy, vegetation type), availability, etc. and produce a personally selected planting list for your specific location. It will also provide links to images and further information. Additional resources can also be found at the end of this publication.



Tuckeroo
Illustration: Andy Erskine

BIODIVERSITY IN THE BACKYARD – A NATURAL RESOURCE

Have you ever stopped to think how we've inherited clean water to drink, fresh air to breathe or how our soils continue to grow healthy food? The answer is biodiversity – literally the variety of plants and animals, their genetics and the ecosystems they live in. These plants and animals, soils and microorganisms all help to filter our water, generate our oxygen and provide the gift of healthy soils. We need to protect biodiversity for our own health as well as play our part in looking after the planet.

Increased population, poor land management practice, and pressure from land clearing and development has fragmented the original environment into small islands or remnants where species are most vulnerable to weeds, pests and predators.

When it comes to flora and fauna, we often only think of an individual species being in danger of extinction, but the reality is each individual species depends on a range of other species - a community - for their survival. This is the inter-dependence of ecosystems and why it is important to protect not just one species, but all species – biodiversity.

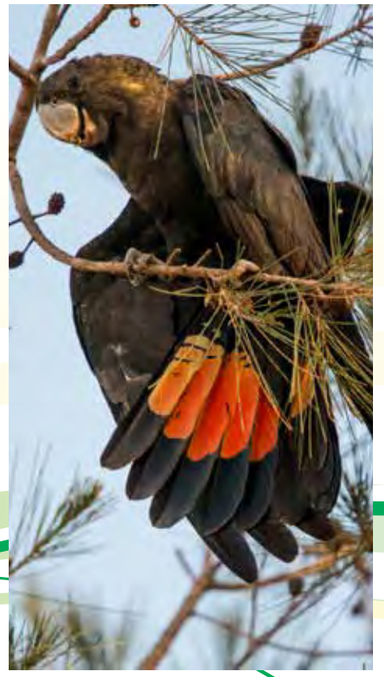
Macadamia
Illustration: Hannah Bunkers

BY PLANTING A NATIVE GARDEN FILLED WITH LOCAL PLANTS YOU CAN CONNECT YOUR GARDEN TO THE EXISTING WILDLIFE CORRIDORS AND ENHANCE THE SURVIVAL FOR MANY NATIVE SPECIES AND THEIR ECOSYSTEMS

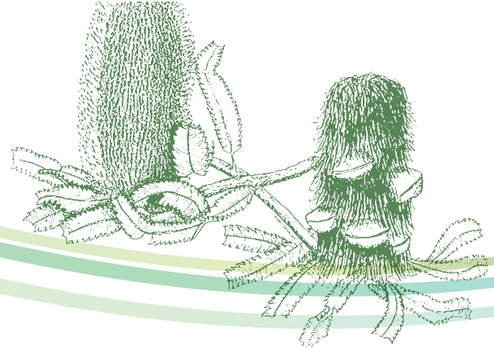
The Tweed Shire is recognised as a biodiversity hotspot – one of the richest and most diverse regions for flora and fauna in Australia. Sadly there are 92 plant and 122 animal species recognised as threatened, 11 Endangered Ecological Communities, one Endangered Population and one area of Critical Habitat in the Shire.

Eastern Blossom Bat
Photo: David Milledge

Leaf-tailed Gecko
Photo: Rainer Hartlieb



Glossy Black-Cockatoo
Photo: George Cornacz



Coast Banksia
Illustration: Hannah Bunkers

My Local Native Garden Sections:

MANY FACTORS AFFECT AND INFLUENCE NATIVE VEGETATION, MAKING IT DIFFICULT TO BE PRECISE ABOUT WHAT TYPE OF VEGETATION COMMUNITY WILL THRIVE IN YOUR GARDEN. TO HELP YOU IDENTIFY WHICH NATIVE COMMUNITIES BEST SUITS YOUR LOCATION WE HAVE DIVIDED VEGETATION TYPES INTO 4 ZONES, NOT ALL LOCALITIES COULD BE INCLUDED DUE TO THE LARGE NUMBER

COASTAL

(P 16-19)

Bogangar
Cabarita Beach
Casuarina
Chinderah
Fingal Head
Hastings Point
Kingscliff
Kings Forest
Pottsville
Tweed Heads
Wooyung

RIVERINE & ALLUVIAL

(P 20-23)

Chinderah
Cobaki
Cobaki Lakes
Condong
Crystal Creek
Eviron
Murwillumbah
Nunderi
Sleepy Hollow
South Murwillumbah
Stotts Creek
Tumbulgum
Tweed Heads West

FOOTHILLS & HINTERLAND

(P 24-27)

Banora Point
Bilambil
Burringbar
Byrrill Creek
Chillingham
Couchy Creek
Crystal Creek
Cudgera Creek
Eviron
Farrants Hill
Kunghur
Limpinwood
Mooball
Pumpenbil
Smiths Creek
Stokers Siding
Tomewin
Tyalgum
Urliup

RIDGES & RANGES

(P 28-31)

Along the ridges and the gullies of:
Cedar Creek
Eungella
Glengarrie
Hopkins Creek
Numinbah
Tomewin
Tyalgum Creek
Upper Burringbar
Upper Crystal Creek

Photo: Rainer Hartlieb

How to use this book

1. Look

Look at the sections opposite (Coastal; Riverine & Alluvial; Foothills & Hinterland; Ridges & Ranges) – which best describes your property? Go to it and view the range of stunning plants that will enrich your garden.

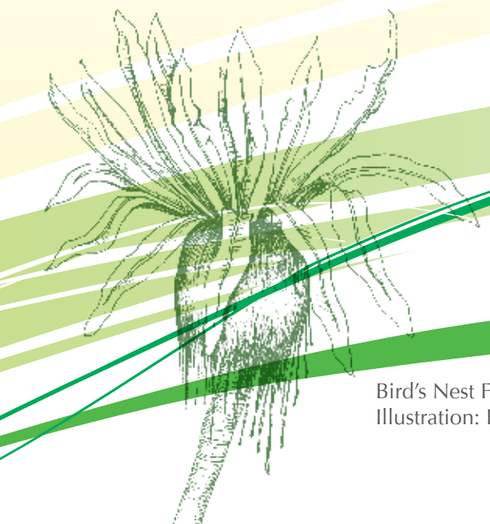
2. Check

Check the locations under the section heading – is there one near you? Do the soil and landscape descriptions fit your place? If not, look at some other sections – your garden may draw inspiration from two or more sections*.

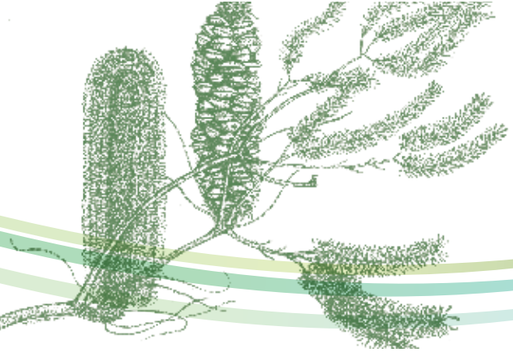
3. Choose

Choose from the list of striking native plants in your section, add others from the Native Species Planting Guide database www.tweed.nsw.gov.au/NativeSpeciesPlantingGuide – contact your local bush friendly nursery and ask them if they have your selection in stock.

* Remember – finding a garden type that resembles your property is a best fit – this is a general guide and your garden may include sections and plants from one, two or even three zones. If you're unsure, try visiting your local nursery with a soil sample, get in contact with your local Landcare group or ask advice from Council.



Bird's Nest Fern
Illustration: Hannah Bunkers



Heath Banksia
Illustration: Andy Erskine

WHAT IS A PLANT COMMUNITY?

Plant communities are a unique assemblage of flora that have evolved as a result of interactions between a variety of factors such as:

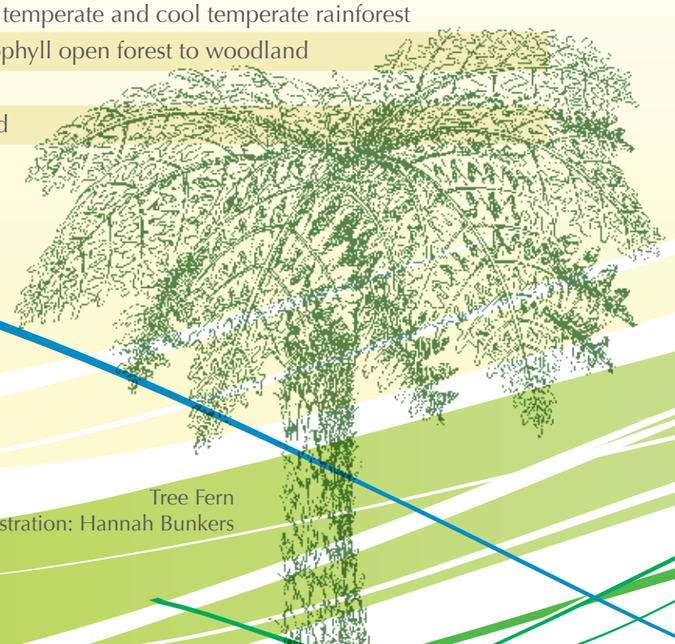
- Geology - underlying rock type and its effect on soils and nutrients
- Soil type – whether the soils are free draining (sand based) or swampy (heavy clay based); fertile or low in organic matter
- Elevation – increased altitude usually leads to cooler, wetter conditions. It can also affect temperature and exposure, all of which impacts on soil types, and can determine if an area is prone to frost.
- Aspect – particularly on slopes where one side has predominantly sun/shade and/or particular winds
- Distance from the coast – exposure to salt laden winds or in tidal zones where only those species that can handle brackish inundation can thrive
- Temperature – the variation in temperature range increases with distance from the moderating influence of the ocean
- Humidity – closer to the coast, sea breezes can moderate the effect of humidity
- Rainfall – across Tweed Shire, the high rainfall favours certain species.

MANY RELATIONSHIPS WITHIN A PLANT COMMUNITY ARE SYMBIOTIC – WHERE THERE IS A RELIANCE OR MUTUAL BENEFIT DERIVED BETWEEN SPECIES – CREATING AN INTERCONNECTED WEB. ADDITIONALLY, OVERLAPPING AREAS OF COMMUNITIES ARE KNOWN AS TRANSITION ZONES OR ECOTONES, WHICH SHOW A PARTICULARLY HIGH LEVEL OF SPECIES RICHNESS.

Below is a list of just some of the many local ecological communities in the Tweed Shire – several of these are listed as threatened under State or Federal legislation.

EXAMPLES OF NATURAL PLANT COMMUNITIES

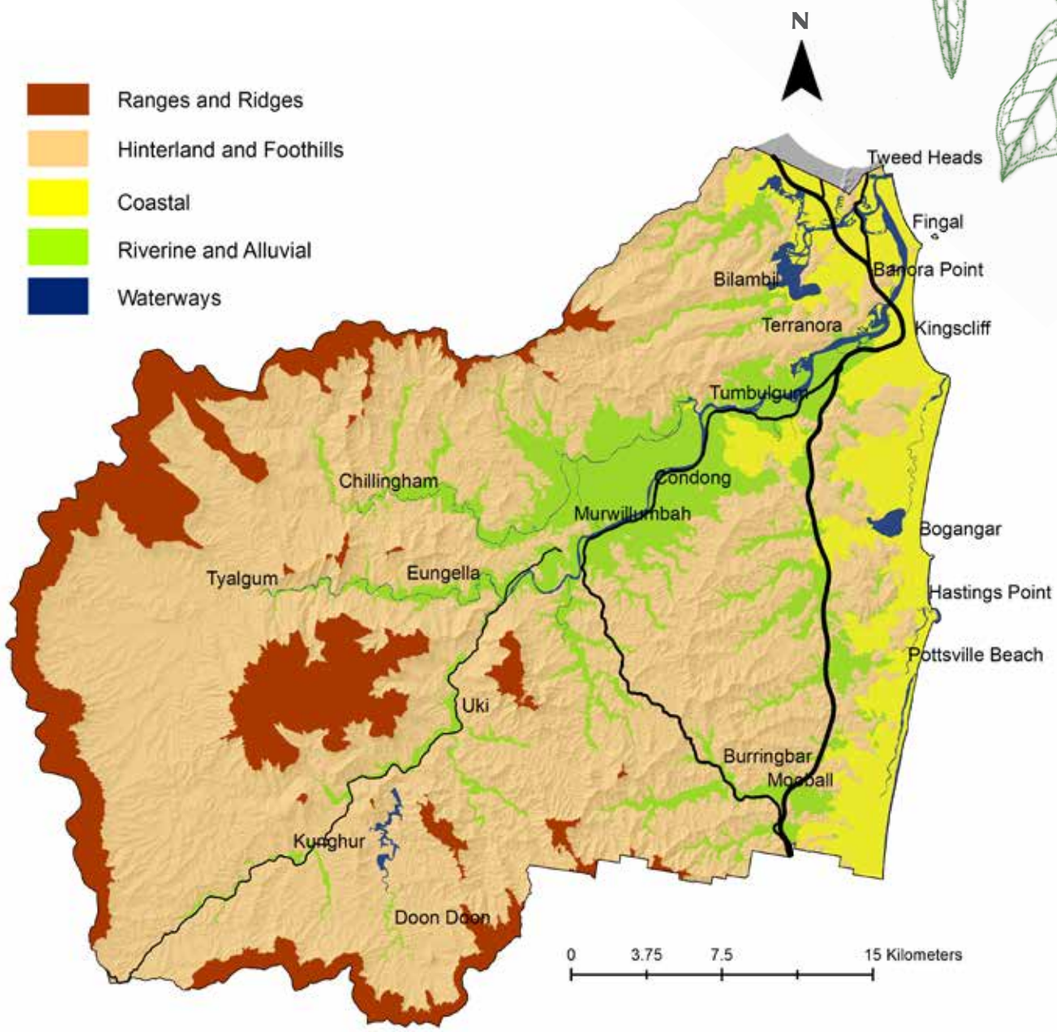
- Foredunes
- Themeda grasslands on seacliffs and coastal headlands
- Coastal heathland
- Coastal cypress pine forests
- Littoral rainforests
- Mangroves
- Coastal saltmarshes
- Swamp sclerophyll forests on coastal floodplains
- Swamp oak floodplain forests
- Freshwater wetlands on coastal floodplains
- Subtropical, warm temperate and cool temperate rainforest
- Wet and dry sclerophyll open forest to woodland
- Native Grassland
- Montane heathland



Tree Fern
Illustration: Hannah Bunkers

Arrowhead vine
Illustration: Tim Roberts

VEGETATION ZONES AND ELEVATION



Design

TWEED SHIRE HAS AN OUTSTANDING PALETTE OF INDIGENOUS PLANTS TO CHOOSE FROM. A GARDEN THAT UTILISES LOCAL SPECIES WILL LOOK MORE IN PLACE WITH ITS SURROUNDS AND LINK UP WITH EXISTING HABITAT TO 'INVITE' THE NATIVE WILDLIFE TO YOUR PLACE.

SUCCESSFUL GARDEN DESIGN BEGINS WITH A SITE PLAN - A SCALE DRAWING THAT INCLUDES ANY SIGNIFICANT FEATURES OF THE SITE SUCH AS EXISTING TREES, SHEDS AND PATHS ETC.

SITE ANALYSIS

Site Analysis is a pivotal stage that lists an inventory of existing and desirable features of the garden that guide the design. Typical features include:

- Direction of cooling summer breezes and warm winter sun (typically north east) – best to leave free of obstructions and keep plantings low.
- Direction of cold winter winds (typically south west) – best for larger trees and wind block plantings to shelter the property
- Desirable views to retain and areas in the garden or rooms of the house where you wish to create privacy
- Undesirable views to obscure
- Pedestrian and vehicle access
- Trees & plants to be retained
- Problem areas to address such as soil quality & drainage
- Fences, overhead power lines & underground cables
- Water outlets.

Sadly… we've all done it… excited by a surge of plant impulse buys, we give little thought to an overall layout. The result: a garden that doesn't function with the surrounding environment. Creating an initial design for a new garden or even renovating an existing garden will give you an overview of what to aim for, even if funds only allow realising the design gradually over time.

Pruned Lilly Pilly hedge with Giant Spear Lilly. Photo: Veda Dante

SITE ANALYSIS EXAMPLE
(Diagram 1)

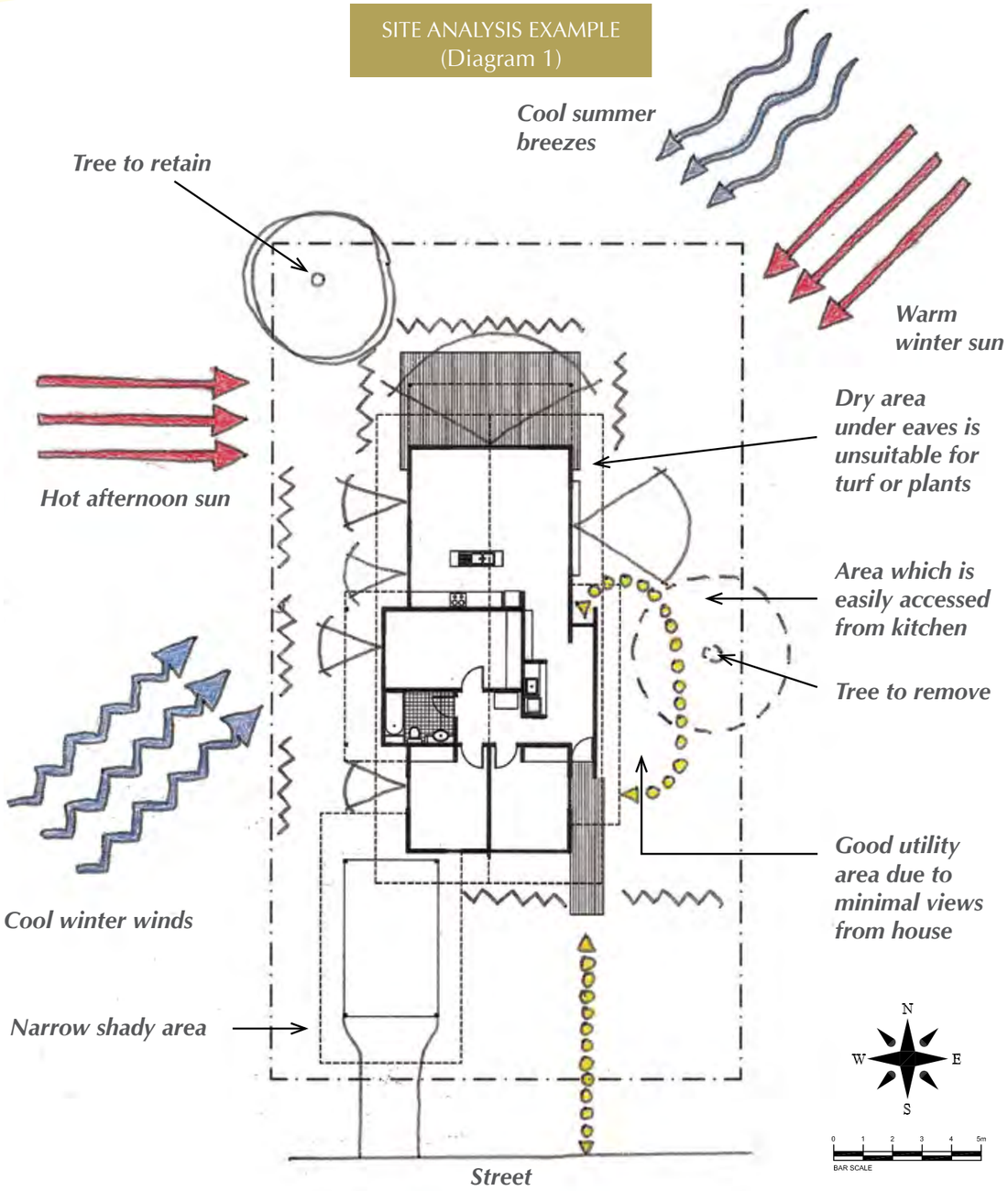


Illustration: Mandy Lisson

Hibiscus Harlequin Bug. Photo: L Koesterke

DESIGN

Once your site analysis is complete you can start to develop a concept plan. This is a simple diagram that helps you to consider where the different functional areas will be located and how they will connect and relate to one another.

Effective landscape design is about context, balance and proportion. A garden that relates to the scale of the surrounding buildings and environment helps in settling the house into the landscape. Choosing the right plants is about both the aesthetic – contrast and harmony – and about the environment – providing vital habitat for native wildlife. Native gardens are not necessarily messy gardens. Many local shrubs respond well to pruning and will develop dense regrowth – providing better protection for small birds.

Think about what functions you want your garden to serve.

- Is there a place to sit and relax?
- Do you wish to attract birds, butterflies or animals?
- Do you require children's play areas or outdoor entertaining areas?
- What about a pool, garden shed or pergola?
- Would you like a pond or water feature?
- Is low maintenance a priority?
- Do you want vegetable gardens and/or chickens?
- Do you have pets and will they need to be fenced?

ARMED WITH YOUR SITE PLAN AND ANSWERS TO THE FUNCTIONS OF YOUR GARDEN, START DESIGNING WHERE THE FOLLOWING POINTS WILL BE ON YOUR PLAN

- **FOCAL POINTS**

A good design has a few focal points but not so many that they are all competing with each other. Where are the best locations to place striking specimen plants, sculptures or water features? Plenty of plain, green, bushy plants supports the more eye-catching elements.

- **STRUCTURE**

Structural diversity is a crucial to creating an variety of habitats. Choose a range of plants and layers, i.e. groundcovers & grasses, vines & scramblers, shrubs & thickets, small and tall trees. This will increase the range of wildlife that will come to nest, rest and play in your garden.

- **TREES**

Trees are an essential element of design. Be considerate of neighbours - one property's southwest is another's northeast - so this may mean a compromise in tree height. Try to get as much information about heights and habits as you can, including root growth. Incorporate existing mature trees into the design and they will provide vital habitat stepping-stones for wildlife.

- **SHRUBS**

Shrubs and groundcovers establish better when planted at the same time as trees. Thickly planted shrubs form excellent screens from winds or views. Smaller birds favour bushy, shrubby, prickly growth for protection.

- **GROUNDCOVERS**

Lower plants soften hard edges and create great habitat for frogs and lizards. They also add to the garden looking complete and can help to minimise weed growth.

- **LAWNS**

Lawns create a sense of space and are great open areas to play or entertain in. They are, however, labour intensive, so reduce their size or consider a native lawn (more info on page 37).

- **VEGETABLE GARDENS**

Choose a position that is easily accessed from the kitchen. Intensively grown vegies will cut down on size and maintenance. Does it need to be fenced from pets or netted for birds and bats?

- **MATERIALS**

Try to be creative - recycle materials where possible. Porous surfaces allow water to soak into the ground rather than hard surfaces that create large volumes of stormwater.

- **BACKYARD BUFFERS & RAINGARDENS**

Densely planted native species in buffer strips and raingardens (bioretention systems) can help to filter and reduce stormwater (more info on page 34).

- **RAINWATER TANKS**

Installing a rainwater tank is one of the easiest ways to reduce the amount of stormwater leaving your property. Rainwater tanks come in all shapes and sizes and the water can be used for watering the garden and washing vehicles. The tank can also be connected to internal plumbing for toilets and laundry.

GARDEN DESIGN EXAMPLE
(Diagram 2)

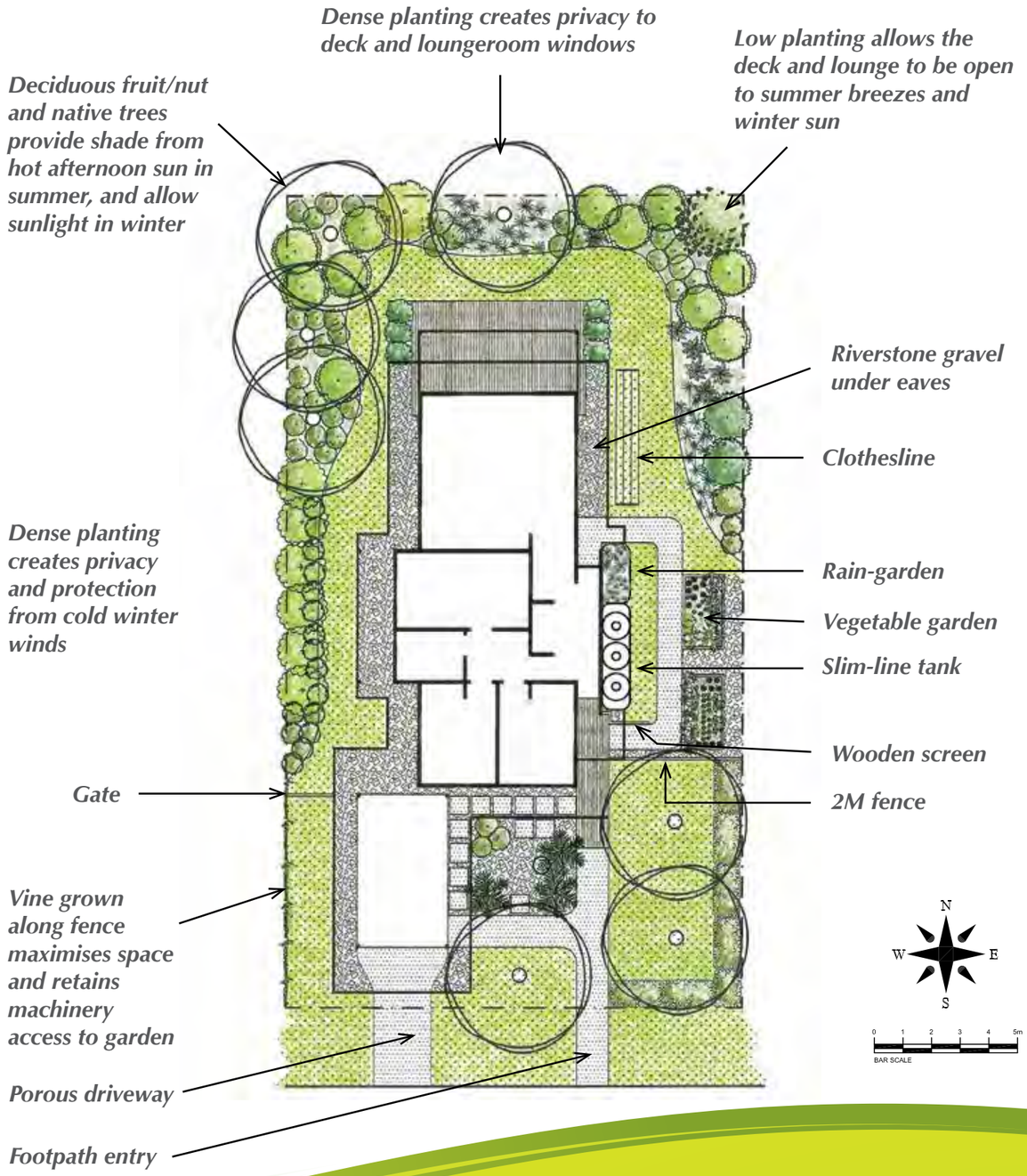


Illustration: Mandy Lisson

Davidson's Plum flower. Photo: Susan Allen

BASIC PLANTING GUIDE

Before you plant

- Check your soil type – does it match the description & type of garden & plants in your zone? Does the soil need any conditioning (mulch, fertilizer, organic matter) before planting?
- Choose plants – pay attention to microclimate, (e.g. full sun/shade, etc).
- Prepare the site – preliminary weeding, dig all the holes and have fertilizer, mulch and water on hand.

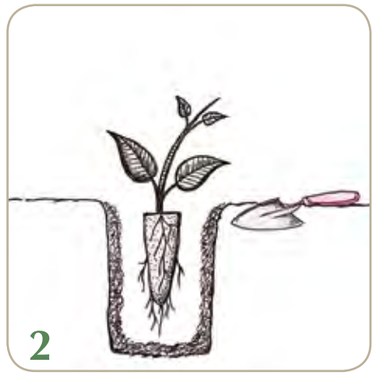
Correct planting technique

Check with the nursery where you purchase the plants about specific planting tips for your selected species, e.g. siting of the planting, watering & fertilizer requirements, mulching etc. Reputable online gardening websites can also be a great source of information.

GETTING HELP

Help can be obtained from local council, landscape designers, experienced bush regenerators, websites and nurseries. There are also a lot of great books and gardening magazines out there to help design your garden – why not put a scrapbook together of all the elements you wish to include? Most importantly, spend time in your garden, get to know the microclimates and plan your garden around its strengths and limitations.

1. Dig a hole slightly deeper and at least twice as wide as the pot size. Loosen the soil around the sides of the planting hole. Water the plant & fill the hole with water and allow both to drain away. If the water doesn't drain from the hole you may need additional help with the addition of gypsum or build up a free draining mound of soil to plant into.



2. Gently remove the plant from the pot or tube and place in the planting hole - the top of the root ball should be level with the surrounding soil. If the roots are pot-bound gently loosen the root ball and then place in hole.

3. Backfill soil, making sure that the surface root ball is well covered and include a little slow release native plant fertilizer and water crystals/gel. Press the backfill down with your hands and shape the soil surface slightly to hold water. Do not place organic matter or too much fertilizer at the base of the hole as this may encourage root rot or fertilizer 'burn'.

4. Water the plant thoroughly after planting and then once a week for the first few months, (depending on season). Thereafter, water generously when the soil feels dry.
5. Mulch around the plant - 10cm thick with at least a 50cm radius - this will help to retain moisture and discourage weed growth. Avoid placing mulch against the stem of the plant as this may encourage collar rot.

Photos: Alison Ratcliffe and James Mayson

Planting illustrations: Hannah Bunkers

Coastal

LOCATIONS INCLUDE:
BOGANGAR, CABARITA BEACH, CASUARINA, CHINDERAH, FINGAL HEAD, HASTINGS POINT, KINGSCLIFF, KINGS FOREST, POTTSVILLE, TWEED HEADS, WOOYUNG

For those of us lucky enough to live in close proximity to the sea, gardening on sandy soils in salt laden winds can be challenging - until you learn the secrets of our local plants.

Before our coastline was cleared for sand mining and coastal development, a diverse ecosystem thrived in a succession of plant communities that each lent protection to the next.

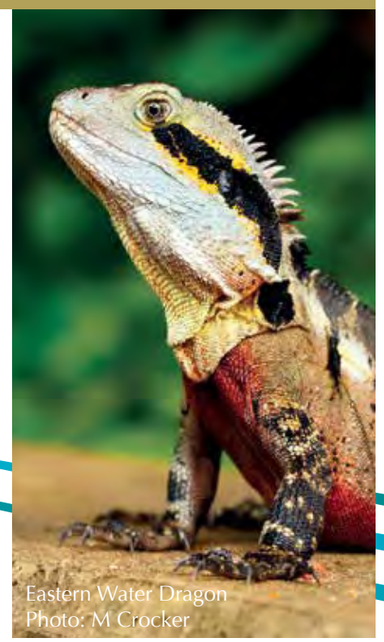
On the foredunes, spinifex grass slows and traps the wind-blown sand, allowing enough security for the low coastal wattle to establish. This in turn provides shelter to the hind dunes and a complex root system that secures the coast against wave attack. In the lee of this, small, salt tolerant trees and leathery vines form a dense barricade and beyond a complex littoral rainforest can establish. Depending on the soil type (sand or clay), and proximity of water table variations, the type of predominant vegetation could be littoral rainforest, melaleuca wetland or fire dependent heath.

The advantages of using local coastal plants in the landscape are salt and drought tolerance, and an ability to thrive in low nutrient sandy soils – a selection of these plants are detailed in the species list that accompanies this section of your guide.

WILDLIFE:
PHEASANT COUCAL, BUSH TURKEY, SWAMP WALLABY, WHITE BELLIED SEA EAGLE, OSPREY, TERN, GULL AND VARIOUS REPTILES, AUSTRALIAN PELICAN, BRAHMINY KITE, BUSH STONE-CURLEW, CORMORANT, EGRET, FLYING FOX, KINGFISHER, SPOONBILL, SWAMPHEN, WATER DRAGON, GOANNA


Bush Stone-Curlew
Photo: David Taylor


Swamp Wallaby & joey
Photo: T Trivett


Eastern Water Dragon
Photo: M Crocker

CREATING A HEATH GARDEN

SOIL DESCRIPTION:
Low nutrient sand and sandy clay

The heath garden would be well suited to a highly exposed site or to frame a view. The small leathery leaves that feature in this broad grouping are salt tolerant and once established can be trained through pruning and require no irrigation. Small shrubs and trees that are fairly nondescript for much of the year will reward you with vigorous flowering in the spring and some of the heath species such as Lemon Scented Tea Tree (*Leptospermum liversidgei*) contain natural insect repellents. This garden will look particularly good with well placed rocks - make them look natural in their setting and try to leave a few caves and crevices for our blue-tongue lizards.

The key species…Banksias, Grass Trees, Leptospermum, Leucopogon, Baeckea, sedges and local Peas. You can even replace the lawn with a low growing form of Kangaroo Grass.

EXAMPLES: Bogangar (south of Primary School) and Cudgen NR

N.B. It should be realised before embarking on the heath garden that many of these plants are volatile; a buffer zone should be established and maintained in areas prone to bushfire. (Interestingly though, there are heath plants that are non-volatile and form natural firebreaks. Further information can be sourced from the RFS & CSIRO.)

Coastal Heath (top left)
Photo: Tanya Fountain
Wetland West Byron (top right)
Photo: Hank Bowers
Littoral Rainforest -
Brays Beach (centre)
Photo: Peter Scholer

CREATING A LITTORAL RAINFOREST GARDEN

SOIL DESCRIPTION:
Sandy loam to sandy clay

In its natural state, such as at Fingal Head, you'll see a compact forest blown into a wedge shape capable of deflecting salt laden winds and providing a surprising amount of shelter beneath. Few of us will have the opportunity to achieve this complexity in our own yards but there are some very useful species to employ in the home landscape. Utilise the sculptural forms of Pandanus, Cordyline, Bangalow Palm, Ginger, Dianella and Hoya Vine. You'll notice these are all lineal plants, which look best with similar shaped and textured plants. Lilly Pillies and other small rainforest species can provide useful hedges and background. Few of these plants flower conspicuously but can put on beautiful flushes of new growth as opportunity allows.

EXAMPLES: Wooyung NR, Fingal Head and Cabarita Headland

CREATING A WETLAND GARDEN

SOIL DESCRIPTION:
Peaty sands

If you live in the low-lying parts of the Shire, the water table may be close to the surface and wet sclerophyll plants will best suit your garden. If you have a really boggy section some of the plants that will happily occupy it and turn it into a feature include: Paperbarks, *Banksia robur,* Blueberry Ash, Cordyline, strappy grasses, ferns and sedges – all can be used to great effect and will require little maintenance. Plant in groups and use your taller species in the background to maximise the impression of space, whilst encouraging the pioneer species that may volunteer to add complexity to the theme. Visit the section on water features and aquatic plants (p32) for more ideas.

EXAMPLE: Stotts Island NR and West Pottsville

Coastal Botanic

Dianella

Great clumping grass. Lush, strappy leaves, dainty purple flowers & edible blue berries. Bushfood

Native Violet

Sprawling groundcover with delicate purple and white flower

Flannel Flower

An elegant white daisy-like flower throughout the year. Prune after flowering to increase bushy habit

Kangaroo Grass

Low maintenance tufting grass with reddish flower heads. Butterfly attractant

Coastal Grass Tree

Grass tree with no trunk and delicate flower spike resembling a bottlebrush

Hoya

Thick leaved, stunning small white fragrant flowers in spring. Suitable for hanging pots

		COMMON NAME	SCIENTIFIC NAME	HEIGHT	WIDTH	SUN	SHADE	WET	DRY	SALT TOLERANT M=Medium H=high L=Low
GROUNDCOVERS & GRASSES	1	Dianella	*Dianella caerulea*	0.8m	spreading	✔	✔	✔	✔	H
	2	Native Violet	*Viola hederaceae*	0.1m	spreading		✔	✔		M
	3	Flannel Flower	*Actinotus helianthi*	0.1m	0.3m	✔			✔	H
	4	Kangaroo Grass	*Themeda australis*	0.2m	spreading	✔			✔	H
	5	Coastal Grass Tree	*Xanthorrhoea macronema*	0.5m	0.5m	✔	✔		✔	H
VINES/ EPIPHYTES	6	Hoya	*Hoya australis*	na	na	✔	✔	✔	✔	H
	7	Guinea Flower	*Hibbertia scandens*	na	na	✔	✔		✔	H
	8	Happy Wanderer	*Hardenbergia violacea*	na	na	✔			✔	H
SHRUBS & SCRAMBLERS	9	Swamp Banksia	*Banksia robur*	2m	2m	✔		✔	✔	M
	10	Snow in summer	*Melaleuca linariifolia*	2m	2m	✔		✔	✔	M
	11	Midgen Berry	*Austromyrtus dulcis*	1.5m	1.5m	✔	✔		✔	H
	12	Clumping Palm Lily	*Cordyline congesta*	1.7m	spreads	✔	✔	✔		M. Protect from wind
	13	Plum Myrtle	*Pilidiostigma glabrum*	1.5m	1.5m	✔	✔	✔		M
PALMS	14	Cabbage Palm	*Livistona australis*	20m	8m	✔	✔	✔	✔	M
TREES	15	Wallum Banksia	*Banksia aemula*	3m	5m	✔			✔	M
	16	Broad-leaved Lilly Pilly	*Acmena hemilampra*	30m (less in cultivation)	8m	✔	✔	✔		M
	17	Blueberry Ash	*Eleaeocarpus reticulatus*	6m	6m	✔	✔	✔	✔	M
	18	Bennetts Ash	*Flindersia bennettiana*	30m (less in cultivation)	8m	✔	✔	✔		H
	19	Celery wood	*Polyscias elegans*	30m (less in cultivation)	8m	✔	✔	✔		H
	20	Pandanus	*Pandanus tectorius*	10m	10m	✔	✔		✔	H

For more species see the Native Species Planting Guide for Tweed & Byron Shires at **www.tweed.nsw.gov.au/NativeSpeciesPlantingGuide**

Guinea Flower

Well behaved vine with large golden-yellow flowers in spring/ summer – excellent screening scrambler

Happy Wanderer

Dark, glossy leaves with bright purple pea like flower in winter/spring

Swamp Banksia

A dramatic & sculptural small tree/shrub with large flower spikes and fruits in autumn/winter lasting months

Snow in summer

Striking masses of white flowers born in summer with attractive paperbark trunk

Midgen Berry

Low shrub – informal hedge.. White flowers in spring/summer with purple spotted edible berries. Wildlife attractant

Clumping Palm Lily

Graceful linear plant with sprays of bright red fruit and flowers in drooping panicles. Bird attractant

Plum Myrtle

Pretty foliage with abundant white flowers autumn/winter, then small pear-shaped purple fruit

Cabbage Palm

Broad fan leaves. Cream-white flower spikes in summer. Red fruit turning black – bird attractant

Wallum Banksia

Robust, sculptural tree with irregular growth habit. Large woody fruit

Broad-leaved Lilly Pilly

Attractive red-pink new foliage with cream flowers on panicles spring/summer, globulous fruit. Wildlife attractant

Blueberry Ash

An elegant small tree with white or pink bell flowers in summer, followed by small, round blue fruit. Bird attractant

Bennetts Ash

An attractive medium tree with large clumps of white flowers, ornamental woody 5-winged seed capsule

Celery wood

Tall, graceful tree with umbrella-like crown of leaves. Small, dark-purple flowers autumn/ winter. Small dark-purple fruit. Bird attractant

Pandanus

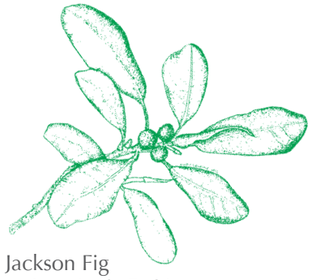
Sculptural tree with large orange fruit (female only), large strappy leaves and distinctive prop roots

Riverine and Alluvial

LOCATIONS INCLUDE:
CHINDERAH, COBAKI, COBAKI LAKES, CONDONG, CRYSTAL CREEK, EVIRON, MURWILLUMBAH, NUNDERI, SLEEPY HOLLOW, SOUTH MURWILLUMBAH, STOTTS CREEK, TUMBULGUM, TWEED HEADS WEST

The riparian zones and alluvial plains of Tweed Shire are some of the most altered and disturbed areas of the north coast. Prior to development they supported a rich mosaic of plant alliances. Remnants of majestic eucalypt-based forest still exist in drier areas. Broad-leaved paperbark forest, swamp oak communities and sedge-lands thrive in areas of wetlands, and, nearer the estuary, communities of mangroves and other salt tolerant plants harbour exceptional biodiversity. All of these species, (except mangroves, which require brackish or salt water) can still flourish near dams, soaks or in gardens on the riverine plains.

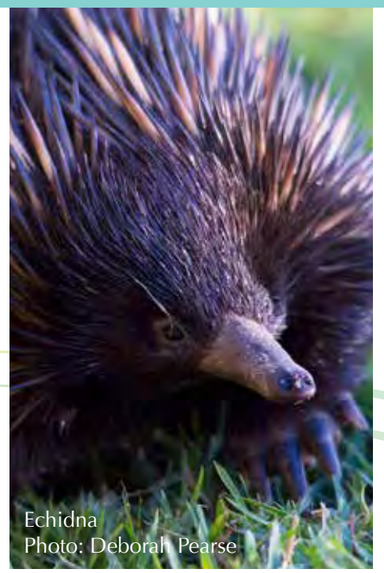
By choosing from the plant communities native to the riparian and alluvial plains of Tweed Shire, you can make your property part of a region-wide wildlife corridor. Doing this, you will invite an incredible diversity of flora and fauna into your backyard. Planting in swathes, to slow runoff and catch silt, will help prevent erosion that in turn helps maintain the health of the whole length of the waterway, encouraging the movement of all life forms that rely on the rivers and floodplains for their survival.



Port Jackson Fig
Illustration: Andy Erskine

WILDLIFE:
ECHIDNA, POSSUM, WATER DRAGON, PLATYPUS, FLYING FOX, INSECTIVOROUS BAT, SWAMP WALLABY, VARIOUS NATIVE FROGS AND FISH, AND A WIDE VARIETY OF BIRDS INCLUDING THE PACIFIC BAZZA

Green Tree Frog
Photo: Rainer Hartlieb



Echidna
Photo: Deborah Pearse

Pacific Bazza
Photo: Deborah Pearse

Coopers Creek,
Photo: Alison Ratcliffe

CREATING A CREEK-SIDE RAINFOREST GARDEN

SOIL DESCRIPTION:
From gravels near the headwaters to fine clays near the estuary and all the gradations of particle size in between

Many gardens border creeks, streams and ephemeral watercourses. By recreating the structure of the natural vegetation communities with trees for canopy cover, under-planted with shrubs, ferns and sedges, it is possible to create your own patch of riparian rainforest.

Plant tussocky Lomandras mixed with the beautiful Crinum Lilies to protect the creek sides from erosion. Interplant with shrubs such as Native Mulberry, a butterfly host and Velvet Leaf whose berries attract small birds, interspersed with local riparian tree species such as Weeping Lilly Pilly and Creek Sandpaper Fig. Finish off with a sward of native groundcovers such as Basket Grass and Native Commelina, which can both be mown to help sieve sediments from runoff before it hits the creek. No rainforest garden is complete without a vine or two trained along fences and pergolas to enjoy their showy flowers. Mulch is essential as it mimics the original forest's nutrient processing, keeps the soil moist, and inhibits the growth of weeds.

EXAMPLES: Highway verge adjoining Stotts Island NR

CREATING AN ALLUVIAL PLAINS GARDEN

SOIL DESCRIPTION:
Silt-based, usually dark grey clays, tendency to crack if allowed to dry out.

Depending on their access to moisture, these lands once supported a variety of forests.

Drier ground: The Eucalypt species (e.g. *E. terreticornis*) that once dominated these areas are potentially very large trees. Due to bushfire constraints and the danger of falling branches these species are not safe to plant near buildings. However there are hundreds of other plants to choose from including: Black She-Oak, which when mature will attract the Black Cockatoo; Kangaroo Grass and Paper Daisies which are low growing groundcovers, whilst Blue Tongue, Breynia and Orange Thorn are all mid-sized shrubs and scramblers. Diligent weeding of exotic species may even revive one or two ground orchids.

Wet or boggy ground: A broad-leaved paperbark forest will flourish where the ground water is close to the surface or the ground is frequently inundated. Plant species consist of River Oaks and Buttonwood as well as Weeping Bottlebrush and Paperbark Tea Trees. Poorly drained soils support a large variety of sedges, rushes and ferns as well as such beauties as Sundews, Karamat and Violets.

EXAMPLES: Pottsville Environment Park

Paperbark,
Photo: Byron Shire Council

Riverine and Alluvial

Everlasting or Paper Daisy

Bright yellow flowers, butterfly host plant

Bungwall (Fern)

Swampy, near paperbarks, creeping rhizomes

Kangaroo Grass

Flower spikes; butterfly host

Karamat

Easily propagated; flowers blue, blue-banded bees, harvester ants, butterfly host

Lomandra

Tussock growth, strappy leaves, branched flower spikes

Swamp or River Lily

Fragrant showy white flowers

		COMMON NAME	SCIENTIFIC NAME	HEIGHT	WIDTH	FULL SUN	PARTIAL SHADE	FULL SHADE	FROST TOLERANT	FLOOD TOLERANT	DROUGHT TOLERANT	TOLERATES HEAVY CLAY SOILS	TOLERATES SANDY SOILS	FLOWER SEASON
GROUND-COVERS AND GRASSES	1	Everlasting or Paper Daisy	*Xerochrysum bracteatum*	30cm	30cm						✔		✔	Summer
	2	Bungwall (Fern)	*Blechnum indicum*	Up to 1m	spreading			✔				✔		n/a
	3	Kangaroo Grass	*Themeda australis*	1.5m	1m				✔		✔		✔	n/a
	4	Karamat	*Hygrophila angustifolia*	Up to 1m	1m	✔	✔		✔			✔		Autumn
	5	Lomandra	*Lomandra hystrix*	1m	1m	✔	✔		✔	✔		✔	✔	Spring/ Summer
	6	Swamp or River Lily	*Crinum pendunculatum*	1m	1m	✔		✔		✔		✔		Spring/ Summer
VINES	7	Common Silkpod	*Parsonia straminea*	n/a	n/a	✔	✔							Spring
	8	Wonga Vine	*Pandorea pandorana*	n/a	n/a	✔	✔		✔					Winter to Spring
	9	Zig Zag Vine	*Melodurum leichhardtii*	n/a	n/a	✔	✔							Spring
	10	Climbing Maidenhair Fern	*Lygodium microphyllum*	n/a	n/a			✔						n/a
SHRUBS AND SCRAM-BLERS	11	Blue Tongue	*Melastoma affine*	2m	1m	✔	✔			✔		✔		All year
	12	Breynia	*Breynia oblongifolia*	3m	2m	✔	✔					✔		Spring
	13	Native Mulberry	*Pipterus argenteus*	8m	2m	✔	✔				✔	✔		Spring to Autumn
	14	Orange Thorn	*Pittosporum multiflorum*	2m	1m	✔	✔		✔			✔		Spring to Summer
	15	Velvet Leaf	*Callicarpa pendunculata*	2m	1m	✔	✔		✔		✔	✔		Summer
TREES	16	Black She-Oak	*Allocasuarina littoralis*	6m	3m	✔			✔		✔		✔	Winter
	17	Creek Sandpaper Fig	*Ficus coronata*	15m	6m	✔	✔			✔		✔	✔	Spring
	18	Veiny Wilkiea	*Wilkiea huegeliana*	8m	2m		✔			✔		✔		Spring to Summer
	19	Weeping Bottlebrush	*Callistemon viminalis*	5-7m	3m	✔	✔		✔	✔		✔	✔	Spring
	20	Weeping Lilly Pilly	*Waterhousia floribunda*	30m	10m	✔	✔		✔	✔		✔	✔	Spring to Summer

For more species see the Native Species Planting Guide for Tweed & Byron Shires at **www.tweed.nsw.gov.au/NativeSpeciesPlantingGuide**

Common Silkpod

Robust; scented flowers; butterfly host; bird attractant

Wonga Vine

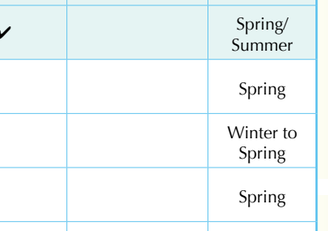
Vigorous; tubular flowers to 20 cm; white, yellow, pink

Zig Zag Vine

Vigorous, prune to keep as a shrub; perfumed flowers, edible fruit; butterfly host

Climbing Maidenhair Fern

Dainty fern-like leaves. Prefers moist rockeries



Blue Tongue

Prolific mauve flowers; edible fruit pulp

Breynia

Tiny flowers, red berries; bird attractant, butterfly host

Native Mulberry

Edible fruit; bird attractant, butterfly host

Orange Thorn

Spiny; cover for small birds; white flowers, edible berry

Velvet Leaf

Bright berries summer to winter; attracts small birds

Black She-Oak

Separate male and female; food for Glossy Black Cockatoos

Creek Sandpaper Fig

Hairy edible fruit on trunk and older branches; birds, flying foxes, butterfly host

Veiny Wilkiea

Perfumed white to yellow flowers; bird attractant, butterfly host

Weeping Bottlebrush

Flower spikes to 10 cm, bird & butterfly attractant

Weeping Lilly Pilly

Drooping branches; older leaves red

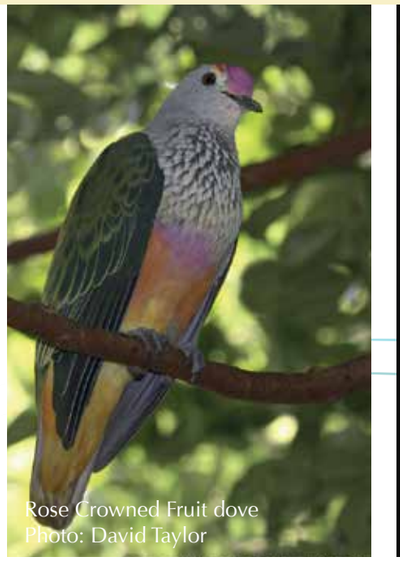
Foothills and Hinterland

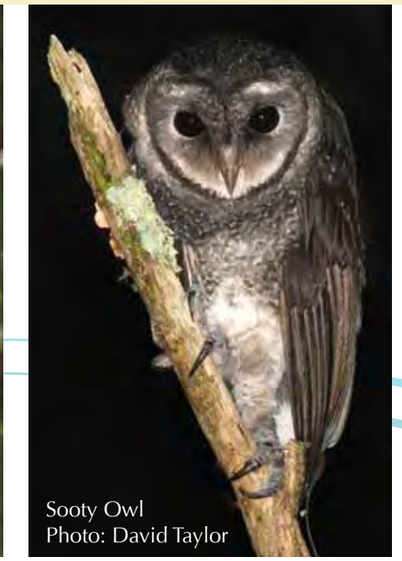
LOCATIONS INCLUDE:
BANORA POINT, BILAMBIL, BURRINGBAR, BYRRILL CREEK, CHILLINGHAM, COUCHY CREEK, CRYSTAL CREEK, CUDGERA CREEK, EVIRON, FARRANTS HILL, KUNGHUR, LIMPINWOOD, MOOBALL, PUMPENBIL, SMITHS CREEK, STOKERS SIDING, TOMEWIN, TYALGUM, URLIUP

The 'foothills and hinterland' vegetation zone includes the heavily eroded near coastal hills and undulating lower slopes of the Tweed River catchment below the upper elevations of the Caldera ranges and ridges. The high rainfall and rich soils of this zone create the perfect conditions for rainforest plants to thrive. Previously the vegetation comprised wet sclerophyll forests and lowland subtropical rainforest. The remaining small isolated remnants of rainforest are now protected as an Endangered Ecological Community

The elevation of the zone ranges from 40m adjacent to river flats at Mooball, Stokers Siding and Tumbulgum, which may register winter frosts, up to 300m around Bilambil, Terranora, Chillingham, Burringbar, Eungella and Uki. Above this height soil type may change and rainforest often transitions to wet sclerophyll forest. Sub-tropical rainforest forms a dense canopy of large trees above mid and under storey layers of dense lush foliage. The range of plants present is extremely diverse and includes trees, shrubs, vines, palms, orchids, epiphytes, fungi and groundcovers. This layered canopy structure creates a cool, moist, shady microclimate which reduces light and wind intensity, and evaporation.

WILDLIFE:
WOMPOO PIGEON, ROSE-CROWNED FRUIT DOVE, BROWN CUCKOO DOVE, FIGBIRD, CURRAWONG, BAR-SHOULDER DOVE, EMERALD DOVE, FAIRY WREN, SILVER EYE, VARIOUS HONEYEATER, GREEN TREE FROG, PERONS TREE FROG, ROCKET FROG, MICROBAT, SOOTY OWL, VARIETY OF LIZARDS AND INSECTS


Rose Crowned Fruit dove
Photo: David Taylor


Sooty Owl
Photo: David Taylor


Green Tree Snake
Photo: Rainer Hartlieb


Photo: Jimmy Britton

CREATING YOUR OWN RAINFOREST

For those with more space on their property who wish to establish their own patch of rainforest, a site specific planting design and careful species selection is essential. A full description of this process is beyond the scope of this book but here is a brief overview.

The first step is achieved by planting pioneer, fast growing trees, which can handle full sun and are generally short-lived in terms of a rainforest (10-30 years). Plant the pioneers 3-4m apart to form a canopy in 2-5 years depending on the site and conditions. Interspersed through these pioneer trees, secondary and mature phase trees are planted. These are slower to establish but can live for hundreds of years and in time will form the rainforest habitat. Once the canopy is established, the final staged planting will contain a diverse mix of trees, shrubs, vines and groundcovers. Where possible, try to source the species that grow naturally in your area – talk to your local native nursery and ensure you are also planting species with local population genetics. By planting in this manner, you will extend the existing habitat for local species encouraging them to move into the new areas that you have provided.

Over time you will notice trees and other plants regenerating naturally. These are brought in by birds and the wind and germinate in the favourable conditions provided by the forest canopy.

More information about planting a rainforest can be found in the book published by the Big Scrub Landcare Group *Subtropical Rainforest Restoration*. This book is essential for anyone looking at undertaking this process, providing a detailed overview of the many factors to consider, as well as a list of appropriate species to plant.

CREATING A RAINFOREST GARDEN

SOIL DESCRIPTION:
Deep, well-structured red/brown krasnozems, high clay content, often acidic - may benefit from the addition of gypsum or lime

A rainforest garden in a moist sheltered part of your property can produce a cool, lush oasis full of verdant foliage. Create a multi-layered rainforest structure by grouping together a range of trees, shrubs, palms and groundcovers sheltered from full sun, frost and prevailing winds.

For a smaller garden, trees such as a Macaranga or Native Frangipani and a few large Bangalow Palms can provide shade. If space is at a premium, plant utilising the shade from your house or fence line. Within this shelter, dense, mass plantings of large glossy-leaved species such as Native Ginger, Cordyline and Cunjevoi look impressive, interspersed with Dianella. Finger Lime and Midgen Berries to provide food and occasional colour. If you need a hedge, Scrub Cherry can be a good choice with dense foliage that can be pruned and it also provides tasty pink berries. Lomandra can form a dense edge that helps keep your garden weed-free. Vines such as the Bower Vine and Purple Coral Pea can grow in a sunny spot and both have a showy display of flowers.

The Birdwing Butterfly Vine likes partial shade and provides essential habitat for the amazing Birdwing Butterfly. In the shade shrubs such as Narrow-Leaf Gardenia and Hairy Psychotria have distinct flowers and can provide a shaded ground layer where Native Violets will spread rapidly and display small purple flowers in summer.

Large feature trees may include Flame Tree, Coolamon and Native Teak, all of which have stunning flower displays. Always ensure large trees are positioned well away from buildings.

Mulch is an important component of a rainforest garden and mimics the humus layer found on the forest floor. The decomposing organic matter forms the basis of the garden ecosystem by adding nutrients to the soil, holding moisture and providing habitat for soil microbes and invertebrates, which in turn provide habitat and food for lizards and birds. Many rainforest plants have a network of surface roots that rely on the nutrients and moisture provided by the mulch.

EXAMPLES: Mt Warning NP, Hogan's Scrub NR, Upper Durobby and Limpinwood NR


Photo: Rainer Hartlieb

Foothills & Hinterlands

Native Ginger

Lush clumping plant with large foliage and bright blue berries. Flowers in spring/ summer. Attracts wildlife. Small variety *Alpinia arundelliana* also available

Cunjevoi Lily

Huge succulent, glossy leaves with a white/yellow flower spike and showy red fruit in summer. Warning: this plant is poisonous if ingested.

Rainforest Lomandra

Native clumping grass with cream flowers and orange capsules in spring. Attracts wildlife. Smaller than other Lomandra species preferring more shade. The larger *Lomandra hystrix* could also be used.

Maiden Hair Fern

Attractive fern with delicate foliage that likes a moist shady position

Soft Water Fern

Attractive clumping fern with a red flush on the new growth

Ground Lily

Unique-looking scrambler with shiny green leaves and small purple flowers

		COMMON NAME	SCIENTIFIC NAME	HEIGHT	WIDTH	SUN	PARTIAL SHADE	SHADE	TOLERATE WET SOIL	TOLERATE DRY SOIL
GROUNDCOVERS & GRASSES	**1**	Native Ginger	*Alpinia caerulea*	2m	1m	✔	✔	✔	✔	✔
	2	Cunjevoi Lily	*Alocasia brisbanensis*	1m	1.5m		✔	✔	✔	
	3 (p18)	Dianella	*Dianella caerulea*	0.8m	spreading	✔	✔	✔	✔	✔
	4	Rainforest Lomandra	*Lomandra spicata*	0.5	0.8		✔	✔	✔	✔
	5 (p18)	Native Violet	*Viola hederacea*	0.1m	spreading		✔	✔	✔	
	6	Maiden Hair Fern	*Adiantum aethiopicum*	0.2m	spreading		✔	✔	✔	
	7	Soft Water Fern	*Blechnum cartilagineum*	0.5m	spreading		✔	✔	✔	
	8	Ground Lilly	*Tripladenia cunninghammii*	0.4m	spreading		✔	✔	✔	
	9	Native Raspberry	*Rubus rosifolius*	1m	spreading	✔	✔		✔	✔
	10 (p30)	Basket grass	*Oplismenus aemulus*	0.2	spreading		✔	✔	✔	✔
VINES/ EPIPHYTES	**11**	Birdwing Butterfly Vine	*Pararistolochia praevenosa*	3m	spreading		✔	✔		✔
	12 (p30)	Birdnest Fern	*Asplenium australasicum*	1m	spreading		✔	✔	✔	
	13	Bower Vine	*Pandorea jasmenoides*	3m	spreading	✔			✔	✔
SHRUBS	**14**	Narrow-leaved Gardenia	*Atractocarpus chartaceus*	3m	2m		✔	✔		
	15	Finger Lime	*Citrus australasica*	Up to 5m	1m	✔	✔			
	16	Broad-leaf Palm Lilly	*Cordyline petiolaris*	2-5m	1.5	✔	✔	✔	✔	✔
	17	Tree Fern	*Cyanthea sp*	10m	4m	✔	✔		✔	
	18	Bolwara	*Eupomatia laurina*	3m	2m		✔	✔		
	19	Hairy Psychotria	*Psychotria loniceroides*	3m	2m		✔	✔		
PALMS	**20**	Bangalow Palm	*Archontophoenix cunninghamiana*	20m	4m	✔	✔	✔	✔	✔
	21	Walking Stick Palm	*Linospadix monostachya*	2-3m	1m		✔	✔	✔	
TREES	**22**	Flame Tree	*Stenocarpus sinuartus*	25m	8m	✔	✔			✔
	23	Scrub Cherry	*Syzygium australe*	25m	4-10m	✔	✔	✔	✔	✔
	24	Glossy Laurel	*Cryptocarya laevigata*	6m	2-6m	✔	✔	✔		

For more species see the Native Species Planting Guide for Tweed & Byron Shires at **www.tweed.nsw.gov.au/NativeSpeciesPlantingGuide**

Tree Fern

Spectacular species with delicate, shady foliage often used as a feature plant in landscaping

Bolwara

Heavily scented flower in summer and edible fruit in autumn/ winter. Bushfood. Attracts wildlife

Hairy Psychotria

Delicate white flowers in summer. Fruit attracts birds.

Bangalow Palm

Classic local palm with bright red fruit in autumn. Bird attractant and a must for any rainforest garden

Walking Stick Palm

Distinctive understorey palm with bright red fruit sporadically through year. Attracts wildlife

Flame Tree

Semi-deciduous feature tree with showy red flowers in spring/summer and large woody capsules

Native Raspberry

Spiky spreading shrub producing edible raspberries in summer. Bushfood. Attracts wildlife. Best grown in moist position receiving direct sunlight

Bower Vine

Great climber with showy white/pink flower in spring/ summer. Attracts wildlife. Frost sensitive

Birdwing Butterfly Vine

Essential habitat for Birdwing Butterfly. They lay their eggs on the leaves and larvae eat the leaves after hatching. Flowers summer/ autumn

Narrow-leaved Gardenia

Narrow leaves and fragrant white flower in late winter/ spring. Attracts wildlife

Finger Lime

Edible citrus, great in salads and with fish. Bushfood

Broad-leaf Palm Lily

Large lush leaves and bright red berry in summer. Bird attracting fruit. Bushfood

Scrub Cherry

Great hedge. Can be pruned to shape. Edible pink/red fruit in spring. Bushfood. Attracts wildlife

Glossy Laurel

Shrubby tree with glossy foliage and large red fruit in spring/summer. Attracts wildlife

Ridges and Ranges

LOCATIONS INCLUDE:
CEDAR CREEK, EUNGELLA, GLENGARRIE, HOPKINS CREEK, NUMINBAH, TOMEWIN, TYALGUM CREEK, UPPER BURRINGBAR AND UPPER CRYSTAL CREEK

The spectacular ranges, ridges and gullies of the upper Caldera slopes provide distinctively different vegetation communities to elsewhere in the Shire. Tall open forests in this zone are dominated by Eucalypt, Turpentine, Casuarina and Brushbox, supporting a well-developed often moist mid storey of tree ferns, rainforest and sclerophyll species and pea flowered shrubs and an understorey of lush ground ferns. On drier north facing sites Grass trees, cycads and grasses may dominate the under storey. Cool temperate rainforest, dry rainforest and montane heath also occur at these elevated sites.

The eucalypt-dominated wet sclerophyll forests, overlap with rainforest communities, especially in the gullies or on the red volcanic soils. Native orchids can be found on trees and rocks in and around wet sclerophyll forest. On the exposed ridges the soil layer is often very thin and only low, tough-leaved heath shrubs grow comfortably, providing an occasional exuberant and showy flower display.

The plant communities of this zone have developed to handle unique environmental conditions including exposure to wind, extremes of cold and heat, moisture laden cloud shrouding, and periodic drought and fire. Fires are an integral part of the Australian bush but it is a delicate balance – while it can stimulate germination and growth of new species, fire can also destroy homes, property and in some cases, reduce the diversity of native species and promote weeds recruitment in their place.

WILDLIFE:
KOALA, RING-TAILED POSSUM, SPOTTED-TAIL QUOLL, WEDGE-TAILED EAGLE, POWERFUL OWL, BARKING OWL, GLOSSY BLACK COCKATOO, YELLOW-TAILED BLACK COCKATOO, LACE MONITOR, A VARIETY OF SKINKS & REPTILES, BLUE AND BROWN BUTTERFLY.


Koala
Photo: Rainer Hartlieb


Tawny Frogmouth
Photo: Rainer Hartlieb


Lace Monitor
Photo: Rainer Hartlieb


Photo: Rainer Hartlieb

FEATURE PLANTS FOR RIDGES AND RANGES

Planting in clumps provides a variety of textural accents to your garden. By including structural diversity in your design, (different layers of heights and plants), you will create ample habitat for local wildlife and draw the eye to focal points. Try using some of these feature plants, either en masse or as a point of interest, to create a spectacular local native garden.

Bird's Nest Fern
Cycad
Grass Trees
Coast Banksia
Hairpin Banksia
Flooded Gum
Cliff Bottlebrush
Giant Spear Lilly
Hovea
Narrow-leaved Palm Lily
Tree Fern

CREATING A RIDGE-TOP GARDEN

SOIL DESCRIPTION:
Red/brown soils, well-drained and often gravelly, slightly acidic and often leached of humus from high rainfall, runoff and exposure to wind. The addition of mulch is always helpful to retain moisture, add organic matter and keep weeds under control.

The major consideration in designing a ridge-top garden is to avoid creating a fire prone environment. An asset protection zone (APZ) is essential in providing a firebreak between your 'assets', (house, shed etc.) and 'fuel', (vegetation). Check Planning for Bushfire Protection (RFS 2016) or Council for recommended setbacks.

Although most Eucalypts are not suitable near the house, a ridgeline garden can provide a shady cooling environment. If you have the space and can set back far enough from the house, Eucalypts do make spectacular feature trees – local native Flooded Gum are beautiful in wet gullies and Tallowwood are a favourite for koalas. A smaller canopy of trees could include the Mountain Bottlebrush, Banksias, Forest Oak and Blueberry ash – all will provide colour, and a range of foliage and shade for the understorey to establish. Try planting masses of ground ferns interspersed with a variety of shrubs such as Grass Trees, Hovea, Narrow-leaved Palm Lily, Tree ferns, Cycads or Giant Spear Lily to provide a contrast of foliage. Shaded or moist spots with rocks may help to establish native Orchids, Bird nest and Elkhorn Ferns.

EXAMPLES: Mt Warning and Mt. Jerusalem National Parks

Factors to consider near your house:

Do not plant garden adjacent to built structures which may transmit fire. Avoid tall, fire loving trees like Eucalypts, in the house garden. Avoid plants with a fibrous bark. Use plants that can be trimmed and that resprout from lignotubers (e.g. some Banksias). Rainforest plants are good to include, especially climbers such as Bower vine (*Pandorea jasminoides*) and Snake vine (*Hibbertia scandens*), which are effective weed barriers for edges of the garden.

Space taller plants further apart and don't allow taller shrubs and trees to hang over the roof and gutters. Keep gutters clear of leaves and branches. Carefully arrange the taller plants to avoid a continuous canopy, thus avoiding a fire prone garden, even though a dense canopy is a feature of the natural environment. Use Sweet Pittosporum (*Pittosporum undulatum*) for low cover and shade. Position lawns, garden walls, paved areas, swimming pools and other fire retarding features such as water features and ponds nearer the house or on the side closest to the fire threat. The native Basket Grasses (*Oplismenus spp.*) make excellent lawns in shady places when mowed regularly. Use mulches that break down quickly (finely chopped tea tree or gravels).

Ridges and Ranges

Native Ginger

Lush clumping plant. Bright blue berries. Attracts wildlife.

Blue Flax Lily

Great clumping grass. Edible blue berries. Bushfood.

Kangaroo Grass

Fine foliage, coppery seed heads. Attracts butterflies.

Lomandra

Dwarf tussock-like grass with fine foliage. Great edge plant. Other species include *Lomandra filiformis* and *L. multiflora*.

Rainbow Fern

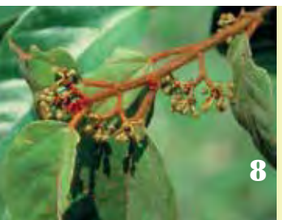
Ground cover, lush foliage. Many native ferns such as the Harsh Ground Fern (*Hypolesis muelleri*) are ideal to plant as a sea of understorey.

Basket Grass

Great native groundcover. Soft leaf and can be lightly mowed

Bird's Nest Fern

Can grow on ground or be attached to tree. Features for trees, habitat for frogs, lizards and other reptiles. A striking alternative is the Staghorn (*Platycerium superbum*).



Grape Ivy

Shiny leaved climber, good screen hedge or fire retardant.

		COMMON NAME	SCIENTIFIC NAME	HEIGHT	WIDTH	SUN	SHADE	WET	WELL-DRAINED	FLOWER SEASON
GROUNDCOVERS & GRASSES	1	Native Ginger	*Alpinia caerulea*	2m	1m	✔	✔	✔	✔	Spring/Summer
	2	Blue Flax Lily	*Dianella longifolia*	0.8m	Spreading	✔	✔	✔	✔	Spring
	3	Kangaroo Grass	*Themeda australis*	1m	Clumping	✔	✔		✔	Summer seed heads
	4	Lomandra	*Lomandra confertifolia*	0.5 m	0.8m	✔	✔	✔	✔	Summer
	5	Rainbow Fern	*Calochlaena dubia*	1m	Spreading		✔	✔	✔	
	6	Basket Grass	*Oplismenus aemulus*	0.2	Spreading	✔	✔	✔	✔	Summer
VINES/EPIPHYTES	7	Bird's Nest Fern	*Asplenium australasicum*	1m	1m		✔	✔		n/a
	8	Grape Ivy	*Cissus antactica*	tall	Climbing	✔	✔	✔	✔	Spring/Autumn
SHRUBS & SCRAMBLERS	9	Snake Vine	*Hibbertia scandens*	1m	2m	✔	✔	✔	✔	Spring/Summer
	10	Pointed-leaf Hovea	*Hovea acutifolia*	2m	1m	✔			✔	Winter/Spring
	11	Cliff Bottlebrush	*Callistemon comboynensis*	2m	1m	✔	✔	✔	✔	All year
	12	Tree Fern	*Cyathea australis.*	10m	4m	✔	✔	✔		n/a
	13	Narrow-leaved Palm Lily	*Cordyline stricta*	2-4m	1m	✔	✔	✔	✔	Spring/Summer
	14	Hairpin Banksia	*Banksia spinulosa*	3-5m	1-2m	✔	✔		✔	Spring/Autumn
PALMS/PALM LIKE PLANTS TREES	15	Grass Trees	*Xanthorrhoea johnsonii*	3m	2m	✔	✔		✔	Autumn to Summer
	16	Spear Lily	*Doryanthes palmeri*	3m	3m	✔	✔		✔	Spring
	17	Shining Burrawang	*Lepidozamia perroskyana*	3m	2m	✔	✔		✔	Winter (cones)
	18	Weeping Pea Tree	*Daviesia arborea*	14m	6-14m	✔			✔	Spring
	19	Blueberry Ash	*Eleocarpus reticulatus*	6m	2-3m	✔			✔	Summer
	20	Forest Oak	*Allocasuarina torulosa*	10m	2-3m	✔	✔	✔	✔	Spring/Summer

For more species see the Native Species Planting Guide for Tweed & Byron Shires at **www.tweed.nsw.gov.au/NativeSpeciesPlantingGuide**

Snake Vine

Twining shrub-like hardy plant. Large yellow flowers, good groundcover or on fence lines.

Pointed-leaf Hovea

Fine open shrub; purple pea flowers in late winter; prefers filtered light; deeper soils.

Cliff Bottlebrush

Small bushy tree 2m. New foliage pink with nectar-rich red flowers throughout year. Attracts wildlife.

Tree Fern

Tall fern for feature plantings.

Narrow-leaved Palm Lily

Shiny green leaves and bright red berries in summer. Attracts birds.

Hairpin Banksia

Showy yellow/orange flower spikes. Excellent specimen for winter colour. Attracts birds.

Grass Trees

Attractive grass tree with tall spikes. Slow growing feature plant.

Spear Lily

Large flax-like plant with tall spikes of red flowers. Grow in clumps or a single feature specimen. Attracts birds .

Shining Burrawang

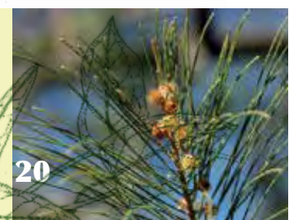
Very attractive palm-like specimen with glossy foliage. Slow growing feature plant.

Weeping Pea Tree

Shrub or small tree with drooping leaves and fragrant yellow pea flowers.

Blueberry Ash

Attractive white 'lily of the valley'-like flowers.



Forest Oak

Major food tree for the endangered Glossy Black Cockatoo

Arrowhead vine,
Illustration: Tim Roberts

Aquatic Plants

Ponds, Dams and Wetlands

Ponds, dams, wetlands and raingardens enhance the beauty of your garden and supplement its habitat values. This section lists some of the more common and accessible local native plants that are suitable to grow in and around your water feature. Aquatic plants may be floating or emergent - those that are rooted in the soil but which can tolerate being partially submerged.

Water Snowflake

White flowers in spring–autumn

Nardoo

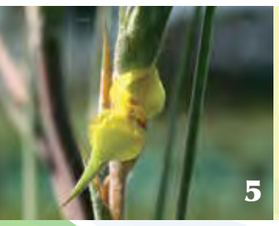
Leaves vary from light green to rustic brown

Azolla

Spreads rapidly especially in warm weather - can carpet ponds or dams. Fronds plants may be green or red dependant on sun/shade levels

Duck Weed

Although commonly called Duck Weed this is a native plant - not an environmental weed. Very small green leaves up to 1 cm



Frogmouth

Beautiful yellow flowers on a spike up to 1m long in warmer months

	COMMON NAME	SCIENTIFIC NAME	HABIT	SUN REQUIREMENTS	WATER REQUIREMENTS
1	Water Snowflake	*Nymphoides indica*	Perennial water lily with floating stolons and leaves	Full sun or part shade	Grows in still and slow flowing water up to 2 m deep
2	Nardoo	*Marsilea mutica*	Perennial fern with four clover-like floating leaflets	Full sun or semi-shade	Grows in still or slow flowing water up to 60cm deep
3	Azolla	*Azolla filiculoides*	Perennial free-floating aquatic fern	Full sun or shade	Grows in still or slow flowing water with adequate nutrient levels
4	Duck Weed	*Lemna* spp.	Perennial free-floating plant	Sun or shade	Grows in still or slow flowing water with adequate nutrient levels
5	Frogmouth	*Philydrum lanuginosum*	Perennial emergent aquatic plant which grows to 2m	Sun or partial shade	Grows on edge of ponds and dams, shallow water & wet soils
6	Jointed Twig-rush	*Baumea articulata*	Perennial emergent aquatic plant which grows to 2.5 m	Prefers full sun	Grows in water up to 1m deep often in deep mud
7	Common Spike-rush	*Eleocharis acuta*	Perennial emergent aquatic plant less than 1 m	Prefers full sun	Grows in water up to 45 cm deep
8	Tassel Sedge	*Carex fasicularis*	Perennial emergent plant to 1 m tall	Semi-shade	Grows in wet soil or on the edge of dams or slow flowing waterways
9	Water Primrose	*Ludwigia peploides* ssp. *montevidensis*	Perennial emergent plant	Full sun or partial shade	Grows in dams or slow flowing waterways
10	Smartweeds or Knotweeds	*Persicaria* spp.	Perennial emergent aquatic plants	Full sun or part shade	Grows in water up to 1m deep

POND MANAGEMENT

Many native animals including birds, frogs and dragonflies often visit small ponds, and if you are lucky, frogs may even breed in your pond. However be careful that you are not breeding cane toads.
There is a fact sheet to keep toads out of your pond at www.tweed.nsw.gov.au/CaneToads

Although it is great to invite frogs to come to your pond to breed you are not permitted to move or breed frogs without a license. This is to ensure that diseases are not spread through our native frog populations.

Visit: www.frogs.org.au for more information. Another consideration is that an overabundance of plants can cause the water to deoxygenate, so you may need to install an aeration system.

Jointed Twig-rush

Can spread to a thick stand therefore best for dams and larger ponds. Attractive seed heads

Common Spike-rush

Thin cylindrical stems

Tassel Sedge

Showy yellow-green fronds, drooping inflorescence

Water Primrose

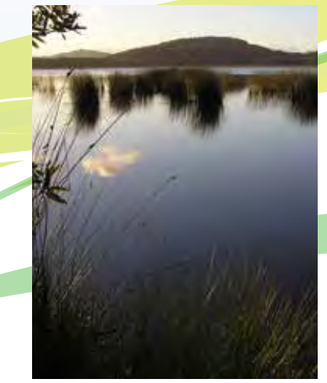
Bright yellow flowers

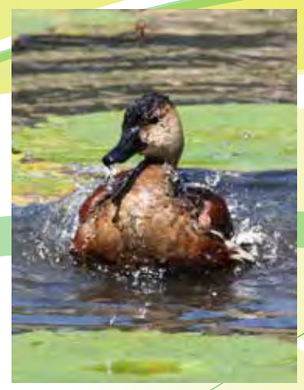
Smartweeds or Knotweeds

Flowers vary in colour between species though usually white or pink. These species readily regenerate naturally in ponds and dams. The species pictured is Slender Knotweed and is a native species. If you have knotweeds regenerating, check that they are one of the native species

SAFETY & HEALTH

Whenever installing ponds, dams or wetlands make sure they are safe, especially for young children. Details on safety and water bodies can be obtained from state and local government agencies. Another health consideration is to ensure that mosquitoes are not breeding in your pond.





Dainty Green Tree Frog; Cudgen Lake; Wandering Whistling Duck
Photos: Tanya Fountain

Landscaping for Water Quality

Where Does Your Drinking Water Come From?

Tweed Shire supplies bulk water to all urban areas via its treatment plants at Uki and Bray Park on the Tweed River and Tyalgum on the Oxley River. It maintains a large impoundment at Clarrie Hall Dam.

WHAT WE DO IN OUR CATCHMENT AFFECTS THE QUALITY OF OUR REGION'S DRINKING WATER.

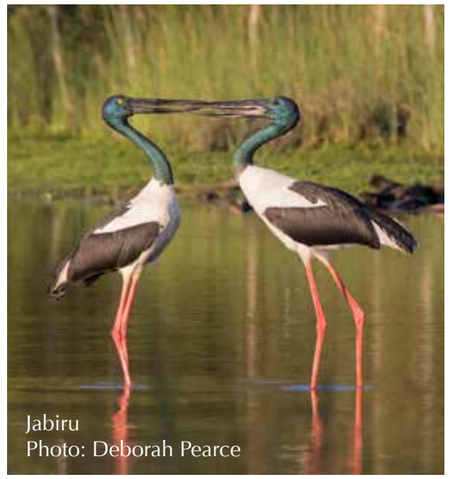
Stormwater flows either directly across the landscape into creeks and rivers, or through stormwater drains and underground pipes into our waterways, carrying a range of pollutants and increasing the potential for erosion. This not only affects river health but within a drinking water catchment, this affects drinking water quality by introducing:

- Sediments from erosion and runoff - harms aquatic life, clogs streams and burdens the drinking water treatment process;
- Pathogens from pet waste and inadequate septic systems;
- Nutrients from lawn and garden fertilisers - promotes the growth of aquatic plants and cause toxic algal blooms; and
- Chemicals from garden pesticides, herbicides, car fluids or washing detergents.

TECHNIQUES TO HELP PROTECT WATERWAYS

Water Sensitive Urban Design (WSUD) seeks to minimise these impacts by using a holistic approach to town planning and development, which embraces the management and conservation of water. WSUD can be incorporated in your property to capture, treat and reuse stormwater. By doing this you can:

- Filter pollutants, sediment, pathogens, nutrients and chemicals from stormwater;
- Reduce the volume of stormwater;
- Improve the health of our waterways and our local water supply;
- Minimise demand on the reticulated town water supply system;
- Enhance the beauty of your property
- Mitigate the impacts of floods; and
- Maintain healthy waterways for future generations to enjoy.



Jabiru
Photo: Deborah Pearce

Water Sensitive Urban Design - What You Can Do!

- **Build a raingarden**
- **Istall a rainwater tank**
- **Use porous landscaping materials**
- **If you have a creek or river on your property, replant the bank with native species**

CREATING A RAINGARDEN

Raingardens (bio-retention systems), are garden beds that capture, filter and treat stormwater from your drive way or roof using a coarse or porous soil mixture of sand or gravel beneath a bed of native plants. Raingardens reduce flooding by sending the water back underground rather than into the street. They also promote biodiversity by providing habitat for wildlife.

When building a raingarden in your backyard remember:

- **On flat sites, raised planter boxes make ideal raingardens. On steeper areas with enough depth for drainage, raingardens can be excavated;**
- **Try to capture and treat stormwater from the greatest impervious area;**
- **Locate the raingarden as close as possible to the roof downpipe and stormwater drainage system to minimise the plumbing work needed; and**
- **Choose native plants with deep fibrous roots that can tolerate short periods of wet conditions, followed by longer dry periods.**

Wildlife in your Garden

Why our gardens matter for the future...

Our gardens are all part of the Northern Rivers biodiversity landscape. Everything we plant adds to a bigger picture of connectedness for our wildlife. Adding plants to your garden that provide food and shelter for native fauna can help to create habitat stepping stones connecting isolated islands of bushland. Biologists call these wildlife corridors and they are critical for our fauna to find the food, shelter, and breeding opportunities they need to thrive. Every backyard, no matter how small, becomes part of the solution.

BIODIVERSITY HOT SPOT

We are lucky enough to live in a biodiversity hotspot – an area that is incredibly rich in its variety of plants and animals. We live in the wet subtropics bioregion which covers SE QLD and NE NSW. This region has the highest diversity of marsupials and bats of all Australian bioregions. We also have the equal highest diversity of frogs and the second highest diversity of birds. The area is also of major significance to migratory and nomadic birds and flying foxes with autumn and winter flowering species providing nectar and pollen when food resources are scarce elsewhere.

Half of the Shire (68,571 ha) is covered by bushland of which 80% has high conservation status.

KOALAS ARE AN ICONIC THREATENED SPECIES

Koalas are now vulnerable to extinction. Human activities and habitat destruction are their greatest threats. Many of the remaining eucalypt corridors along traditional koala routes are severely fragmented by development. This increases koala susceptibility to disease, motor vehicle accidents and dog attacks. Our koalas are under great stress because food is harder to find and they need to spend more time on the ground as food trees are further apart.

HOW CAN YOU HELP?

By creating and restoring koala habitat. Remove weeds such as lantana and invasive vines that can inhibit koalas accessing food and shelter trees. If you live in koala habitat and have enough clear land to accommodate tall growing species, plant food and shelter trees that create corridors. These are the four local preferred food trees:

Forest Red Gum *Eucalyptus tereticornis* – coastal, ridges and ranges

Tallowwood *Eucalyptus microcorys* – hinterland, ridges and ranges

Swamp Mahogany *Eucalyptus robusta* – coastal floodplains and swamps

Small-fruited Grey Gum *Eucalyptus propinqua* – northern ridges.

Secondary browse trees and shelter trees are also important in corridors. When planting koala food trees, it's important that they are grown from seed collected locally and preferably from trees known to be eaten by koalas.

Pouched Frog (left)
Photo: Steve Wilson
Koala mother and joey (top right)
Photo: Michael Bingham
Albert's Lyrebird (bottom right)
Illustration: Suzi Lechner

KOALA RESCUE

If you see a sick or injured koala please call Friends of the Koala 24hr rescue service 6622 1233

IS THAT KOALA SICK OR HEALTHY?

Healthy koalas: have a thick grey and white coat; a full rounded belly; bright alert eyes; are responsive when startled; and spend most of their time in trees.

Sick koalas: have a brown, dry matted coat; crusty, red or pussy eyes; and dirty or wet bottoms. They often remain fairly low in a tree for a number of days, are unresponsive and have difficulty climbing.

For mote information and local nursery listings, refer to the resources section.

How can I attract Wildlife to my Garden?

NATIVE WILDLIFE ARE WELCOME VISITORS TO OUR GARDENS AND CHOOSING NATIVE PLANTS THAT PROVIDE FOOD AND PROTECTION IS A GREAT START. HERE ARE SOME SIMPLE IDEAS TO MAKE OUR GARDENS EVEN MORE WELCOMING FOR ANIMALS, BIRDS, FROGS, LIZARDS, BUTTERFLIES AND OTHER INSECTS.

CREATING STRUCTURAL HABITAT FEATURES

Features such as logs, rocks, leaf litter and ponds create important structural features that will make your garden more inviting to a range of wildlife. Mulch, leaf litter, sticks and bark forms the basis of the food pyramid in the ecosystem of your garden. They provide habitat for worms and insects and these in turn provide a food source for lizards, birds, frogs, bandicoots and echidnas. Logs and rocks placed in protected areas will provide a home for frogs and lizards while a rock placed in the morning sun will be appreciated by the local skinks. A birdbath placed in an open sunny spot with clean water will attract birds and provide them with somewhere to cool off in summer. A shrub located nearby will provide a safe retreat from predators. And it's not just birds that require water! Water bowls placed on the ground will provide water for lizards, mammals and even bees. Remember to add some rocks or logs so that if an animal falls in they can climb out again (see pond management page 33). Retain important habitat trees, especially any with hollows or that produce fruit and nectar.

Yellow Tail Black Cockatoos
Photo: Byron Shire Council

NEST BOXES

Nest boxes in backyards can fill the gap where there are no tree hollows. They can encourage many birds to your garden and can give your local possum an alternative home to your roof. At least 10 mammal, 15 bird and 8 microbat species as well as some reptiles have been recorded using nest boxes in Australia. Many of these species play an important part in our ecosystem through pollination of plants, dispersal of seeds and regulating insect populations. Did you know a microbat can eat 500 mosquitoes in 1 hour!

When deciding what sort of box to install, identify what hollow-using fauna occur in your area and use this to guide what type of box is appropriate. It is not recommended to provide homes for some animals within urban areas and near busy roads, due to the possibility of road kill and attacks by domestic pets. In these areas bird and bat nest boxes located high in trees are a good option. Refer to the resources section for more information.

Squirrel Gliders
Photo: Mark Evans & Nick Sanderson

HABITAT FOR NATIVE BEES

Native bees are an important part of our ecosystems as they are a major pollinator of many of our food plants as well as native plants. Bees, along with all pollinators, are under threat from newly arrived pests and diseases, habitat loss and chemical pollution. More information on how to attract pollinators to your garden, what trees and plants to conserve and plant on your property, and when plants produce nectar and pollen to provide food for native bees is contained in the resources section.

Grey-headed Flying Fox
Photo: Tanya Fountain
Blue Banded Bee Photo: James Mayson
Barn-Owl Photo: Deborah Pearse

FUNGI IN THE GARDEN

Fungi are a little known but vital component of all local ecosystems. In any forest system, fungi rot down wood and leaf litter making nutrients available for plants to grow. It is estimated 80-90% of all plants form mycorrhizal partnerships with fungi – a mutually beneficial relationship where plants can acquire moisture and minerals sooner from fungi than they could get themselves, whilst the fungi find shelter in the tree roots – both a critical survival strategy during droughts. More information on Australian fungi is in the resources section.

Coral Fungi
Photo: Rainer Hartlieb

NATIVE LAWNS AND UNDERSTOREY

Many local species are suitable as ground covers and for creating a lawn that can be mown. Often native species come up self–sown after the removal of more competitive exotic lawns such as buffalo, kikuyu and carpet grasses and increase the biodiversity in your garden. Native grasslands in the wild are often a "matrix of herbs and grasses", so a native lawn can include low growing sedges, grasses and herbs. Many native grasses and herbs have attractive flowers and seed heads, so interesting effects can be achieved by leaving areas of your lawn unmown to create a colourful meadow (much less work!). They are also an important food for wallabies and pademelons, butterflies and pollinating and pest controlling insects.

Different plants will do well in different positions in your garden. **In moist, shady conditions:** Basket Grass *Oplismenus aemulus, O. imbecilis* form great lawns and respond well to mowing. Other species include Pygmy Panic *Panicum pygmaeum,* Pademelon Grass *Ottochloa gracillima,* Native Kidney Weed *Dichondra repens,* Native Viola *Viola hederacea,* Centella *Centella asiatica,* Speedwells *Veronica plebia,* Whiteroot *Pratia purpurescens* and Pennywort *Hydroctyle laxiflora*. Most of these can be easily spread by dividing up clumps and replanting. Other grass species are Weeping Meadow Grass *Microlaena stipoides* and Wiry Panic, Bordered Panic *Entolasia spp.*. Most of these plants will grow in drier conditions, though their vigour and habit may be reduced. **In drier conditions:** Kangaroo Grass *Themeda australis,* Flax Lily *Dianella sp.,* and Mat Rushes *Lomandra spp.*

WILDLIFE FRIENDLY FENCING

Consider wildlife and only fence where needed or change your type of fencing. www.wildlifefriendlyfencing.com

LAND FOR WILDLIFE

The Land for Wildlife program is a voluntary property registration scheme for landowners who wish to manage areas for biodiversity and wildlife habitat. www.tweed.nsw.gov.au/Wildlife

Mt Chincogan
Photo: Alison Ratcliffe

Invasive Species

INVASIVE SPECIES ARE INTRODUCED SPECIES THAT HAVE NATURALISED AND HAVE AN ADVERSE EFFECT ON NATURAL ECOSYSTEMS. MOST PEOPLE KNOW THAT FOXES, RABBITS, CANE TOADS AND INDIAN MYNAS ARE ALL INVASIVE SPECIES BUT INVASIVE SPECIES ALSO INCLUDES PARASITES, FUNGI, INSECTS AND WEEDS.

INVASIVE FAUNA

Indian mynas and cane toads are two of the most destructive invasive species and may be found in your garden. There are several things you can do to help limit the populations of toads and mynas.

1. Grow your lawn longer because toads and mynas love short manicured lawns.
2. Don't feed these pests; this includes not leaving unattended pet food outside.
3. Toad proof your ponds and dams.
4. Join the Indian Myna trapping program.
5. Join a toad buster group.

PETS

It is important to remember that pets such as cats and dogs are introduced species and need to be managed in a way that doesn't adversely affect our native fauna. Don't let your pets roam freely and keep cats in the house, especially at night.

WHAT IS AN ENVIRONMENTAL WEED?

Some of the most invasive species with the biggest impact on our native bushlands have escaped from gardens. These plants are environmental weeds and Australia's 2011 State of the Environment Report identified Weed invasion to be a threatening process for one-third of rare species in Australia.

Environmental weeds are plants growing outside of their natural distribution that have a negative impact on the natural ecosystems and the plants and animals within those ecosystems. These weeds are introduced into new areas by human activities. Sometimes this is accidental such as via transport but most often, plants are bought for the home garden and then escape. In fact one hundred and twenty four environmental weed species are still being sold in nurseries across New South Wales!

HOW CAN MY GARDEN PLANTS THREATEN BIODIVERSITY?

Some introduced plants have a direct impact on native animals. For example the introduced species Dutchman's Pipe has very similar leaves to the native Richmond Birdwing Vine. When the Richmond Birdwing butterfly accidentally lays its eggs on the exotic plant the caterpillars are poisoned.

Most environmental weeds simply out-compete native plants for light, water, nutrients and

Indian Myna
Photo: Wendy Gibney

space. Invasive vines such as Morning Glory, Madeira Vine and Cat's Claw Creeper are some of the worst environmental weeds as they smother native plants, completely blocking photosynthesis and can grow thick enough to break branches and bring down entire trees and shrubs.

HOW DO THE PLANTS ESCAPE FROM GARDENS?

Garden waste dumping is a serious threat to native bushland as weeds are directly spread into new areas. But environmental weeds may also be spread indirectly. Seeds can be dispersed by birds or bats, some may be wind-blown or spread by water and still others have sticky seeds that cling to clothing, pets or even vehicles. Plants such as the Madeira Vine spread vegetatively and even a small leaf is enough to start a new infestation. So no matter how careful you are, environmental weeds in your garden can still spread to natural ecosystems. It's best not to have them in the first place.

NOT ALL INTRODUCED SPECIES ARE A PROBLEM

Many exotic species of plants from other parts of the world pose no threat at all. Roses, gardenias and azaleas are all exotic plants but none of these have the potential to become invasive species.

WHAT CAN YOU DO TO STOP THE SPREAD OF ENVIRONMENTAL WEEDS?

1. Learn which plants are environmental weeds.
2. Don't plant environmental weeds and gradually remove weeds.
3. Plant local native species.
4. Buy plants from Bushland friendly nurseries.
5. Carefully dispose of environmental weeds and their seeds.
6. Join your local Landcare or Dunecare group.

CAMPHOR LAUREL

Camphor laurels have become very common in our region. Camphors now serve a role in our environment - many rainforest birds have adapted to feed on the seeds and local wildlife, including koalas, use them for shelter and stepping stones to move across the landscape. If all the camphors are removed on a property at once, without a seed bank being present, then you will probably end up with an even worse weed problem than when you started. However if you kill an area of camphors that are surrounded by native bush using a camphor conversion technique, then amazing results will be achieved. Camphors on creek banks are not ideal as their roots do not hold the banks together. Native species such as watergum, casuarina, figs and lomandra have matting fibrous roots and are also able to withstand the large pressure of water when our rivers flood.

Cane Toad
Photo: Wendy Gibney

WEEDS – THE GOOD NEWS

Nature doesn't like gaps. Wherever there is space to grow, something fills it, usually weeds. Weeds can provide an important role in binding the soil together and providing habitat for native species. There is nothing as bad as bare soil – this is an invitation for loose precious topsoil and the runoff can lead to pollution of waterways. Whether you are doing natural regeneration (is there a native seedbank still active in your soil?), or planting, it is imperative to have a plan when attacking weeds.

HOW TO TACKLE WEEDS?

Each site is different and will have a different weed story. Look and think which are your biggest weed priorities. Start small and watch and learn what nature does on your site. Good questions to ask are:

- Does the weed strangle or smother?
- What is going to happen when I remove all these weeds?
- How am I going to manage and maintain the site? How much time do I have available?
- Is there something I can do to give nature a hand – broadcasting local seeds, controlling annual weeds, mulching plantings?
- How can I get more light and heat into my site to improve native seed germination.

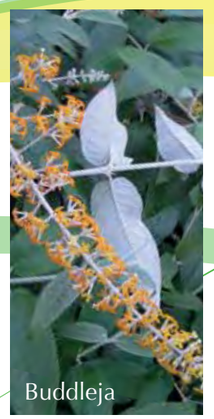
Examples of exotic garden escapees that have become serious environmental weeds. Photos: Byron Shire Council.

Morning Glory

Maderia Vine

Cat's Claw

Small-leaved Privet



Buddleja

Glory Lily

Other Points for Consideration

CULTIVARS

When a naturally occurring plant has been selected or changed by the intentional actions of humans, it is called a cultivar (under the International Code of Nomenclature for Cultivated Plants). Humans have been 'improving' nature by cultivation for thousands of years; orange trees, tomatoes and wheat are good examples. It is important to recognise that cultivated native plants are not the same as local natives or naturally occurring species.

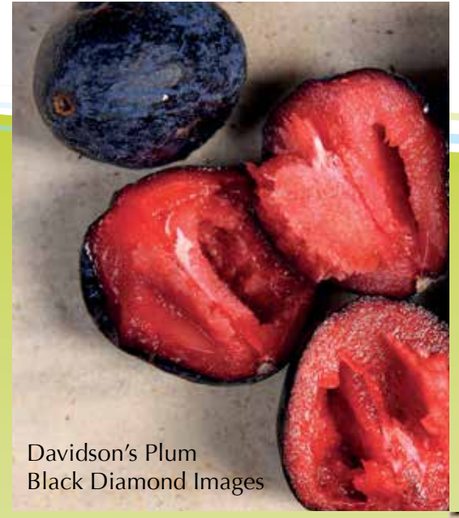
Cultivars often have fancy names like Callistemon Perth Pink, which is a selected form of *Callistemon salignus*, a local native plant. Cultivars can be identified where the abbreviation 'cv' is used. They are often bred to flower more prolifically than true natives and if they are not sterile, may produce viable seed. For this reason, cultivars should never be reintroduced to bushland situations, or used in revegetation. If you live near natural bush, be aware that the cultivars and exotics in your garden may influence native vegetation through the spread of seeds by birds or seedlings over time.

Cultivars are very popular for gardens as they are seen as improvements to the wild species. However they have potential to hybridise or cross with the native species, thus changing the genetics forever. The dangers in this are that the new species may not have the genetic characteristics (resilience) to survive over time; frost hardiness or drought tolerance may be reduced. We ask you to please consider the importance of the natural ecology and genetic integrity when designing your garden.

PLANT PROPAGATION & SEED PROVENANCE

Growing your own native plants can be immensely rewarding and cost saving. Many Australian seeds require specific treatments before they will germinate. Care should be taken when collecting seeds to propagate, that they are collected from a nearby, existing, healthy area of native vegetation. Provenance is based on the idea that local plants are genetically adapted to local environmental conditions. Provenance is difficult to predict across different species. This means seed should always be sourced from a large, healthy population even if this means sourcing seed from a larger population that is further away but from a similar environment. Local nurseries that collect and grow wild seed are performing a valuable service in preserving the genetic resources of our native bush. More information can be found on the Florabank website and the Australian National Botanic Gardens Website – details in the Resources section.

Native Landscaping
Photo: Alison Ratcliffe



Davidson's Plum
Black Diamond Images

BUSH FOOD

What could be more logical than planting endemic species that provide food for wildlife and people? Local plants are adapted to the conditions and rarely need fertilisers, pesticides or additional water once established. Some people like to dot their bushfood plants around the garden so they can have a nibble as they potter, others prefer to create a food forest where all the edibles are clustered in one area for ease of harvesting. Please note the previous section on cultivars when choosing plants where there is a possibility their seed may be spread into the bush. Our favourites include: Midgen Berry, Macadamia Nut Tree, Brush Cherry, Native Raspberry, Davidson's Plum, Native Tamarind & Finger Lime. The Internet is a great resource for recipes – just search for 'Bushfood' or the plant of your choice into your search engine.

CLIMATE CHANGE

A predicted increase in extreme weather events in the form of more severe droughts, more frequent fires and the possibility of greater variations in rainfall patterns, may lead to increased stress on plants and animals as they become progressively isolated in remnants of vegetation (CSIRO 2007). All the more reason why it is critically important to protect existing remnants and expand local wildlife corridors to allow species to move across the landscape. This will offer some refuge and provide our endemic plants and animals a chance to adapt to these evolving conditions.

Land Mullet (left)
Photo: Rainer Hartlieb
Myrtle Rust (centre top)
Photo: Dr. L. Moran (CSIRO)
Myrtle Rust (centre bottom)
Photo: NSW I&I

PLANT HEALTH

Since the first edition of this book some of our local native species have become hard to find in nurseries due to myrtle rust. Myrtle rust (*Puccinia psidii*) is a fungal disease which infects plants in the Myrtaceae family. Common Australian Myrtaceae species include eucalyptus, willow myrtle, turpentine, bottlebrush, paperbark, tea tree and lilly pilly. Myrtle rust was first detected in NSW in April 2010 and has since spread across the eastern Australian landscape and is now widespread. As with any plants with diseases, all affected material should be removed and disposed of. An effective way to prevent the spread of diseases, pests and weed seeds is to hot compost. Tweed Shire Council's green organic bin undergoes this process so it is safe to dispose of infected material and weeds in your green organics bin. Always practice good hygiene when working with native plants and general nursery stock. Clean equipment such as containers and secateurs after use. See: www.dpi.nsw.gov.au/biosecurity/plant/established-plant-pests-and-diseases/myrtle-rust

Mulch
Photo: Rous County Council

SOIL

The condition and type of your soil will impact on what plants grow best.

- **Soil texture** – tested by taking a handful of soil from various spots in your garden. Gradually wet each soil sample and work it in your hand until it forms a ball. It should be just drier than the point at which the soil sticks to your fingers. Add some dry soil if it becomes too sticky. Slowly squeeze the soil out to form a sausage-like ribbon. **Clay soil** produces a firm shape that will bend like clay. **Sandy soil** crumbles and you can see and feel sand. **Loam soil** holds together but is still slightly crumbly.
- **Soil pH** – test kits are widely available and inexpensive, as are products to adjust your soil's pH.
- **Organic matter** – regularly adding compost and manure can help improve the soil structure and its ability to store moisture and nutrients.
- **Organic Mulch** – regular applications of a 5cm thick layer of mulch (sugarcane waste, hay, straw, chipped bark, tea tree mulch, or sawdust) placed over the soil helps to reduce water loss and insulates plant roots against extremes of heat and cold. It also helps prevent weed growth and releases nutrients as it decomposes.

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A Field Guide to Australian Frogs 1995. Barker J. Grigg G.C. Tyler, M.J., Surrey Beatty & Sons.

A Field Guide to Reptiles of New South Wales 2004. Swan G. Shea G. Sadlier R., Reed New Holland.

Common Weeds of Subtropical Rainforests of Eastern Australia - *A practical manual for their identification and control* 2008. Big Scrub Landcare Group.

Create More Butterflies 2005. Jordan, F. & Schwenke, H., Earthling Enterprises.

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Mangroves to Mountains 2009. Logan River Branch S G A P (Qld Region) Inc.

Nest Boxes for Wildlife - *A practical Guide* 2006. Alan and Stacey Franks, Blooming Books.

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Rainforest Trees of Mainland South-eastern Australia 2008. Floyd, A.G., Terania Publishing Lismore.

Rainforest Climbing Plants - *A field guide to their identification* 2007. Harden, G., McDonald, B., Williams, J., Gwen Harden Publishing.

Rainforest Trees and Shrubs - *A field guide to their identification* 2006. Harden G., McDonald, B., Williams, J., Gwen Harden Publishing.

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Waterplants in Australia - *A field guide 4th edition* 2003. Sainty, G and Jacobs, S., Sainty and Associates.

Butterfly Host Plants of SE Qld and NE NSW 2005 (second revised edn.). Moss, J.T., Butterfly & other Invertebrates Club Inc., Qld.'

ONLINE RESOURCES

NATIVE FLORA

Australian Fungi: www.anbg.gov.au/fungi

Australian Plant Image Index: www.anbg.gov.au/plantinfo/index.html

Caldera Fungi: www.calderafungi.blogspot.com

Florabank - native species seed management: www.florabank.org.au

Fungimap - online field guide for fungi: www.fungimap.org.au

How to Propagate Australian Plants: www.anbg.gov.au/PROPGATE/plant01.htm

NSW Office of Environment and Heritage – *Threatened Species:* www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species

PlantNET- NSW Flora Online: www.plantnet.rbgsyd.nsw.gov.au

Rainforest Plants of Australia - *Rockhampton to Victoria:* Interactive USB key and information system (2014) www.rainforests.net.au/product/rainforest-plants-of-australia/

NATIVE FAUNA

Atlas of Living Australia: www.ala.org.au/

Backyard Buddies - creating a habitat haven in your backyard: www.backyardbuddies.org.au

Biodiversity in my Backyard (by Rita de Heer): www.mullumyard.blogspot.com

Birdlife Northern NSW: www.birdlife.org.au/locations/birdlife-northern-nsw

Birds in Backyards - online Bird Finder: www.birdsinbackyards.net

Build your Own Nest Box booklet: www.brunswickvalleylandcare.org.au/resouces

Flora for Fauna: www.floraforfauna.com.au

Frogs Australia: www.frogs.org.au/frogs/ofNSW/The_North_Coast

Hollow Log Homes nest boxes: www.hollowloghomes.com

Native Bees: www.sugarbag.net

Reptiles: www.reptilesofaustralia.com

The Atlas of NSW Wildlife- BioNet search: www.bionet.nsw.gov.au

Tweed Shire Council - Koala Info: www.tweed.nsw.gov.au/Koalas

Tweed Shire Counci - Wildlife Info: www.tweed.nsw.gov.au/Wildlife

Wildlife Friendly Dams: www.waternsw.com.au/water-quality/catchment/living/managing-land/farm-dams & www.murraywildlife.com.au/farm-dams/

WILDLIFE EMERGENCY NUMBERS

Australian Seabird Rescue	02 6686 2852
Friends of the Koala Rescue	02 6622 1233
Tweed Valley Wildlife Carers	02 6672 4789

PEST ANIMALS

Tweed Shire Council - Invasive/Pest animals: www.tweed.nsw.gov.au/InvasiveAnimals

Wild Dogs, Foxes and Cats Local Land Services: www.northcoast.lls.nsw.gov.au/biosecurity/pest-control

WEEDS & BUSH REGENERATION

Australian Association of Bush Regenerators: www.aabr.org.au

Big Scrub Landcare Weeds and Restoration Manuals – available for purchase from: www.bigscrubrainforest.org.au/?post_type=product

Bushland Friendly Nursery Scheme brochure: Available from Tweed Shire Council

Byron Shire Council Weed Profile Sheets: www.byron.nsw.gov.au/weed-profiles

Tweed Shire Council Bushland Regeneration information: www.tweed.nsw.gov.au/BushlandRegeneration

Weeds of the North Coast of NSW: free to download from www.brunswickvalleylandcare.org.au/weeds available for a donation from Brunswick Valley Landcare 6626 7028

LOCAL ORGANISATIONS

Big Scrub Landcare: www.bigscrubrainforest.org.au

Brunswick Valley Landcare: www.brunswickvalleylandcare.org.au

Caldera Environment Centre: calderaenvironmentcentre.org

Department of Primary Industries - Biosecurity: www.dpi.nsw.gov.au/biosecurity

Landcare Australia: www.landcareonline.com.au

Landcare NSW: www.landcarensw.org.au

National Parks: www.nationalparks.nsw.gov.au

North Coast Local Land Services: www.northcoast.lls.nsw.gov.au

NSW Government Office of Environment and Heritage: www.environment.nsw.gov.au/topics

Rous County Council – weed biosecurity: www.rous.nsw.gov.au

Tweed Landcare Inc. - tweedlandcare.org.au

Tweed Shire Council biodiversity information: www.tweed.nsw.gov.au/Biodiversity

LOCAL NURSERIES (BUSH-FRIENDLY)

We would like to thank the following nurseries for their support in publishing this book:

Burringbar Rainforest Nursery

www.burringbarrainforestnursery.com.au

Ph: (02) 6677 1088

380 Burringbar Road, Upper Burringbar, NSW 2483

brnursery1@gmail.com

Firewheel Rainforest Nursery

www.firewheelnursery.com.au

Ph (02) 6689 5246 | 0427 008 522

387 Dorroughby Road, Dorroughby NSW 2480

info@firewheelnursery.com.au

Mullum Creek Nursery

www.mcnativenursery.com.au

Ph (02) 6684 1703

110 Yankee Creek Road, Mullumbimby NSW 2482

bgreen@mcnativenursery.com.au

Ragged Blossom Native Nursery

www.raggedblossom.com.au

Ph: 0403 720 950

Bangalow NSW 2479

plants@raggedblossom.com.au

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