Native Garden

A planting guide to promote biodiversity in the Lismore region





Acknowledgements

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This document is also available in PDF format on the internet at: www.rous.nsw.gov.au and www.lismore.nsw.gov.au

My Local Native Garden Guide: A planting guide to promote biodiversity in the Lismore Region (2016).

Adapted by Rous County Council and Lismore City Council based upon the publication.

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The original "My Local Native Garden" Team

James Mayson – editor Mandy Lisson – garden design Andy Erskine – coastal Rita De Heer – riverine & alluvial Angus Underwood – foothills & hinterland Jo Green – ridges & ranges Wendy Gibney – aquatic plants, invasive species www.thomasmanguy.com – graphic design

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Introduction

WELCOME TO MY LOCAL NATIVE GARDEN – A PLANTING GUIDE TO PROMOTE BIODIVERSITY IN THE LISMORE REGION.

MESSAGE FROM ROUS COUNTY COUNCIL

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 earth.

When we turn on our taps, the quality of the water that flows out has been influenced by these natural processes. Rous County Council is the bulk water supply authority with a primary responsibility to 'supply high quality safe drinking water.' And so how is biodiversity and our local native gardens involved in this function?

Scrambling Lily Illustration: A Erskine

All of the key water sources of Rous County Council (Rocky Creek Dam, Emigrant Creek Dam and the Wilsons River source) are located within the Big Scrub landscape. In this way, Rous water represents 'water from the Big Scrub rainforest.' The quality of these water sources is dependent upon the prevailing conditions in these water catchment areas. Management of catchments is important for improving the quality of water flowing from the hillsides and into our streams. Protecting and restoring native vegetation serves a range of functions that improve the quality of the catchment, and have a beneficial effect on water quality, one of the key management goals of Rous County Council.

Rous County Council encourages all landholders in our water catchment areas – whether at an the individual lot level in an urban setting or at a larger scale in our rural areas – to create a native garden or other natural habitat area to positively influence water



sources within our catchments. In this way you will be helping to manage water in partnership with nature by helping to protect the health of our waterways, for the benefit of our local drinking water supply and the enhancement of biodiversity in the Big Scrub landscape.

MESSAGE FROM LISMORE CITY COUNCIL

The Lismore Local Government Area (LGA) is located within the Northern Rivers Region and is recognised for its amazing biodiversity - one of the richest and most diverse regions for flora and fauna and their associated habitats in Australia. The LGA borders onto the World Heritage listed Border Ranges National Park and is within the Border Ranges rainforest region. The LGA also contains fragments of the Big Scrub rainforest, which was once Australia's largest expanse of lowland subtropical rainforest. The Big Scrub was extensively cleared following European settlement and now less than 1% of its original extent remains. The high biodiversity is a result of the regions position in the Macleay-McPherson Overlap, where the southernmost limit of many tropical species and the northernmost limit of many temperate species coincide.

Within the LGA the biodiversity values include over 1000 vascular plants, 60 species of mammal, 236 species of bird, 33 species of amphibian and 55 species of reptile. The Northern Rivers Region contains a large number of endemic species and whilst the region occupies just 6.3% of NSW, it supports over 40% of the state's threatened species, including around 70% of threatened frogs, 75% of threatened birds, 60% of threatened mammals and 40% of threatened plants. In addition, one fifth of the State's threatened ecological communities are known to occur in the Northern Rivers Region.



Green Tree Frog (juvenile) Photo: W Gibney

Increased population, dated land management practices and pressure from agriculture and development have fragmented the original environment into small 'islands' or remnants where species are vulnerable to weeds, pests and predators. When it comes to flora and fauna, we often 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.

ve e of neir

Macadamia Illustration: H 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

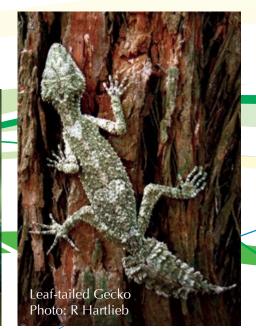
This publication hopes to inspire you to invite the natural world into your own backyard. It is an entry point to introduce you to just some of the incredible variety of local native plants. The guide will assist you to design, plant and maintain your own garden with species that are local to your area. By following our basic planting guide, your garden will not only be easier to grow and maintain, but it will integrate into the surrounds, linking

Wompoo

Fruit-Dove

Photo: D Taylor

with a range of natural habitats to help support the great diversity of local wildlife. By creating a backyard native garden you are helping to protect and restore biodiversity; the health of our waterways and drinking water supply; the land, wildlife and people.





Firewheel Tree Illustration: Andy Erskine

My Local Native Garden Sections:

AS THERE ARE MANY FACTORS THAT AFFECT AND INFLUENCE NATIVE VEGETATION, IT IS DIFFICULT TO BE PRECISE ABOUT WHAT TYPE OF VEGETATION COMMUNITY WILL THRIVE AT YOUR PLACE. SO TO HELP YOU IDENTIFY WHICH NATIVE COMMUNITIES BEST SUIT YOUR GARDEN WE HAVE DIVIDED VEGETATION TYPES INTO 3 ZONES:

COASTAL PLAINS RIVERS AND FLOODPLAINS

(P 18-21)

Bexhill Blakebrook Boatharbour Booerie Creek Booyong Broadwater Buckendoon Coraki Corndale Dungarubba East Coraki Eltham Fernside Green Forest Goolmangar Howards Grass Jiggi Kilgin

Koonirigan Lagoon Grass Lismore (South, North, CBD) Loftville Monaltrie Ruthven South Gundurimba Spring Grove Tatham Tuckurimba Tuncester North Woodburn Woodlawn Wyrallah

MIDLAND HILLS

(P 22-25)

McLeans

Bentley Blue Knob Bungabee Caniaba Chilcotts Grass Corndale Clunes Coffee Camp Dorroughby Dunoon East Lismore Girards Hill Goonellabah Georgica Keerrong Larnook Levcester Lindendale Lismore Heights Marom Creek

Ridges McKees Hill Modanville Mountain Top Numulgi Nimbin Pearces Creek Repentance Creek **Richmond Hill** Rock Valley Rosebank Stoney Chute The Channon Terania Creek Tregeagle Tucki Tucki Tullera Tuntable Creek

ESCARPMENT RANGES

(P 26-29)

Along the ridges and the gullies of: Dorroughby Mountain Top Nightcap Nimbin Repentance Creek Terania Creek The Channon Whian Whian

6 My Local Native Garden

al A



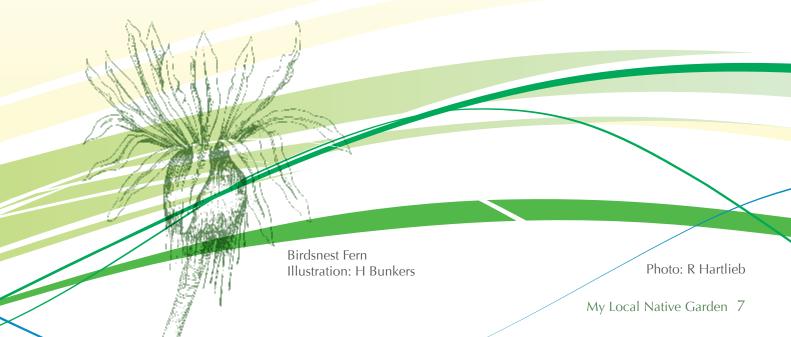
How to use this book 1.Look 2.Check 3.Choose

at the sections opposite (Coastal Plains; the locations under the section Midland Hills; Escarpment Ranges) which best describes your property? Go to it and view the range of stunning plants that will enrich your garden.

heading- is their 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*.

from the list of striking native plants in your section – ring up 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 an environmental strategies officer at Council.



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 the Lismore Region, high rainfall favors 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 Lismore Region – several of these are listed as threatened under State or Federal legislation.

EXAMPLES OF NATURAL PLANT COMMUNITIES

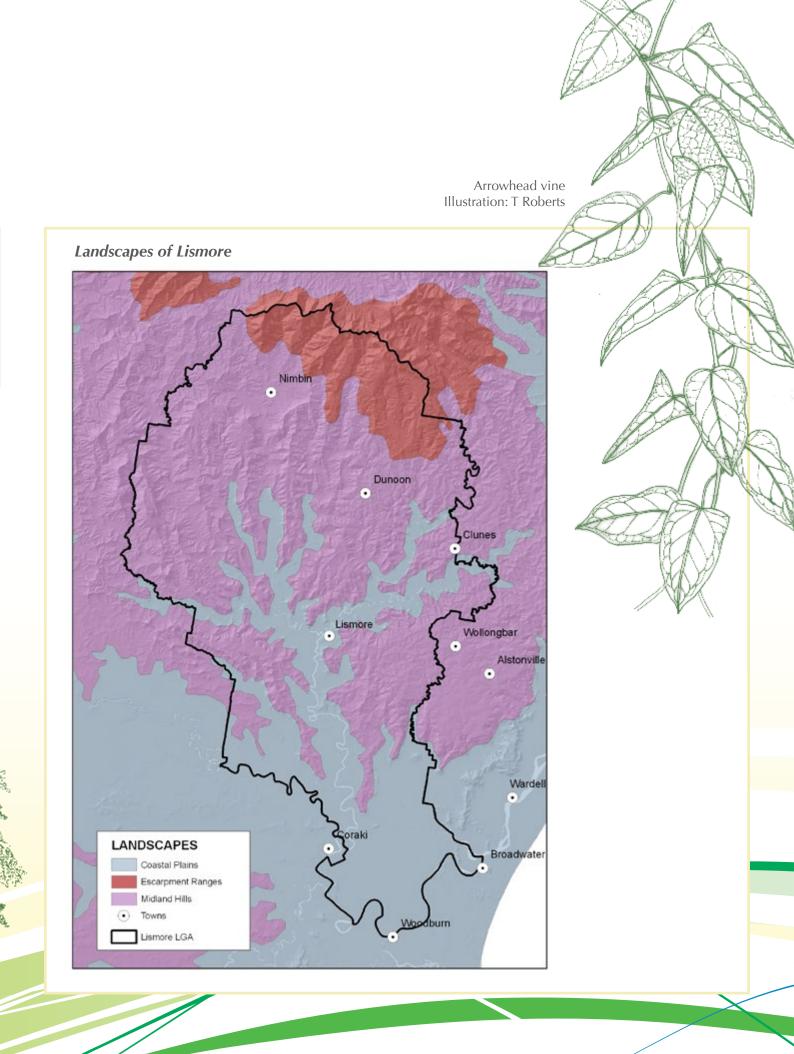
Mangroves Swamp sclerophyll forests on coastal floodplains Swamp oak floodplain forests Freshwater wetlands on coastal floodplains Subtropical coastal floodplain forests Lowland rainforests on floodplain Dry rainforest Wet sclerophyll forest (shrub grass formation) Dry sclerophyll forest (shrub grass formation) Riparian rainforest Eastern riverine forest

Open forests

Snake Vine

Illustration: A Erskine

Tree Fern Illustration: H Bunkers



Landscaping for Water Quality

DID YOU KNOW THAT LISMORE AND ITS SURROUNDING VILLAGES LIE WITHIN A DRINKING WATER CATCHMENT?

A catchment is an area of land that feeds water to a particular creek, river or other water body. In Lismore, water is pumped directly from the Wilsons River to the Nightcap Water Treatment Plant, for treatment before it is distributed across the region as drinking water.



WHAT WE DO IN OUR CATCHMENT AFFECTS THE QUALITY OF OUR REGIONS DRINKING WATER

In Lismore and our surrounding villages, stormwater flows either directly across the landscape into creeks and rivers, or it travels through a network of drains and underground pipes before it empties into our waterways, carrying with it a range of pollutants and increasing the potential for erosion. When this happens within a drinking water catchment it affects river health and drinking water quality by introducing:





- Sediments from erosion and runoff that 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 that can promote the growth of aquatic plants and cause toxic algal blooms; and
- Chemicals from garden pesticides, herbicides, automotive fluids or car 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 design to capture, treat and reuse stormwater. By utilising WSUD at your place, you can help to significantly improve the quality and quantity of water entering our local waterways.

Incorporating WSUD in backyard design can:

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



Water Sensitive Urban Design - What you can do!

There are a number of simple and effective ways you can implement WSUD in your backyard such as:

- Build a raingarden
- Install a rainwater tank
- Use landscaping materials for water quality



Design

LISMORE AND ITS SURROUNDING VILLAGES HAVE 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

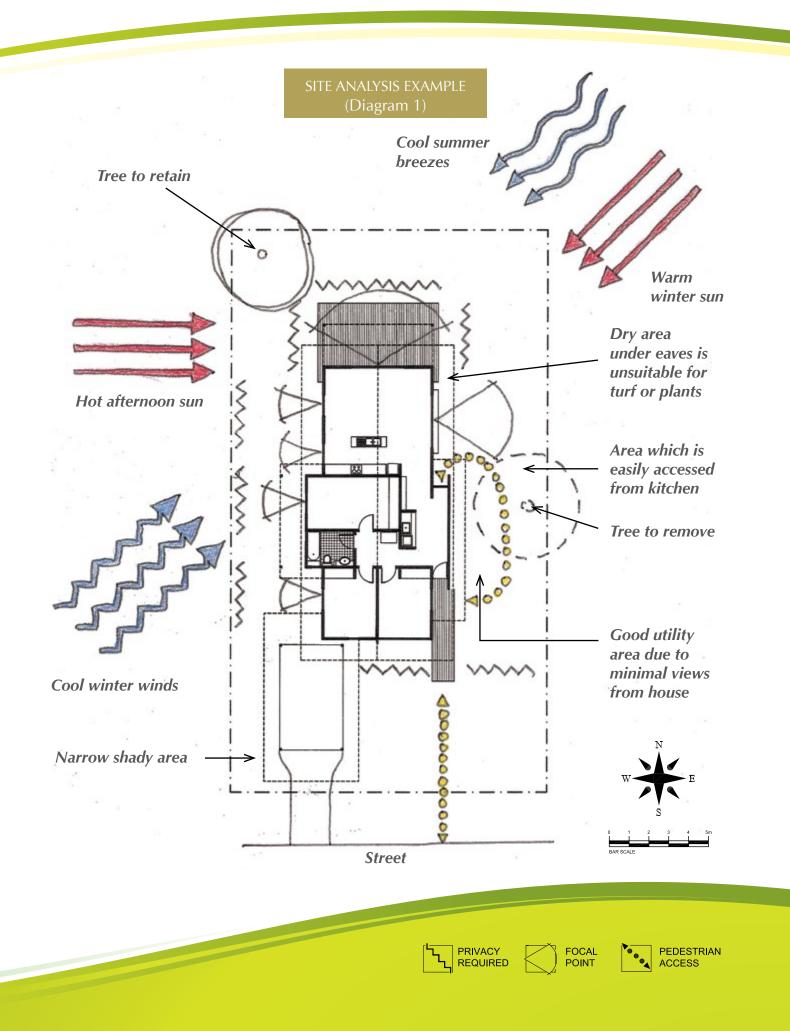
Site Analysis is a pivotal stage that lists an inventory of existing and desirable features of the garden that guide the design. Typical features include:

- 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.







DESIGN

Once you have considered your existing site analysis, you can think about your needs and define your objectives, then develop a concept plan. This is a simple bubble diagram that helps you to consider where the different functional areas will be located and how they will connect and relate to one another.

This section is designed to help you plan a simple and effective garden landscape for water quality. Incorporating these techniques can filter out pollutants and soak up excess water on your property influencing water sources within our catchments and helping to protect the health of our waterways, our local drinking water supply, land, wildlife and people.

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

BACKYARD BUFFERS

Buffers are gardens of densely planted native species placed between hard surfaces at the location where stormwater leaves your property. While the size of buffers can vary, wider buffers have a greater ability to stabilise soils, filter pollutants, and absorb stormwater.

FILTER STRIPS

Filter strips are a type of backyard buffer that can be used in a wide variety of places in order to improve water quality. Examples of filter strips in the backyard include flower beds with ornamental grasses, perennial gardens, and "no-mow" zones. As rainwater passes through a filter strip, the low growing vegetation slows the movement of water, allowing sediment to settle out, and excess nutrients and pollutants to be filtered by the plants. The plants also help absorb some of the rainwater, resulting in less stormwater from your property.

RAINGARDENS

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

RAINWATER TANKS

Installing a rainwater tank is one of the easiest ways to reduce the amount of stormwater leaving your property, by collecting runoff from your roof and storing it for later use. Rainwater tanks come in all shapes and sizes and can be simply fitted with a tap and connected to a hose for watering the garden and for washing pets and vehicles. Your rainwater tank could also be connected internally providing water for toilets and laundry.

• MATERIALS

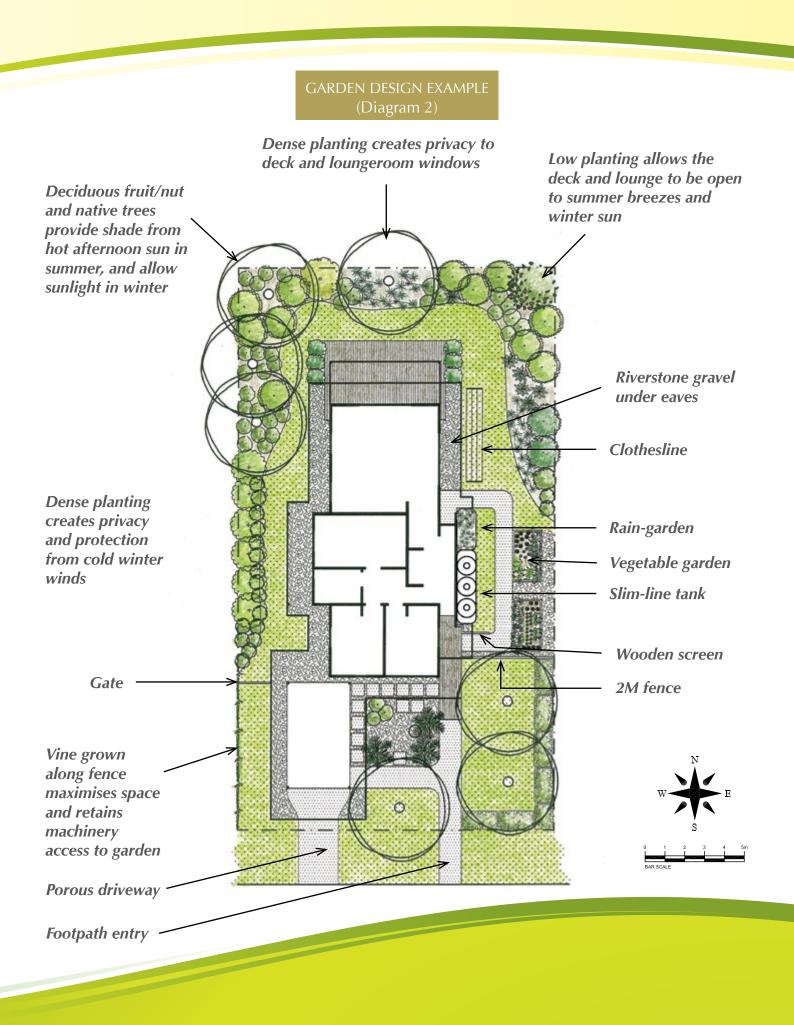
Think about all of the hard surfaces that cannot absorb water, such as driveways, carports, rooftops, patios, and paths. These areas will increase rainwater runoff rather than absorbing it. Use porous materials designed to allow water to soak through the surface and seep back into the ground.

OTHER CONSIDERATIONS

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

Think about what functions you want your garden to serve.

- Is there a place to relax and to entertain?
- Do you wish to attract birds and butterflies?
- Do you require children's play areas or outdoor entertaining areas?
- What about site features such as pools, garden sheds or pergolas?
- Is low maintenance a priority?
- Do you want vegetable gardens and/or chickens?
- Do you have pets and will they need to be fenced?



Foambark. Photo: I Stych

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, fertiliser, 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 fertiliser, 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 & fertiliser requirements, mulching etc. Reputable online gardening websites can also be a great source of information.

GETTING HELP

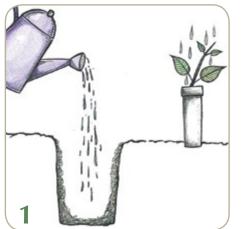
Help can be obtained from Lismore City Council, landscape designers, experienced bush regenerators, websites and nurseries. There are also a lot of great books and gardening magazines out there to help design your garden – why not put a scrapbook together of all the elements you wish to include? Most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



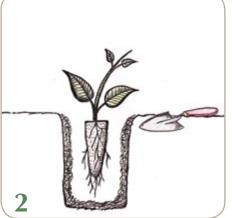




Photos: V Dante, J Mayson and Lismore City Council



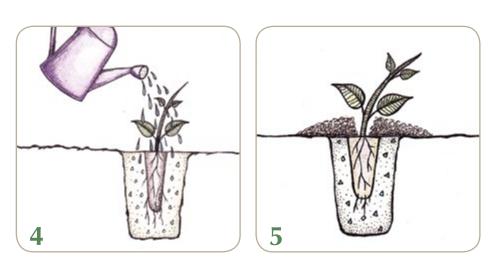
 Dig a hole slightly deeper and at least twice as wide as the pot size. Loosen the soil around the sides of the planting hole. Water the plant & fill the hole with water and allow both to drain away. If the water doesn't drain from the hole you may need additional help with the addition of gypsum or build 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. Fill back soil, making sure that the surface root ball is well covered and include a little slow release native plant fertiliser 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 fertiliser at the base of the hole as this may encourage root rot or fertiliser '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.



Coastal Plains Rivers and Floodplains

LOCATIONS:

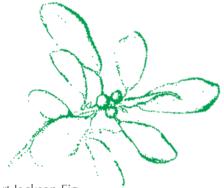
BEXHILL, BLAKEBROOK, BOATHARBOUR, BOOERIE CREEK, BOOYONG, BROADWATER, BUCKENDOON, CORAKI, CORNDALE, DUNGARUBBA, EAST CORAKI, ELTHAM, FERNSIDE, GREEN FOREST, GOOLMANGAR, HOWARDS GRASS, JIGGI, KILGIN, KOONIRIGAN, LAGOON GRASS, LISMORE (SOUTH, NORTH, CBD), LOFTVILLE, MONALTRIE, RUTHVEN, SOUTH GUNDURIMBA, SPRING GROVE, TATHAM, TUCKURIMBA, TUNCESTER, NORTH WOODBURN, WOODLAWN, WYRALLAH.

The coastal plains, riparian zones and floodplains of the Lismore region are some of the most altered and disturbed in the Richmond Catchment. Settlement and farming on the floodplain has changed vegetation from flood-tolerant native trees, shrubs and wetland plants to floodsusceptible exotic plants and grasses. The floodplain is intensively grazed and cropped for sugarcane, tea-tree and soya beans.

Prior to settlement the coastal plain supported a rich mosaic of plant communities. Remnants of majestic eucalypt forest still exist in drier areas. Paper-bark tea-tree forest, swamp oak communities and sedge-lands thrive in areas of wetlands, and, in the lower estuary, communities of mangroves and other salt tolerant plants are found. All these species, (except mangroves, which require brackish or salt water) can still flourish near dams, soaks or in gardens on the coastal plains.

Choosing to plant species native to the coastal plain of the Lismore region will make your property part of a region-wide wildlife corridor. Doing this will invite an incredible diversity of wildlife and plants into your backyard.

Dense plantings can slow runoff and catch silt, which will help prevent erosion and maintain the health of the whole length of the waterway. It will also encourage the movement of all life forms that rely on the coastal plains for their survival.



Port Jackson Fig Illustration: A Erskine

WILDLIFE:

ECHIDNAS, POSSUMS, WATER DRAGONS, PLATYPUS, FLYING FOX, INSECTIVOROUS BATS, SWAMP WALLABY, VARIOUS NATIVE FROGS AND FISH, AND A WIDE VARIETY OF BIRDS INCLUDING THE PACIFIC BAZZA



Green Tree Frog Photo: D Kemp







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, rivers 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 Dianella and Blue 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: Currie Park and Pritchard Park in North Lismore.

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 (e.g. *E. terreticornis*) and Angophora (e. g. *A. floribunda, A. subvelutina*) species 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: River Oak, which when mature will attract the Black Cockatoo; Native Violet and Pygmy Panic which are low growing

Paperbark, Photo: V Dante groundcovers, whilst Blue Tongue, Breynia and Orange Thorn are all midsized shrubs and scramblers. Diligent weeding of exotic species may even revive one or two ground orchids.

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



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Slaters Creek, Photo: V Tallon

Swamp Water

Fern Swampy, near paperbarks, creeping rhizomes

Coastal Plains – Rivers and Floodplains

HEIGHT WIDTH

FULL

SUN

FROST

TOLERANT

FLOOD

TOLERANT

DROUGHT

TOLERANT

15















Blue Commelina Perennial herb with	Commelina	1 2	Swamp Water Fern Blue Commelina	Blechnum indicum Commelina cyanea	0.5m 0.3m	1m 1-2m	~		v v		v	
deep blue flowers		3	Pygmy Panic, Dwarf Panic	Panicum pygmaeum	0.3m	creeping			~		~	
		4	Lomandra	Lomandra hystrix	1m	1m	~	~	~	~	~	
Pygmy Panic,		5	Swamp or River Lily	Crinum pendunculatum	1m	1m	~		~		~	
Dwarf Panic		6	Dianella	Dianella caerulea	0.8m	spreading	r	v	~	~	~	
Easily propagated; flowers blue; blue-		7	Native Violet	Viola hederaceae	0.1m	spreading			~	~	~	
banded bees; harvester ants; butterfly host		8	Common Silkpod	Parsonia straminea	n/a	n/a	r		~			
	VINES	9 (p24)	Birdwing Butterfly Vine	Pararistolochia praevenosa	5-10m	spreading		v			~	
Lomandra		10 (p28)	Native Yam	Dioscorea transversa	4m	n/a	r		~	~		
Tussock growth, strappy leaves, branched flower spikes		11	Climbing Maidenhair Fern	Lygodium microphyllum	4m	spreading	~		~			
	SHRUBS AND	12	Blue Tongue	Melastoma affine	2m	2m	~		~		¥	
		13	Breynia	Breynia oblongifolia	3m	2m	~				~	
0		14	Native Mulberry	Pipterus argenteus	8m	5m	~			~	~	
Swamp or SCRAMBLE River Lily	SCRAMBLERS	15	Orange Thorn	Pittosporum multiflorum	2m	1m	r	r			~	
Fragrant showy white flowers		16	Velvet Leaf	Callicarpa pendunculata	2m	1m	r	r		r	~	
		17	Thorny Pea	Desmodium acanthocladum	1-2m	spreading		v	r		~	
		18	River Oak	Casuarina cunninghamiana	35m	8m	v	v	~	v		
Dianella		19	Creek Sandpaper Fig	Ficus coronata	15m	6m	V		v		~	
Great clumping grass. Lush, strappy leaves, dainty	TREES	20	Veiny Wilkiea	Wilkiea huegeliana	8m	2m			r		~	
		21	Willow Bottlebrush	Callistemon	10m	5-10m	~	~	v			









Robust: scented flowers; butterfly host; bird attractant



Blue Tongue

Willow Bottlebrush

Weeping Lilly Pilly

Climbing

21

22

COMMON NAME

SC NAME

Prolific mauve flowers; edible fruit pulp

salignus

Waterhousia

floribunda



10m

30m



21

~

~

~

5-10m

10m

20



~

TOLERATES

HEAVY CLAY

SOILS

TOLERATES

SANDY

SOILS

~

~

~

~

~

~ ~

~

FLOWERS

Most of year

Spring/ Summer Spring/

Summer

Spring/ Summer

Most of year

Spring

Spring/ Summer

yes

All year

Spring Spring to Autumn

Spring to

Summer

Summer

Summer

Spring

Spring to

Summer

Spring

Spring to

Native Mulberry

Edible fruit; bird attractant. butterfly host







white flowers,

edible berry

Midland Hills

LOCATIONS:

BENTLEY, BLUE KNOB, BUNGABEE, CANIABA, CHILCOTTS GRASS, CORNDALE, CLUNES, COFFEE CAMP, DORROUGHBY, DUNOON, EAST LISMORE, GIRARDS HILL, GOONELLABAH, GEORGICA, KEERRONG, LARNOOK, LEYCESTER, LINDENDALE, LISMORE HEIGHTS, MAROM CREEK, MCLEANS RIDGES, MCKEES HILL, MODANVILLE, MOUNTAIN TOP, NUMULGI, NIMBIN, PEARCES CREEK, REPENTANCE CREEK, RICHMOND HILL, ROCK VALLEY, ROSEBANK, STONEY CHUTE, THE CHANNON, TERANIA CREEK, TREGEAGLE, TUCKI TUCKI, TULLERA, TUNTABLE CREEK.

The midland hills are located primarily to the North of Lismore amongst the rolling hills and valleys of the Wilsons River catchment. The high rainfall and rich soils of this area create the perfect conditions for rainforest plants to thrive. The original vegetation of this area is lowland subtropical rainforest, commonly referred to as 'The Big Scrub' and remnants of this vegetation are now protected as an Endangered Ecological Community. The Big Scrub once covered the entire hinterland area (75,000 hectares), however this was almost entirely cleared. Now only about 700 hectares (1% of its original extent) remains in small isolated remnants.

The elevation of the midland hills ranges from 40m along the river flats, which are prone to winter frosts, up to 300m in the north around Terania Creek and Whian Whian, where the soil and vegetation changes from rainforest to wet sclerophyll forest.

Sub-tropical rainforest forms a dense canopy of large trees above a mid and understory layer of dense lush foliage. The range of plants present is extremely diverse and includes trees, shrubs, vines, palms, epiphytes, fungi and groundcovers. This structure creates a cool, moist, shady microclimate by reducing the light intensity, wind and evaporation.

WILDLIFE:

SUB-TROPICAL RAINFOREST IS A HAVEN FOR BIRDLIFE - WOMPOO PIGEON, ROSE-CROWNED FRUIT DOVE, BROWN CUCKOO DOVE, FIGBIRD, CURRAWONG, BAR-SHOULDER DOVE, EMERALD DOVE, FAIRY WREN, SILVER EYE, SOOTY OWL, VARIOUS HONEYEATERS, ALSO GREEN TREE FROG, PERONS TREE FROG, ROCKET FROG, A VARIETY OF LIZARDS, MICROBATS AND INSECTS.





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 shortlived 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 include the Flame Tree, Coolamon and Firewheel, 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 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: Protesters Falls in Nightcap National Park, Rotary Park in Lismore, Tucki Tucki Creek Recreation Park in Goonellabah and Rocky Creek Dam.



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/vellow flower spike and showy red fruit in summer. Warning: this plant is poisonous if ingested





Soft Water fern Attractive clumping fern with a red flush on the new growth







edible raspberries in summer. Bushfood, Attracts wildlife, Best

grown in moist position receiving direct sunlight

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

Midland Hills

		COMMON NAME	SC NAME	HEIGHT	WIDTH	SUN	PARTIAL SHADE	SHADE	TOLERATE WET SOIL	TOLERATE DRY SOIL
GROUNDCOVERS	1	Native Ginger	Alpinia caerulea	2m	1m	~	~	~	~	~
	2	Cunjevoi	Alocasia brisbanensis	1m	1.5m		~	~	~	
	3 (p20)	Dianella	Dianella caerulea	0.8m	spreading	~	~	~	~	~
	4	Rainforest Lomandra	Lomandra spicata	0.5	0.8		~	~	~	~
	5 (p20)	Native Violet	Viola hederacea	0.1m	spreading		~	~	~	
& GRASSES	6	Rough Maidenhair	Adiantum hispidulum	50-70cm	spreading		~	~	~	
	7	Soft Water Fern	Blechnum cartilagineum	0.5m	spreading		~	~	~	
	8	Ground Lilly	Tripladenia cunninghammii	0.4m	spreading		v	~	V	
	9	Native Raspberry	Rubus rosifolius	1m	spreading	~	~		~	~
	10 (p28)	Basket Grass	Oplismenus aemulus	0.2	spreading		~	~	~	~
	11	Birdwing Butterfly Vine	Pararistolochia praevenosa	5-10m	spreading		~	~		~
VINES/ EPIPHYTES	12 (p28)	Birdnest Fern	Asplenium australasicum	1m	2m		~	~	~	
	13	Bower Vine	Pandorea jasminoides	3m	spreading	~			~	~
	14	Narrow-leaved Gardenia	Atractocarpus chartaceus	3m	2m		v	~		
	15	Finger Lime	Citrus australasica	Up to 5m	1m	~	~			
SHRUBS	16	Broad-leaved Palm Lily	Cordyline petiolaris	2-5m	1.5	~	~	~	~	~
	17	Tree Ferns	Cyathea sp	10m	4m	~	~		~	
	18	Bolwarra	Eupomatia laurina	3m	2m		~	~		
	19	Hairy Psychotria	Psychotria loniceroides	3m	2m		~	~		
PALMS	20	Bangalow Palm	Archontophoenix cunninghamiana	20m	4m	~	v	~	v	v
	21	Walking Stick Palm	Linospadix monostachya	2-3m	1m		~	~	~	
	22	Flame Tree	Brachychiton acerifolius	25m	8m	~	~			~
TREES	23	Scrub Cherry	Syzygium australe	25m	4-10m	~	~	~	~	~
	24	Glossy Laurel	Cryptocarya laevigata	6m	2-6m	~	~	~		





Native (ocal Ŷ

Garden

24



Broad-leaf Palm Lily Large lush leaves and bright red berry in summer. Bird

Tree Ferns

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



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

Hairy Psychotria

Delicate white flowers in summer. Bird attractant fruit



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



Scrub Cherry

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



24



25

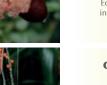
attracting fruit. Bushfood



16













Escarpment Ranges

LOCATIONS:

NIGHTCAP RANGE ON RIDGES SURROUNDING THE CHANNON, DORROUGHBY, NIMBIN, REPENTANCE CREEK, TERANIA CREEK AND WHIAN WHIAN, AND THE MACKELLAR RANGE, KOONORIGAN RANGE AND MOUNTAIN TOP.

The spectacular ranges, ridges and gullies of the escarpment provide a distinctively different vegetation community to the rest of the Lismore region. The Nightcap Range, including the World heritage-listed Nightcap National Park, and broader escarpment, contains the most intact biodiversity in the Lismore region, with only a small portion under commercial agriculture.

The area is dominated by 'tall open forest' with a shady canopy of Eucalypts, Casuarinas and Brushbox. It has a well-developed mid-storey of tall tree ferns and pea flowered shrubs, and an understorey of lush ground ferns. Grass trees, cycads and scramblers feature and there are many epiphytes, (growing on other plants) including the magnificent Bird's Nest Fern and Staghorn.

These Eucalypt-dominated communities are also known as Wet Sclerophyll Forests, and can 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, toughleaved heath shrubs grow comfortably, providing an occasional exuberant and showy flower display.

The plant communities of the ridges and ranges have evolved to handle the unique and harsh environmental conditions such as exposure to wind, extreme cold and heat, fire and drought and an elevation ranging from 50m to 100m and more. 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 number of plant species and allow weeds to grow in place of natives.

WILDLIFE:

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



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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 mass or as a point of interest, to create a spectacular local native garden.

Birdsnest Fern Cycad Grass Trees 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 asi

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 with your local fire brigade or Council about 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, tall Treeferns, Cycads or Giant Spear Lily to provide a contrast of foliage. Shaded or moist spots with rocks may help to establish native Orchids, Birdnest Ferns and Elkhorns.

EXAMPLES: Minyon Falls, Whian Whian and Nightcap National Park. Factors to consider near your house:

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 Native Yam and Guinea Flower, which are effective fire and 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 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 guickly (finely chopped tea tree or gravels).

Native Ginger

Blue Flax Lily

blue berries. Bushfood

Kangaroo Grass

Attracts butterflies

Fine foliage, coppery seed heads.

Great clumping grass. Edible

Lush clumping plant. Bright blue berries. Attracts wildlife

Escarpment Ranges

HEIGHT

2m

0.8m

3m

3m

14m

10m

10m

WIDTH

1m

Spreading

SUN

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3m

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6-14m

5-8m

5-8m

SHADE

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FLOWER SEASON

Spring/ Summer

Spring

Summer seed heads

Summer

Summer

Spring/Summer

n/a

Late Winter /Spring

Spring/ Summer

Winter/ Spring

n/a

Spring/ Summer

Spring/ Autumn

Autumn to Summer

Spring

Winter (cones)

Spring

Summer

Spring/ Summer

SC NAME

Alpinia caerulea

Dianella longifolia

Doryanthes palmeri

Daviesia arborea

Eleocarpus reticulatus

Allocasuarina torulosa

Lepidozamia perroskyana

Narrow-leaved Palm Lilly

Shiny green leaves and bright red berries in summer. Bird attractant





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





Forest Oak Major food tree for the endangered Glossy Black Cockate



					-10	
GROUNDCOVERS	3	Kangaroo Grass	Themeda australis	1m	Clumping	
& GRASSES	4	Lomandra	Lomandra confertifolia	0.5 m	0.8m	
	5	Soft Bracken	Calochlaena dubia	1m	Spreading	
	6	Basket grass	Oplismenus aemulus	0.2	Spreading	
	7	Stream Lily	Helmholtzia glaberrima	2-2.5m	2m	
VINES/ EPIPHYTES	8	Birdnest Fern	Asplenium australasicum	1m	2m	
	9	Native Yam	Dioscorea transversa	4m		
SHRUBS & SCRAMBLERS	10	Guinea Flower	Hibbertia scandens	1m	2m	
	11	Pointed-leaf Hovea	Hovea acutifolia	2m	1m	
	12	Rough Tree Fern	Cyathea australis	10m	4m	
	13	Narrow-leaved Palm Lilly	Cordyline stricta	2-4m	1m	
	14	Hairpin Banksia	Banksia spinulosa	3-5m	1-2m	
	15	Grass Trees	Xanthorrhoea spp.	3m	2m	

COMMON NAME

Native Ginger

2 Blue Flax Lily

1

16

17

18

19

20

Spear Lily

Shining Burrawang

Weeping Pea Tree

Blueberry Ash

Forest Oak

Lomandra

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

Soft Bracken

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





Stream Lily

Large lily, broad leaves, grows on waters edge with white to pink flowers

Birdnest 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)



PALMS/ PALM

LIKE PLANTS

TREES

Native Yam A robust twining vine with attractive foilage



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



Rough Tree Fern Tall fern for feature







Arrowhead vine, Illustration: T Roberts

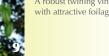








Guinea Flower



Aquatic Plants

1

2

3

4

5

6

7

8

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10

Water Snowflake

White flowers in spring-autumn









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.

SC NAME

Nymphoides indica

Marsilea mutica

Azolla filiculoides

Philydrum lanuginosum

Baumea articulata

Eleocharis acuta

Carex fasicularis

Ludwigia peploides

ssp. montevidensis

Persicaria spp.

Lemna spp.

HABIT

Perennial water lily with

Perennial fern with four

Perennial free floating

aquatic fern

clover-like floating leaflets

Perennial free floating plant

Perennial emergent aquatic

Perennial emergent aquatic

plant which grows to 2.5 m

Perennial emergent aquatic

Perennial emergent plant to

Perennial emergent plant

Perennial emergent aquatic

plant less than 1 m

1 m tall

plant which grows to 2m

floating stolons and leaves

COMMON NAME

Water Snowflake

Nardoo

Azolla

Duck Weed

Frogmouth

Jointed Twig rush

Common Spike rush

Tassel sedge

Water Primrose

Smart weeds or

Knotweeds

POND MANAGEMENT

SUN REQUIREMENTS

Full sun or part shade

Full sun or semi shade

Full sun or shade

Sun or partial shade

Prefers full sun

Prefers full sun

Full sun or partial shade

Full sun or part shade

Semi shade

Sun or shade

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.byron.nsw.gov.au/cane-toads

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

Visit: http://frogsaustralia.net.au/ for more information. Another consideration is that an over abundance of plants can cause aeration system.

deep

deep

nutrient levels

nutrient levels

flowing waterways

& wet soils

WATER REQUIREMENTS

Grows in still and slow flowing water up to 2 m

Grows in still or slow flowing water up to 60cm

Grows in still or slow flowing water with adequate

Grows in still or slow flowing water with adequate

Grows on edge of ponds and dams, shallow water

Grows in water up to 1m deep often in deep mud

Grows in wet soil or on the edge of dams or slow

Grows in dams or slow flowing waterways

Grows in water up to 45 cm deep

Grows in water up to 1m deep

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





Water **Primrose** Bright vellow flowers

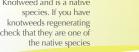


Smart weeds or **Knotweeds**

Flowers vary in colour between species though usually white or pink. These species readily regenerate naturally in ponds and dams. The species. If you have knotweeds regenerating



species pictured is Slender Knotweed and is a native check that they are one of the native species



Frogmouth

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

SAFETY & HEALTH

nlants

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.

CREATING A RAINGARDEN

Raingardens (also known as bio-retention systems), are garden beds that use a coarse or porous soil mixture of sand or gravel beneath a bed of native plants to capture, filter and treat stormwater from your drive way or roof. Raingardens reduce flooding by sending the water back underground rather than into the street. In addition, raingardens 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.

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My Local Native Garden 31

Local Koala populations have state significance



KOALAS ARE LISTED AS 'VULNERABLE' TO EXTINCTION UNDER STATE AND FEDERAL LEGISLATION. LISMORE IS LUCKY TO BE ONE OF THREE URBAN CENTRES IN NSW WITH A SIGNIFICANT KOALA POPULATION.

The greatest threat to the longterm survival of the koala is human activities and with it, habitat destruction. Many of the remaining belts of eucalypts along traditional koala routes have become severely fragmented by residential and infrastructure development. This increases koala susceptibility to disease, motor vehicle accidents and dog attacks. Koalas are under greater stress because food is harder to find



and they spend more time on the ground as food trees are further apart.

Lismore City Council's Comprehensive Koala Plan of Management for South-east Lismore (CKPoM) aims to protect the remaining koala population found in the southeast of the LGA, which is considered one of the most significant on the NSW North Coast.

For more on the CKPoM please go to the council website.

Lismore City Council is also implementing a Biodiversity Management Strategy that is restoring koala habitat throughout the Lismore area mostly on private property through partnerships with landholders.

HOW CAN YOU HELP? CREATE AND RESTORE KOALA HABITAT

Residents with existing koala habitat and food trees can help by protecting and restoring these areas by removing weeds such as lantana and invasive vines that can inhibit koalas accessing food and shelter trees.

Residents can also help by planting local koala food trees in suitable places. Planting between patches will help create corridors along which koalas can move freely and access food. If you don't have koala trees but live in a koala habitat area with enough clear land to accommodate tall growing species, you can help by planting these four local preferred species:

Forest red gum *Eucalyptus tereticornis – suitable across the entire LGA*

Tallowwood *Eucalyptus microcorys – prefers midland hills and escarpment*

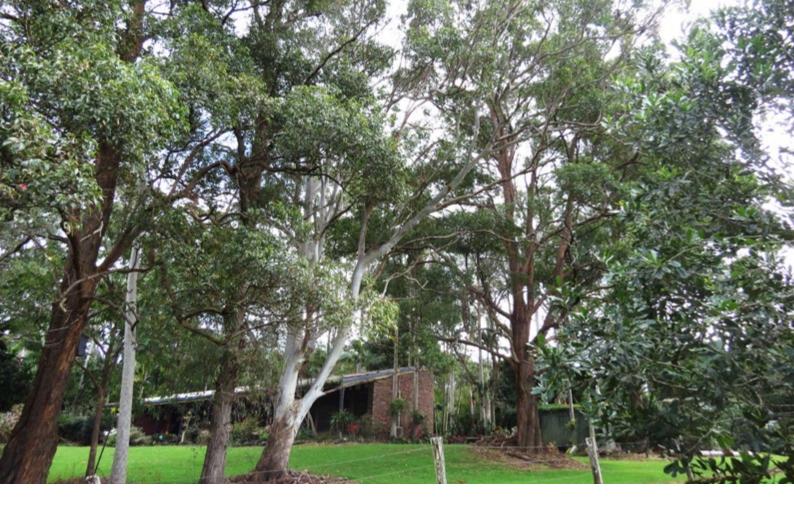
Swamp mahogany *Eucalyptus robusta* – suitable on the floodplain and swampy areas

Small-fruited grey gum *Eucalyptus propinqua* – dryer escarpment areas such as the North-west

Secondary browse trees include:

Flooded Gum Eucalyptus grandis Blackbutt Eucalyptus pilularis Sydney Blue Gum Eucalyptus saligna Scribbly Gum Eucalyptus signata Grey Ironbark Eucalyptus siderophloia Forest Oak Allocasuarina torulosa Brush Box Lophostemon confertus Paperbark Melaleuca quinquenervia

When planting food trees for koalas it's important that the trees be grown from seed collected locally, and preferably from trees known to be eaten by koalas. You can ensure this by shopping from one of the local nurseries listed in this book.



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.

CONTAINING DOGS

Koalas are very susceptible to infection and death if they receive even a minor puncture wound from a dog, as under their thick fur their skin is very fragile. It's a natural instinct for dogs to chase things, so dog owners need to be realistic about their dogs' chase and hunt behaviour. It helps to divert your dog's chase behaviour to balls, toys and games. Training your dog to respond to your call when chasing a ball may help if you need to call them away from a koala. A veranda with a self-closing gate can be adequate to contain your dog. An enclosed area or koala proof fenced run are better alternatives.



REPORTING INJURED KOALAS

If you see a sick koala or your or a neighbour's dog has had a koala in its mouth, it's crucial that it be rescued and treated immediately. Friends of the Koala operate a 24 hour Rescue Phone on 6622 1233.

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
- 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 Landcare 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 2006 State of the Environment Report identified weeds as 'Australia's second greatest threat to biodiversity after land-clearing.'

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. Sometime 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 space. Invasive vines such as Morning Glory, Madeira



Vine and Cats-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 others still 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. 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 from your garden
- 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

Some of the exotic species introduced into Australian gardens that have escaped to become serious environmental weeds: , Elephant Ears, Small Leaved Privet, Buddleja, Camphor laurel. Photos courtesy Byron Shire Council.

WEEDS – THE GOOD NEWS

Nature doesn't like gaps. Wherever there is space to grow, something, (usually weeds) fills it. However in terms of looking after the environment, 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 erosion to take hold. Apart from losing precious topsoil, the runoff can lead to pollution of our waterways. It is imperative to have a plan when attacking weeds – whether it's for natural regeneration, (is there a native seedbank still active in your soil?) or a planting regime - consider what will take over when you remove the weeds.









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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.

Land Mullet (top) Coral Fungi (top facing page) Photos: R Hartlieb Local nurseries that collect and grow wild seed are performing a valuable service in preserving the genetic resources of our native bush. We ask you to please consider the importance of the natural ecology and genetic integrity when designing your garden.

CREATING STRUCTURAL HABITAT FEATURES

To attract wildlife in your garden, it takes more than just plants. While the flowers, fruit and protection provided by plants is important, features such as logs, rocks, leaf litter and ponds create important structural features that make your garden more inviting to a range of wildlife. Mulch, leaf litter, sticks and bark forms the basis of the food pyramid in your garden ecosystem. These features provide habitat for worms and insects, many of which are important in the cycling of nutrients to the soil and in turn, provide a food source for lizards, birds, frogs, bandicoots and echidnas. Logs and rocks placed in protected areas around the garden 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 will attract local birds, providing a reliable source of water and somewhere for them to cool off in summer. A shrub located nearby will provide a safe retreat from predators. (For further information - see pond management under the Aquatic Plants chapter.)

Be sure not to take rocks and hollow logs from the bush where they are already providing habitat for the wildlife.

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 wood litter making nutrients available for new growth. 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. Excellent information about Australian fungi can be found here: http://www.anbg.gov.au/fungi/index. html You can also learn more about local fungi from the ongoing collection being blogged at http://calderafungi. blogspot.com.

NEST BOXES

Nest boxes in backyards are a great way to encourage many birds around your house and can give your local possum an alternative home to your roof. Nest boxes placed in rural areas can provide important habitat for a range of species including birds, arboreal (tree dwelling) mammals and microbats. Many of these species play an important part in our ecosystem through pollination of plants, dispersal of seeds and regulating insect population.



Artificial tree hollows, or 'nest boxes' can be used by a range of animals as a replacement for natural hollows in the landscape. At least 10 mammals, 15 birds and 8 micro-bat species as well as some reptiles have been recorded using nest boxes in Australia.

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 to use. It is not recommended to be providing homes for some animals within urban development or adjacent to busy roads. Consider the consequences and potential risk to wildlife from road kill and attacks by domestic pets. In busy urban areas nest boxes located high in trees targeting birds may be a preferred option.

There are several nest box manufacturers in Australia as well as a number of publications that outline their design and construction – easily sourced from the internet. The Bush Futures Project has an excellent brochure on nest boxes that can be found here: www.byron.nsw.gov.au/ environmental-resources.

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.

Photo: A Underwood



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 plug 'Bushfood' or the plant of your choice into your web browser. Brunswick Valley Landcare has a download of species found in the local Yallakool reserve: http:// www.brunswickvalleylandcare.org.au/ PLANT_LIST.pdf

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 offer some refuge and provide our endemic plants and animals a chance to adapt to these evolving conditions.

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

Backyard Buddies: www.backyardbuddies.net.au/

Big Scrub Landcare: www.bigscrubrainforest.org.au

Brunswick Valley Landcare: www.brunswickvallevlandcare.org.a

Friends of Lismore Rainforest Botanical Gardens: www.friendslrbg.com.au

Frogs Australia: frogsaustralia.net.au/

Landcare Australia: www.landcareonline.com.au/

Lismore City Council: www.lismore.nsw.gov.au

National Parks: www.environment.nsw.gov.au/parks/ RegionNorthernRivers.htm

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

North Coast Weeds Advisory Committee: www.northcoastweeds.org.au/

NSW Flora Online - Plantnet: plantnet.rbgsyd.nsw.gov.au/

Rous Water: www.rous.nsw.gov.au

Rural Fire Service NSW: www.rfs.nsw.gov.au

Save Our Waterways Now, (Check out their brilliant booklet, "The Creek In Our Backyard"): www.saveourwaterwaysnow.com.au

Subtropical Farm Forestry Associaton: www.sffa.org.au/index.htm

Threatened Species: www.environment.nsw.gov.au/threatenedspecies/index.htm

Water by Design: www.waterbydesign.com.au

LOCAL NURSERIES (Bush-Friendly)

All Natives

Ph 6664 7310 | 04 2993 7315 1078 Bulmers Rd, Hogarth Range info@allnatives.com,au By appointment and at Lismore Car Boot Market & Channon Market

Booyong Rainforest Creation

Ph: 04 2215 2098 | 04 3517 5173 400 Houghlahans Creek Rd, Via Booyong. booyongrc@outlook.com

Eastern Forest Nursery

Ph 6629 0353 848 Bruxner Hwy, Sth Gundurimba 2480 e.f.n@bigpond.com Open M – F 7.30 – 3.00

Firewheel Rainforest Nursery

Ph 6689 5246 | 04 2700 8522 387 Dorroughby Road, Dorroughby NSW 2480 info@firewheelnursery.com.au www.firewheelnursery.com.au

Friends of the Koala Nursery

Ph 6624 5032 Rifle Range Road, East Lismore NSW 2480

Mullum Creek Nursery

Ph 6684 1703 Lot 2 Yankee Ck Rd, Mullumbimby 2482 bgreen@mcnativenursery.com.au

Windara Nursery

Ph 6662 3857 253 Sextonville Rd Casino admin@windara.org.au Open M – F 8.30 - 4



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