

*cambooya shire*

A guide to managing vegetation in  
**Cambooya Shire**





### Cover photography - Richard Thorpe

#### Front Cover photos:

(Clockwise from top left)

*Elastostachys xylocarpa* fruit (White Tamarind)

Mixed Open Forest

*Pittosporum phylliraeoides* fruit (Cattle Bush)

Grassland wildflowers

*Pimelea linifolia* flowers (Slender Rice Flower)

#### Back Cover photos:

(Clockwise from top left)

Map of historic grassland cover in Cambooya Shire

*Callitris baileyi* capsules (White Cypress Pine)

*Wahlenbergia gracilis* (Australian Bluebell)

*Eucalyptus crebra* flowers (Narrow-leaved Ironbark)

Grassland daisies

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*cambooya grasslands*

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Photography – Richard Thorpe. All photos taken during the survey period of 2002 – 2006. © R & J Thorpe

Small photos on page 15 taken by Rick Galbraith.

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## Introduction to the vegetation of Cambooya Shire

The native vegetation of Cambooya Shire is a distinctive feature that contributes to the area's unique character. It is closely linked with the geology of the Shire and its associated soils and topography. The more mountainous and rocky basaltic areas of the eastern parts of the Shire contain significant areas of native vegetation that comprise woodlands, whilst the 'Downs' or alluvial plains areas to the west and south are dominated by grasslands.

Areas of native vegetation (termed 'remnant vegetation') that remain in Cambooya Shire are a valuable resource providing a number of functions or ecosystem services. These services can include provision of clean air and water, erosion and salinity control, shelter for livestock and crops, natural pest control, habitat for plants and animals and aesthetics.

The question is sometimes asked as to the value of native vegetation and what it contributes at a property scale to the local environment. In a productive landscape, a balance needs to be achieved between production and nature conservation. This *Glovebox Guide* seeks to assist landholders in understanding and managing native vegetation on their properties.

## Land zones

Land zones are geomorphic (geological characteristics) categories that describe the major geologies and associated landforms of an area. They have had a major determining influence on the vegetation communities present and their structure in Cambooya Shire. There are two broad land types or land zones in the Shire; upland areas that are volcanic in origin comprising basalt plains and hills and the alluvial plains made up of river and creek flats that are often described as 'Downs' areas. A small part of the eastern zone of the Shire is of sedimentary origin. These areas are illustrated in Figure 1.

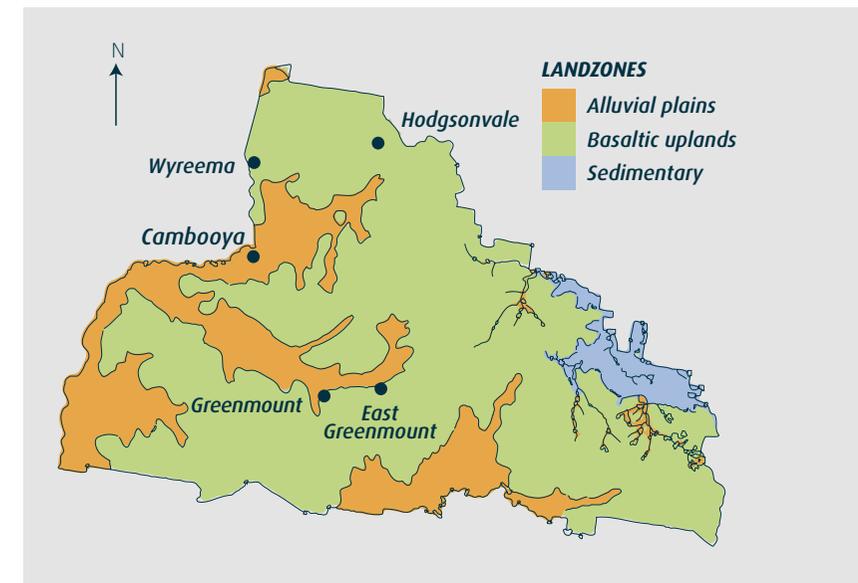


Figure 1: Land zones of Cambooya

## Vegetation

There are a great diversity of plant species found in Cambooya Shire, ranging from grasses and herbs on the plains to grassy woodlands in upland areas. A unique feature of the flora of the Shire and neighbouring areas is the occurrence of many plant species that do not occur elsewhere in the State, for example, the Austral Cornflower (*Stemmacantha australis*). Additionally, there are many species present that are classified as rare or endangered and hence are of special significance to the area.

### VEGETATION COMMUNITIES

There are a number of distinct vegetation types or communities within Cambooya Shire, ranging from native grasslands on floodplains to ironbark woodlands in the upland areas to patches of rainforest and semi evergreen vine thickets in escarpment areas.

#### Grasslands

Native grasslands once covered much of the alluvium and deep cracking clay soils of the Condamine floodplains and associated tributaries. Prior to agricultural development, approximately 13,000 hectares of the Shire was covered in Queensland Bluegrass communities that supported a unique and diverse species mix of both temperate and tropical plants. Today, following extensive agricultural development of the fertile plains, approximately 16 hectares or 0.12% of the original grassland communities remain.

The components of a healthy grassland community include:

- A diversity of different grass and forb species (usually between 40 to 80 species),
- A variety of wildlife (both macro and micro),
- Open inter-tussock spaces, and
- Very few weeds.

Grasslands have been described as vegetation with less than 5% canopy of trees, (which are often absent in this vegetation type). The groundcover is usually dominated by Queensland Bluegrass (*Dichanthium sericeum*) in relatively well-drained positions, Tall Oatgrass (*Themeda avenacea*) in the hummocks and Pale Spikerush (*Eleocharis pallens*) in hollows and low lying floodplains.

#### Grassy woodlands

Grassy woodlands can be thought of as grasslands with trees on them with many native grasses and forbs being found in both grasslands and grassy woodlands. Typically, woodlands occur on those areas above the floodplains and consist of a number of vegetation communities including Forest Red Gum (*Eucalyptus tereticornis*) and Mountain Coolibah (*Eucalyptus orgadophila*) with a canopy cover in the range of 10% to 30%. Often the shrub layer is sparse or absent and the ground layer is often dominated by Queensland Bluegrass (*Dichanthium sericeum*).

#### Rainforests and Semi Evergreen Vine Thickets

Small areas of microphyll rainforest and semi-evergreen vine thickets occur in the eastern escarpment areas of the Shire. These vegetation communities form dense thickets often less than ten metres high that contain a rich diversity of plant species, some of which are quite rare. These remnants have high nature conservation values and provide habitat for a range of wildlife species that are distinct from those found in other vegetation communities in the shire.

Semi-evergreen vine thickets are prone to invasion by lantana and pasture grasses which provides a fuel layer that is otherwise absent and can contribute to severe damage by fire. Unrestricted grazing by cattle can cause damage to remaining vegetation and contribute to weed invasion.

## Vegetation components

There is more to a patch of remnant vegetation than just trees. A healthy patch of remnant vegetation is made up of a number of components or elements. These can vary according to the type of vegetation community, whether it is grassland, woodland or rainforest.

### THE ESSENTIAL GROUND-LAYER

Leaf litter, lichens and mosses, patchy low vegetation, rocks and logs together comprise the ground-layer which provides habitat for a great diversity of birds, animals, reptiles and invertebrates (spiders, ants, centipedes, beetles, etc). All of these creatures aid in the decomposition of litter (leaves, twigs, branches, etc), which in turn releases nutrients essential for plant growth.

Many of the litter layer dwellers are an important food source for larger animals, reptiles and birds. It is estimated that twenty percent of Australian mammals depend directly on the litter layer for food and shelter. Many of these predators require rocks and crevices, hollow logs or thick vegetation for refuge and breeding sites. If the ground layer is sparse or lacking, it can be enhanced by allowing woody debris to accumulate or adding it to the site, along with planting suitable vegetation.

### THE ALL IMPORTANT UNDERSTOREY LAYER

A healthy understorey layer made up of plants that grow in the 20 centimetre to 1.5 metre height range. Numerous 'beneficial' insects along with many frogs, reptiles, birds and small mammals depend on this layer to provide essential habitat resources of food and shelter.

Ground dwelling and foraging birds, animals, reptiles and amphibians are particularly sensitive to changes or modification to their habitat. Trampling and destruction of the litter layer; frequent fires, removal of bush rocks and other disturbances reduce food and habitat resources of these creatures and increase the risk of predation.

#### Did You Know That?



#### Cunningham's Skink (*Egernia cunninghami*)

The Cunningham's Skink is a moderate to large lizard (up to 30cm) that lives in rock crevices and hollow logs. In appearance it is a robust, spiny lizard with cream blotches along the mouth and a long spiny tail. They are active by day and eat a wide range of fruits and seeds, invertebrates, and even small vertebrates. Females give birth to 4 – 6 live young in a litter. The adults and young of successive seasons often live together in small colonies. Commonly found in escarpment woodlands these skinks appear to be fairly adaptable to suitable habitat (log piles, firewood heaps, amongst old sleeper garden edging) and will tolerate living quite close to dwellings and in back yard gardens with hollow logs.

### GROUND COVER

Maintaining good ground cover is vital for conserving and protecting the essential resources of soil and water. Living plants (grasses, shrubs and trees) together with ground litter play a key role in slowing and intercepting surface runoff associated with rainfall events. In the absence of adequate and effective ground cover and surface protection, rapid runoff of water can occur, taking with it soil and organic matter. This contributes to erosion, siltation of waterways and declining water quality. Figure 2 illustrates the positive benefits of good ground cover contrasted with poor grass and ground cover and the impacts on soil loss and water quality.

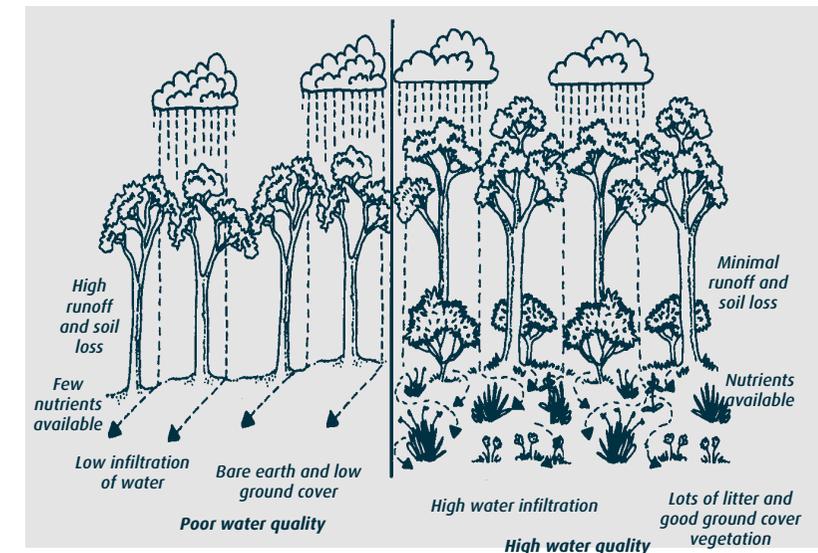


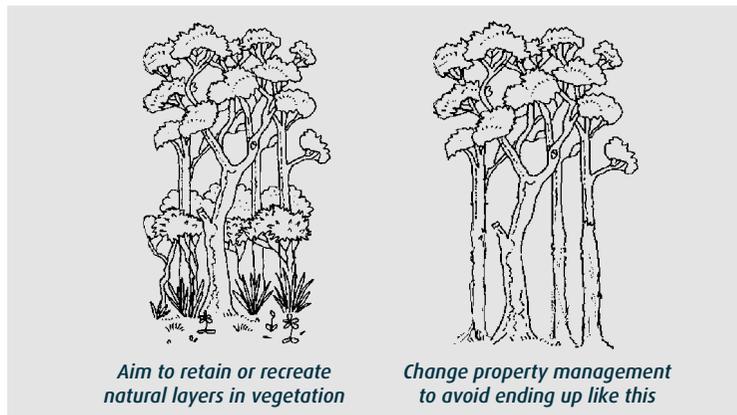
Figure 2: The positive benefits of maintaining high levels of groundcover contrasted with the negative results of low groundcover and bare earth.

(Redrawn from Bennett et al. 2000).

The maintenance of good levels of ground cover – both living and dead (e.g. grass and litter layers) in conjunction with adequate soil organic matter contributes to an increase in biological activity in the soil. This results in improved soil structure and fertility, provides for better plant growth, infiltration of rain and higher productivity.

## VEGETATION LAYERS AND MANAGEMENT

Different 'layers' in natural vegetation provide different areas and types for foraging, nesting locations and shelter for wildlife. Some wildlife species search for food in the ground layer, others in canopy foliage, or on branches and tree trunks, whilst others in shrubs and bushes. Property management (e.g. fire, grazing, natural regeneration, etc) can be adjusted to cater for the requirements of the various layers.



### Maintain a diversity of vegetation

Natural plant communities have a sense of randomness about them. Plants do not grow in straight, regularly spaced rows but occur in a 'patchy' manner that can comprise scattered thickets, sparsely covered areas interspersed with small clearings. A mixture of tree and shrub species of different ages and sizes enhances natural patchiness along with diversity of growth forms and bark textures. This patchiness of vegetation can provide native wildlife with a diversity of resources such as food, habitat and shelter.

### PROMOTE PATCHINESS OF VEGETATION

When revegetating areas, patchiness can be developed by irregular spacing of trees and shrubs, planting in groups and clumps rather than straight rows, and by using plants with different growth forms and bark types (e.g. 'ironbark', 'gum', or 'coolibah/box' types). Patchiness can be created, enhanced and maintained by a range of management techniques including planting, use of fire and thinning of sapling forests.

### WHAT I CAN DO

- ✓ Maintain or re-create layers in at least 30% of my bushland.
- ✓ Resist the urge to 'tidy up'.
- ✓ Fence off strategic clumps and allow regeneration to occur in planned areas.
- ✓ Control grazing in areas of remnant vegetation.
- ✓ Learn what animals live in and use the various layers.
- ✓ Retain leaf litter and fallen woody debris.
- ✓ Use fire with caution.

### Building Blocks for Habitat

Habitat is the environment in which a species can occur, survive and reproduce. It consists of the various components of the environment that native flora and fauna require for different parts of their life cycle. Native fauna require areas for feeding, roosting, migration and the rearing of young.

Components that contribute to healthy habitat include:

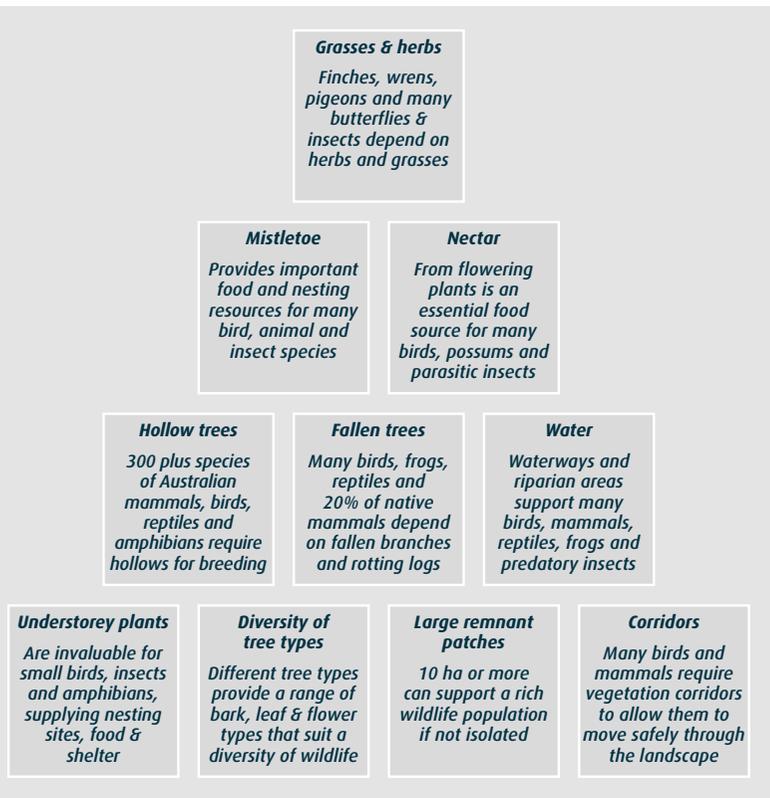
- Plant structure – trees, shrubs, ground covers
- A range of vegetation age classes,
- Tree hollows and fallen logs and branches,
- Leaf litter, mosses and lichen,
- Native grasses, rushes and sedges,
- Watercourses, streams, rivers and damp or swampy areas,
- Plants flowering and seeding throughout the year,
- Rocks – small and large, and
- Seasonal cracks in the soil.

Different plant and animal species have individual habitat requirements. The more habitat structural components that are available to wildlife, the greater the potential range of species that will be present. Even if only one or two of these elements are present, they may still provide important habitat for a range of species.





The concept of 'Habitat Building Blocks' demonstrates how a number of components can combine to form a healthy environment or habitat. The more building blocks present, the greater the habitat quality and complexity. This in turn enables a greater range of species to potentially utilise a particular habitat. Figure 3 below illustrates the concept of 'Habitat Building Blocks'.



**Figure 3: Habitat building blocks**  
 (Reproduced from 'Re-leaving New England: A farmer's guide to trees on farms')

**SIZE DOES MATTER – LARGE OLD TREES**

Large old trees are a unique and irreplaceable feature of our landscapes that are invaluable for our wildlife. They are a valuable resource for both wildlife and farming systems, providing both food and shelter.

As trees age, they often develop hollows that are used by wildlife for nesting and roosting. They are usually at least 100 years old before they begin to develop hollows that can be utilised by wildlife. It is estimated that over 300 species of native wildlife in Australia utilise tree hollows, including frogs, reptiles, birds and mammals.

**The living dead**



If all the trees are the same age with little or no regeneration occurring, then the remnant is likely to be doomed in the long term (although this process may take many years).

The health of isolated trees is often at risk from a number of factors including compaction and increased nutrient loads caused by cattle camping under them, defoliation by insects, greater exposure to the elements and use of herbicides.

Fencing off to allow regeneration to occur and planting more shrubs and trees are options for landholders to consider.

**Figure 4: The living dead**

**The value of large trees to landholders**

Large trees provide more shade, and in groups provide better protection from severe weather conditions than small trees. They provide a more stable microclimate, the area beneath large trees being relatively cooler in summer and warmer in winter.

## TREES & INSECTIVOROUS BATS

Insectivorous bats can provide a unique ecosystem service in maintaining the health of the rural environment by consuming up to one and a half times their body weight in insects each night. Of the dozen or so species of insectivorous bats that potentially occur in the Cambooya Shire; the majority prefer to roost in tree hollows.

Bats usually select tree hollows that have entrances not much larger than their own body size -about 3 cm or less in diameter. Larger colonies, especially those formed when females congregate to give birth, require a large internal hollow with a small entrance. These types of hollows are usually found only in large old trees.



### Dead trees

Dead trees and branches in paddocks and amongst bushland have more value than many people realise. Often viewed as a source of firewood, their loss from some areas of the landscape has had a significant impact on wildlife. Before removing dead wood from your property, consider its values.

Dead wood provides:

- Perching sites for birds of prey.
- Important roosting sites for bats.
- Large nesting hollows used by cockatoos, owls, gliders and other species.
- Important sources of food for insectivorous birds.
- Logs, branches and twigs that provide important habitat for ground-dwelling wildlife.

### WHAT I CAN DO

- ✓ Retain large old trees – both living and dead.
- ✓ Fence off strategic clumps and allow regeneration to occur in planned areas.
- ✓ Retain some fallen woody debris for wildlife.
- ✓ Plant suitable trees to provide nesting hollows in the future.
- ✓ Establish firewood plots.

## HOLLOW HAVENS - *Eucalyptus tereticornis*

*Eucalyptus tereticornis* (also known as Forest Red Gum or Queensland Blue Gum) is one of the most common trees in the Cambooya Shire landscape. While still common, remnants have become fragmented and degraded through clearing and weed invasion - especially *lantana*. Forest Red Gum woodlands of the eastern ranges of the shire (RE; 11:8:8 / 11:8:2a) have been reduced to less than 28% of their historic extent in the Shire resulting in their conservation status of "of concern". Forest Red Gum fringing forests (RE 12:3:7) have also been reduced to 65% of their historical shire distribution, while Forest Red Gum woodlands on alluvial flats (RE12:3:3) have suffered a much greater reduction, down to less than 7% of their historic shire distribution contributing to their "endangered" ecosystem classification.

The Forest Red Gum is a large, fast growing, hollow forming tree that has special significance for many fauna species. The habit or form of individual trees is highly variable, usually a tall forest tree up to 40m with upward sweeping branches although it sometimes occurs as a shorter, stout trunked form with a heavily branched, weeping crown. These Forest Red Gums provide valuable habitat and food resources to a broad range of species.

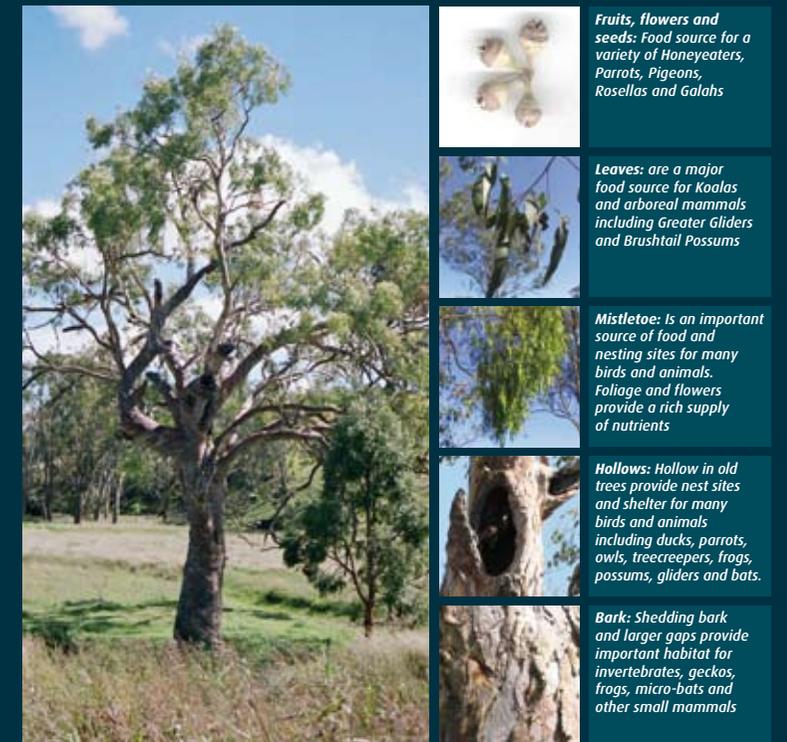


Figure 5: *Eucalyptus tereticornis* – a hollow haven that provides important habitat for wildlife



## Why manage native vegetation?

“Why should I care about managing native vegetation on my property?” is a question that is often asked. “What benefits can I expect from incorporating nature conservation into my land management practices?”

There are a wide range of benefits for landholders who choose to incorporate nature conservation into their property management. Retaining native vegetation helps to stabilise the soil surface, reduce the risk of salinity and erosion, stabilise stream banks, provide shelter for crops and livestock, supply pasture for livestock and provide habitat for wildlife. Providing suitable habitat for wildlife can contribute to pollination of crops, control of pests (mice, insects and grubs), recycling of nutrients, personal satisfaction and farm tourism.

Some vegetation types are found almost exclusively on private property and are not well represented in national parks and reserves. Conserving these vegetation types and the animals associated with them depends very much on the sympathetic management of these lands.

The plants and animals that comprise our wildlife form part of our natural heritage, create a sense of place or identification with the landscape, and for many people on the land contribute to the quality of rural life.

### Vegetation under pressure / History

Following European settlement in the late 1800’s, there have been major changes in the nature and extent of native vegetation and the fauna communities that they support in Cambooya Shire. Native grasslands once covered 13,000 hectares of the Shire. These have now been reduced to 16 hectares or 0.12% of their original extent following conversion to cropping and improved pastures. The woodland areas have fared better with 16,200 hectares or 33.5% of their original coverage of 48,300 hectares remaining. Weed invasion, feral animals and ongoing fragmentation of vegetation communities continue to impact on our natural systems.

## Ecosystem services

Ecosystem services can be defined as: - “the fundamental life-support services provided by natural ecosystems, without which human civilization would cease to thrive”. It is this link between natural assets and human benefit that distinguishes the ecosystem approach. If natural assets are not maintained, then the benefits derived from these services decline. Figure 6 below illustrates a conceptual framework that identifies the assets, products and the maintenance role in providing ecosystem services. Ecosystems are the complex system of plant, animal, fungal, and microorganism communities and their associated non-living environment interacting as an ecological unit.

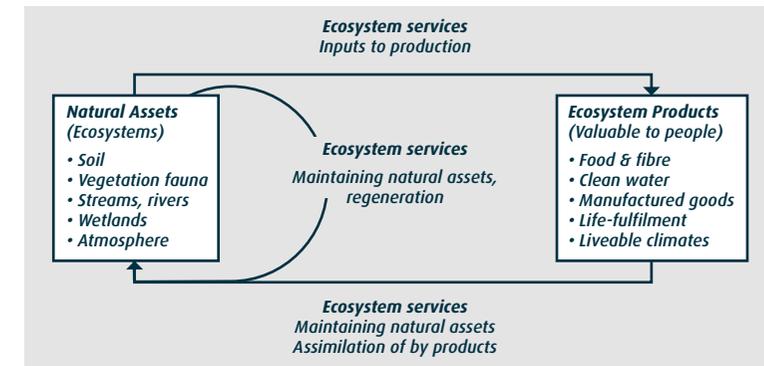


Figure 6: Ecosystem services conceptual framework

### Why should we bother about ecosystems?

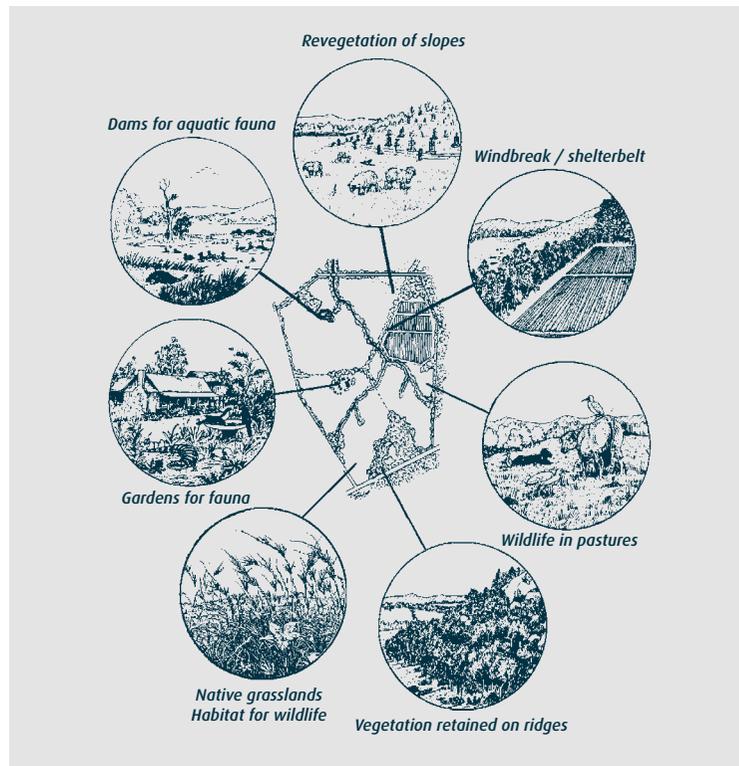
The decline of various native species (plants and animals) can be a sign that an ecosystem is out of balance. Diverse ecosystems are healthy and self sustaining. When many animal and plant species are living together, there are in built checks and balances to keep the system operating effectively. This means that if one species increases for some reason, then there is more food for another species and the first species is pulled back into balance.

Many properties have a simplified vegetation structure – scattered trees, no shrubs and reduced numbers of grass species. These landscapes lack a diversity of species – both plants and animals – and have a limited ability to self regulate. This means that individual species may rapidly increase to the detriment of others.

**Remember: Every place, no matter how small or how modified, has some value, because it can support the life of some native animal, plant or microbe.**

## The benefits of native vegetation at a property scale

Native vegetation can make a significant contribution to land productivity, sustainable land use, and ultimately the profitability of properties. Figure 7 below provides some examples of the production benefits that woody and grassy native vegetation can provide at a paddock and farm scale. Benefits of retaining areas of native vegetation or replanting them include: shelter for stock and crops from wind and weather, pest control by birds and insects, primary and secondary products from native vegetation, pollination by insects, health, recreation and amenity benefits as well as helping to address erosion, water logging and salinity management.



**Figure 7:** Farm plan showing the benefits of native vegetation at a farm scale.

(From *Grow Your Own Wildlife – How to improve your local environment*. Johnston, Peter and Don, Alan 1990. Reproduced with permission from Greening Australia)



**Windbreaks and shelter belts** provide shelter from wind and weather and help to improve stock productivity and crop yields. Experience on the Darling Downs has shown that windbreaks and shelterbelts can contribute to increased crop yields. They also act as wildlife corridors and assist wildlife to move across the landscape. To be effective, they need to be a minimum of 20 to 30 metres wide and are most effective when they are at least 100 metres wide.

**Creeks and gullies** can provide diverse and important habitat for wildlife, especially if native grasses, tussocks, shrubs and trees are retained for at least 50 metres either side of them.

**Farm dams** and their associated vegetation are important habitats for frogs, yabbies, fish, birds, invertebrates and reptiles. Trees that have fallen into the water are often used by fresh water turtles and water dragons as basking sites. Emergent vegetation such as reeds provides shelter and nesting sites for birds like the clamorous reed warbler and habitat for frogs.

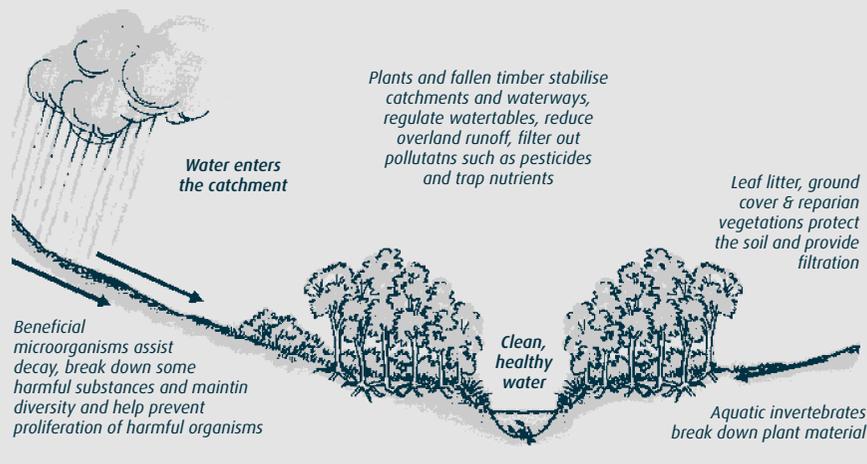
**Vegetation** retained on ridges or in clumps on the property can assist in pest control by providing habitat for birds, bats, insects and small native marsupials and rodents that prey on pest insects. It can also assist in lowering water tables, filtering and slowing rainfall runoff and prevent erosion from occurring.

**Native grasslands** contain a diversity of grasses, herbs and forbs (including several rare and threatened species) that support a host of wildlife species ranging from birds to reptiles, mammal and frogs and a myriad of insects.

**Gardens** around homes, if planted with a range of suitable native plant species, can attract and support a number of wildlife species. This provides interest and pleasure for residents and food and shelter resources for wildlife.



**The role of nature in providing clean water**



**Figure 8: The role of nature in providing clean water.**

*(Redrawn from Land and Water Australia 2001)*

**Thirteen good reasons to manage your riparian lands with care**

- |                               |                                      |
|-------------------------------|--------------------------------------|
| 1. Reduced erosion            | 8. Opportunities for diversification |
| 2. Improved water quality     | 9. Climate protection                |
| 3. Healthy ecosystems         | 10. Retention of nutrients           |
| 4. Maintaining river courses  | 11. Lowered water tables             |
| 5. Better stock management    | 12. Increased fish stocks            |
| 6. Decrease in insect pests   | 13. Decreased algal growth           |
| 7. Increase in capital values |                                      |

**RIPARIAN MANAGEMENT**



**Figure 9: The value of vegetation in maintaining riparian areas**

Riparian areas are important components of the landscape that require careful management to maintain and improve their condition. Healthy vegetation consisting of a mixture of trees, shrubs, tussocks, grasses and rushes can help to prevent flood damage and maintain the integrity of stream banks. These riparian areas provide important habitat for a broad range of plant and animal species. It is important to note that on floodplains, trees and shrubs may be sparse or absent from riparian areas and creek banks are stabilised with tussocks (*Phragmites* and *Juncus* spp.), rushes and grasses.

**WHAT I CAN DO**

- ✓ Protect riparian areas in good condition.
- ✓ Rehabilitate / revegetate degraded areas.
- ✓ Minimise disturbance.
- ✓ Implement a weed control program.
- ✓ Control / manage stock access in riparian areas.
- ✓ Provide off-stream watering points for livestock.
- ✓ Undertake a regular monitoring program to identify any problems developing or becoming more serious.

## You can make a difference

Often individuals believe that their actions will not make a difference. However, if enough individuals start doing something, then together, their collective actions can make a big difference. There is much that landholders can do to make a difference by conserving native vegetation on their properties. Actions could include developing a long-term vision for the property and where it fits within the landscape, learning about the plants and animals that occur on the property - their requirements for survival and developing a property plan that takes into consideration production and conservation issues. On-ground actions can be implemented such as fencing off areas of remnant vegetation and stream banks to manage stock access, retaining or re-creating shelterbelts and wildlife corridors, conservatively grazing native pastures and planting suitable vegetation for a diversity of wildlife such as Cunningham Skinks, Rosellas, Fairy Wrens, Finches and tree frogs.

## Managing my patch – where do I start?

Often it is daunting to try and work out how to manage areas of native vegetation on your property. Where do I start? What should I take into consideration? What information do I need? Where can I get it? How much is it going to cost? These are questions that are frequently asked. Figure 10 below can help you work through the steps from having some thoughts or ideas to actually implementing them on the ground.

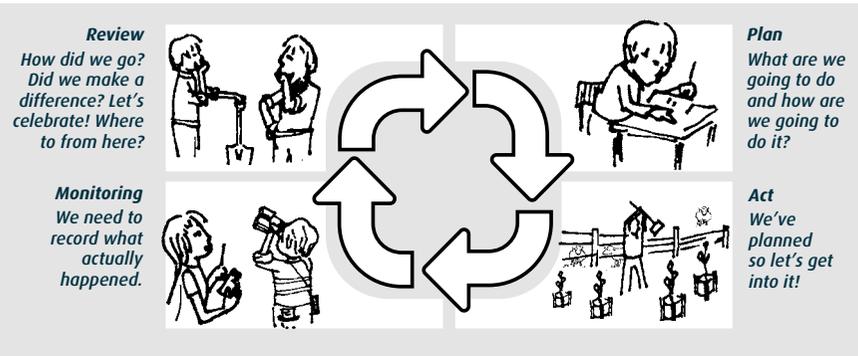


Figure 10: The cyclical nature of planning, acting, monitoring and reviewing in a work program.

The best place to start is with some planning to guide your actions. Think about what your vision or mental picture is for your property in the future. Follow this with a stock-take or assessment of your property and its values, then plan and prioritise your actions. Once the planning is done, then it's time for work. When the action or doing part is under way, it is important to record or monitor your actions so that you can assess how you are going. It is possible then to review your progress to see whether you are making a difference or if you need to change a few things. This whole process can then continue through additional cycles indefinitely. The section 'Planning for Action' has more detailed information on how to prepare a plan for your property.

## GRAZING MANAGEMENT

Management of grazing has a great influence on vegetation and its composition in grassy woodland areas. Heavy grazing tends to select for shorter grasses and plants that are less palatable and have lower feed values. This is illustrated below. Prolonged heavy grazing of native pastures should be avoided where possible. Rotate stock on a regular basis to give pastures a chance to recover and to set seed.

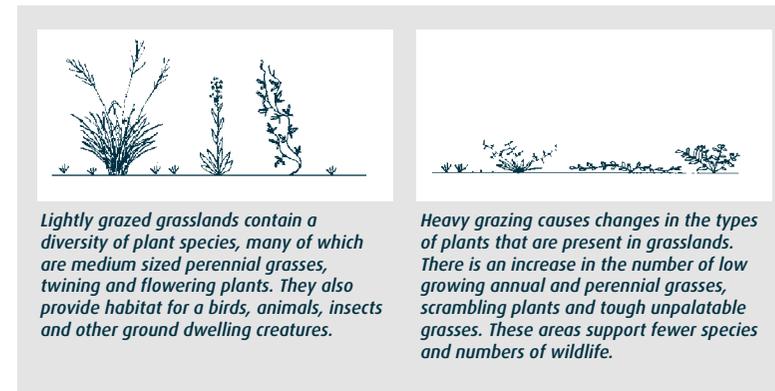
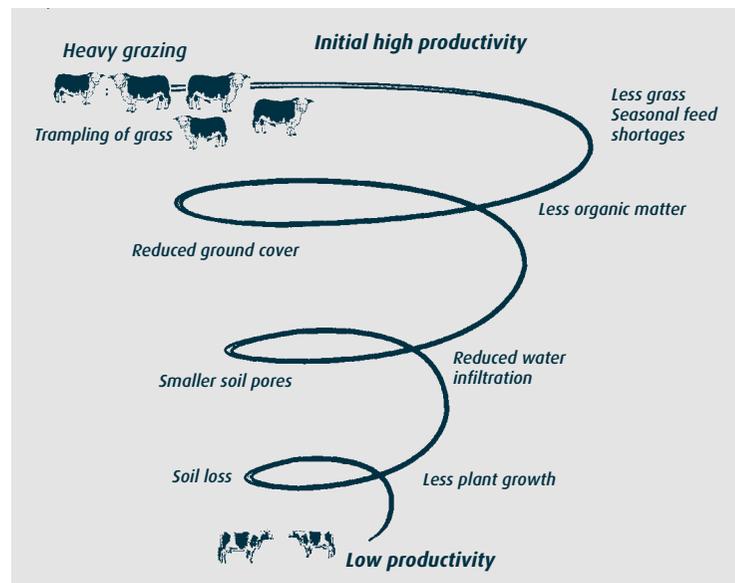


Figure 11: Grassland plant structure resulting from light and heavy grazing pressure.

### THE OVERGRAZING SPIRAL

Heavy grazing over an extended period of time can contribute to nutrient run down in the soil, changes in grassland species composition and soil compaction. This can result in reduced livestock production, less infiltration of rainfall, increased runoff and soil and nutrient loss.

Heavy grazing over an extended period of time can contribute to nutrient run down in the soil, changes in grassland species composition and soil compaction. This can result in reduced livestock production, less infiltration of rainfall, increased runoff and soil and nutrient loss as illustrated.



**Figure 12:** The overgrazing spiral to lower production  
(Redrawn from *Managing & conserving grassy woodlands CSIRO 2002*).

### Fire

Fire has an important and positive role to play in maintaining the diversity of native plants and animals in our landscape. For many of our native plants however, being adapted to fire does not mean that they will flourish under any burning regime. Whilst plants and animals have a variety of mechanisms to enable them to maintain their presence in the face of fire, there are limits. Either too frequent or too infrequent fires can lead to species decline and even their eventual local extinction.

Positive effects of fire include; opening up the foliage canopy, allowing sunlight to reach the ground, creating an ash bed that is rich in nutrients for germinating seedlings and potentially eliminating insects and fungal diseases. Many plants are stimulated to flower after a fire such as Grasstrees (*Xanthorrhoea spp.*) whilst others such as Banksias and Hakeas release their seeds from woody cases. Heat and smoke from fires are important in stimulating seed germination of many plant species, for example Hoveas.

Fire-adapted plants respond to fire in two ways.

1. Despite being burnt and appearing dead, plants are able to send out new shoots from stems and lignotubers. These plants are called "resprouters". Eucalypts are a common example of resprouters.
2. Plants that are killed by fire and rely on regeneration from seed, which is often produced in large quantities. These plants are called "obligate seeders" and have no choice but to grow from seed.

### What about the animals?

Animals have a variety of ways to cope with fire. Some are "avoiders" (for example wallabies and bandicoots), and manage to stay alive by either moving outside the burning area or by taking refuge underground or in hollow logs. Other species lose substantial numbers of individuals in a fire and rely on re-colonisation by populations from outside the burnt areas.

Many animal species in fire-adapted systems show a preference for a particular stage of post-fire regeneration, depending on their feeding and breeding needs. For example the Eastern Chestnut Mouse likes open forests and heathlands in the early and middle stages of post-fire regeneration. It begins to recolonise burnt areas about one and a half years after a fire and decreases when litter and understorey vegetation builds up.

Antechinus prefer sites with thick undergrowth that develops some years after a fire. Birds also show similar patterns of preference for post-fire habitats.

Animal habitat requirements and life cycles need to be considered when planning a fire regime so as to minimise harmful impacts.

### Implications for using fire as a management tool

Four factors need to be considered when implementing a fire regime:

1. Fire frequency – how often fire occurs.
2. Fire extent – the area covered by the fire.
3. Fire intensity – how hot the fire is.
4. Fire season – what time of the year the fire occurs.

**Fire frequency** – frequent fire tends to reduce shrub cover and encourage fire tolerant grass species such as blady grass. It can also cause “obligate seeder” plants to disappear from the landscape if there is insufficient time for them to grow to maturity and produce seeds. Long-term fire exclusion will disadvantage some species and they too may in turn disappear from the landscape as they grow old and die.

**Fire extent** - A patch burning or mosaic pattern is recommended. Mosaics occur naturally, even in uncontrolled wildfires. Unburnt areas provide:

- Places for animals to seek refuge in a fire.
- A source of food in the months after a fire.
- A seed source for plant regeneration.
- A base from which animal species can recolonise the burnt area when it becomes suitable.

It is recommended that adjoining patches be burnt at intervals of not less than 2 years.

**Fire intensity** - Intensity is related to frequency and season of burn. The more frequently an area is burnt, the cooler the fire is likely to be, as fuel loads will normally be much less. There is no best answer as to the most appropriate fire intensity. Ecologically, variability in intensity is desirable and often occurs by default. Hotter fires are generally more destructive and will kill more animals and plants, whilst cooler fires are generally more patchy and remove less of the litter layer. Plants vary in their response to fire intensity with some requiring a hot fire to regenerate whilst others need a cool fire or smoke to stimulate germination.

**Fire season** - There is no one best time for burning, in fact research tends to suggest that a variation in season of burning is desirable. A mix of late summer, autumn and winter burning together could provide variability at the landscape level. In general, spring fires can have a detrimental effect on native fauna, as this is when birds are nesting and mammals are rearing their young. A spring fire can also remove summer food resources for these species. Fires in late autumn may have the least detrimental effect on native fauna, since as a general rule the life cycle of invertebrates (such as insects and spiders) has been completed, and birds and mammals have reared their young. Where possible avoid fire in dry times or drought.

Factors to consider when burning include:

- **Breeding seasons of animals and birds.** Where possible, wait until wildlife have completed their breeding cycle and are better able to cope with disturbances such as fire.
- **Insect dormancy.** Many invertebrates are dormant during winter and may be especially vulnerable to the effects of fire.
- **Availability of seed.** A late winter/early spring burn will prevent a year’s flowering and seeding for many shrub species. Providing enough time has elapsed since any previous fires to allow a sufficient seed store to have built up, this may not be a problem.

Different vegetation communities have different requirements in regard to fire – its presence or absence or frequency. The table on the following page identifies some suggested fire regimes for the various vegetation communities in Cambooya Shire.

## fire management



**Table 1: Vegetation communities and suggested fire regimes**

VEGETATION DESCRIPTION	FIRE FREQUENCY	REGIONAL ECOSYSTEM
<b>Alluvial grasslands:</b> Are adapted to a regular fire regime. Fire at appropriate intervals can assist in maintaining the diversity and health of grasslands.	3 – 5 years	11.3.21, 11.3.24
<b>Fringing vegetation and creek side vegetation.</b> Narrow vegetation communities adjacent to waterways that have a grassy or shrubby understorey. These strips provide a buffer against erosion. Will often naturally exclude fire, but may burn in a wildfire.	In general, don't burn	12.3.7, 12.3.9
<b>Grassy woodland.</b> Dry eucalypt forest / woodland with a grassy understorey adapted to regular fire.	3 - 6 years	11.8.2a, 11.8.5, 11.8.8, 12.8.14, 12.8.16, 12.8.17
<b>Mixed open forests.</b> Dry eucalypt and shrubby open forest woodlands that may contain a variety of other tree species. Shrubby understorey normally present.	7 - 25 years	12.9-10.3, 12.9-10.5, 12.9-10.7, 12.9-10.18, 12.9-10.19
<b>Tall forest.</b> Wet eucalypt forests need a hot fire to burn out rainforest understorey (if present), if this vegetation type is to survive. Intervals between hot fires should exceed 20 years (and preferably much longer), where possible. Hot fires, however, are dangerous, so in practice these regimes may not be possible to implement except in large wilderness areas.	20 - 100 years	12.8.9
<b>Rainforest, semi-evergreen vine thicket and brigalow belah communities.</b> Not fire adapted, and should not be burnt. Will generally naturally exclude fire. May burn in extreme conditions, especially if flammable weeds have invaded.	Exclude fire	12.9-10.6, 12.8.21, 12.9-10.15,

*Fire regimes based on the publication, 'The role and use of fire for biodiversity conservation in Southeast Queensland: Fire management guidelines derived from ecological research'. (Fire and Biodiversity Consortium 2001)*

### SUGGESTED BURNING REGIMES



*Creekside and gully vegetation - in general, don't burn*



*Alluvial Grasslands - vary intervals between 3 and 5 years*



*Grassy Woodland - vary intervals between 3 and 6 years*



*Mixed open forest - vary intervals between 7 and 25 years*



*Semi Evergreen Vine Thicket and Rainforest - exclude fire*



*Tall forest - intervals between hot fires should exceed 20 years*

**Figure 13: Suggested fire interval for different vegetation communities.**

### GRASSLANDS AND FIRE

Healthy native grasslands have a high species diversity which can require active management to help sustain them. This may mean controlling weeds and rank old grass. Fire is a useful tool providing it is used wisely as grasslands can be damaged by intense fires. 'Cool' burns are best after good rains when rapid regeneration will occur. Avoid burning in dry months when fires will be more intense and the ground surface may be left exposed for extended periods of time.

### A few guidelines

Fire should only be used in remnant vegetation for two reasons:

- (i) As a means to reduce a fire hazard, and
- (ii) As an ecological management tool.

If possible, never burn the whole of a remnant at any one time. Unburnt areas provide potential refuges for wildlife.

### WHAT I CAN DO

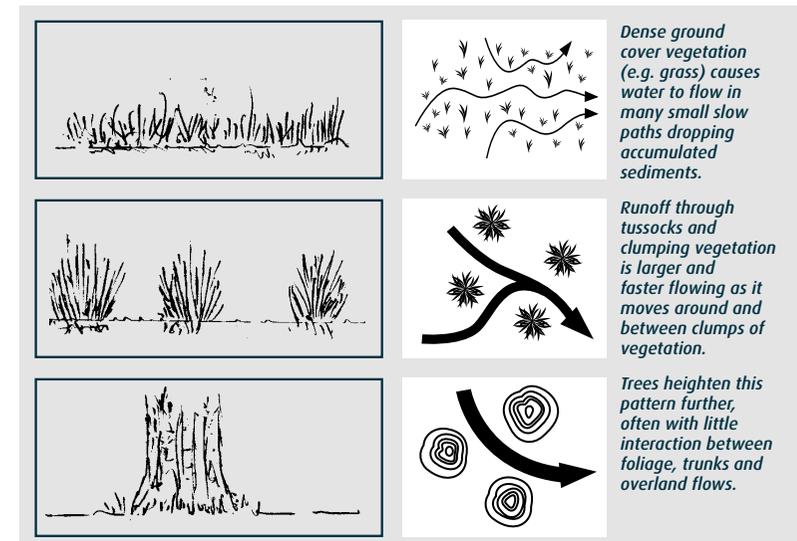
- ✓ Develop a property management plan that includes fire.
- ✓ Burn in a mosaic pattern rather than burn an entire patch of vegetation at one time.
- ✓ Monitor the effects of fire on plants and animals.
- ✓ Wait until wildlife have completed their breeding cycle before burning an area.
- ✓ Vary the season and interval of burning.
- ✓ Work in with neighbours.
- ✓ Rake / remove fuel from around habitat trees and logs before burning.
- ✓ Keep records – photographs and notes.
- ✓ Always ensure safety of life and property.

### Erosion

Soil erosion caused by water is one of the most common and serious forms of land degradation in Cambooya Shire, having the potential to take place on most soils. The potential for erosion depends on vegetation cover present, soil type and the degree and length of slope. The longer and steeper the slope, the more potential there is for erosion to occur. This is especially the case in steep hilly areas, though overland flows on the alluvial plains can also be a significant problem. Although erosion is a natural phenomenon, rates of erosion currently occurring in the region are now much higher than in pre-European times. The majority of erosion is the result of human land management activities. Serious and widespread soil erosion by wind and water occurs when ground cover is lacking, particularly during the summer months when high intensity storms are more common.

The main forms of erosion that occur in Cambooya Shire are rill and gully typically occurring in upland areas and sheet erosion caused by overland flows, especially on alluvial floodplains. Although erosion is more likely to occur on cultivated lands, rill and gully erosion can also occur on grazing lands. Over-grazing and excessive burning of pasture in upland areas contribute to increased rates of erosion. Additional areas that erosion may occur are where roads, tracks, watering points and fences have not been located appropriately, leading to concentration and diversion of runoff water which in turn can contribute to severe erosion.

Erosion starts when land management practices cause increased and concentrated flows of surface run-off, or remove protective layers from the soil surface. Gullies are formed as concentrated flows of water scour away unprotected soil, creating sharply defined channels. Overland flows can strip away large amounts of soil and contribute to sedimentation and siltation of creeks and waterways. Maintaining adequate and appropriate vegetation cover, especially dense ground cover, can significantly reduce the risk of erosion.



**Figure 14: Flow paths of water through different types and density of vegetation.**  
(Redrawn from Land and Water Australia 2001)

Trees have a potential role to play in stabilising and rehabilitating eroded sites. However, trees are only part of a rehabilitation plan which should also include increasing groundcover with shrubs and grasses, managing animal access and, in some cases, remedial earthworks. Tree planting or regeneration should be one of the last steps used to effectively combat soil erosion. Activities such as fencing, diversion banks, shaping of the banks and grass cover establishment may be required prior to woody vegetation establishment. Advice should be sought from Department of Natural Resources and Water advisers or Landcare coordinators before attempting to stabilise active gully and rill erosion. Wherever possible, use local native plant species for rehabilitation works as they have the advantage of being adapted to local conditions.

Characteristics that can predispose soils to water erosion include:

- Little or no structure;
- High silt and fine sand content;
- Low levels of organic matter;
- Low infiltration of water due to crusting and hard setting soils. (Rainfall tends to flow over the surface rather than soak into the soil); and
- Highly dispersible soils that lack cohesion when exposed to water and rapidly collapse to slurry.

These features can all be natural characteristics of the soil, but soils can also become more prone to erosion through poor management. For example, overgrazing can reduce organic matter, permeability and soil structure.

Two key principles in managing problem soils to avoid erosion are:

1. **Maintain ground cover, and**
2. **Avoid disturbance.**

#### WHAT I CAN DO

- ✓ Determine if the soils on my property are prone to erosion;
- ✓ Keep the amount of bare ground to a minimum;
- ✓ Maintain good ground cover vegetation on my property;
- ✓ Graze conservatively and only allow limited stock access to high-risk areas; and
- ✓ Seek advice and treat erosion areas sooner rather than later.

## Salinity

To date, salinity outbreaks have not been recorded in Cambooya Shire. A salinity hazard map for the Shire has been prepared by the Department of Natural Resources and Water which shows that the Shire has a low to low-moderate salinity hazard.

Typically salinity outbreaks occur at the interface between the alluvial floodplains and basaltic uplands. The majority of salinity problems are caused by a rise in watertable levels. This is generally attributed to practices that increase the rate of infiltration of water into soil and groundwater stores and/or decrease the rate of losses brought about by evapo-transpiration.

Practices such as the removal of trees from grazing land and the establishment of agricultural activities on land once forested, in conjunction with irrigation of cropping areas, can contribute to a rise of water tables.

Landuse changes since European settlement have led to the situation in some areas where rainfall is not fully utilised by vegetation in the landscape and the excess water is “leaking” below the root zone. In dry-land areas this can result in shallow aquifers filling which in turn, brings salts contained within the soil to the surface with potential for leaching into creeks and rivers.

## Weeds

Maintaining the healthy, natural functioning of ecosystems depends on preventing the degradation of natural resources. Weeds have the potential to significantly affect natural systems with resulting harmful impacts on the area’s biodiversity.

A weed is simply a plant out of place. They can be exotic or native plants that have spread beyond their natural range. Weeds are characterised by their ability to spread rapidly and produce unwanted economic, environmental or social impacts.

Environmental weeds are those plants that are not native to the local area and can invade and displace native vegetation. All landholders have a responsibility to control weeds on their property. Weeds may or may not be declared pest plants and can include:

- Plants forming dense thickets such as lantana that invade bushland areas, choking out native plants.
- Succulents like mother of millions that can establish virtually anywhere in the shire and form dense infestations, preventing native plants from re-establishing.
- Grasses such as Coolatai grass that can invade native grassy areas, especially along roadsides.
- Shrubs and trees such as willows and broad leaf privet that can establish in riparian areas along streams and rivers. Duranta and boxthorn that can invade many of the open bushland areas of the shire.

Did you know that invasion by alien species is the second greatest threat to biological diversity after loss and degradation of habitat and may pose a greater threat than salinity?

### What causes weeds to invade?

Weeds usually need an event to trigger their invasion, as they don't automatically invade an area of native vegetation just because a seed source is available. One of the most important events that enable weeds to become established is disturbance of soil and native plant communities. This can often be seen in the growth of weeds along the edges of roads and tracks. Other factors include fire, increased nutrient levels, changes in drainage patterns, grazing and climatic events. The effects of these events are not limited to exotic weed species, as some native plants also require a level of disturbance in order to regenerate.

### What harm do environmental weeds do?

Environmental weeds are very effective at reproducing, dispersing and colonising new areas. Many can withstand harsh or difficult growing conditions. These characteristics combine to make them highly invasive. Environmental weeds can smother native vegetation, prevent seedling establishment of native species and contribute to changed fire regimes. This process can take many years and ultimately result in the loss of native vegetation communities. Associated with this process is a loss of habitat for native plants and animals and the potential local extinction of these species.

### 5 principles to better weed management

Effective weed management requires a planned approach so that the problem can be addressed in a strategic and coordinated manner.

1. Prevention is the best form of weed control.
2. Avoid disturbance or creating an environment in which weeds will flourish.
3. Always treat weed infestations when small; do not allow weeds to establish.
4. Weed control is not cheap, but it is cheaper now than next year, or the year after.
5. Rehabilitate treated areas to prevent re-infestation.

### Some control methods

**Cut stump** can be used for controlling a wide range of woody weeds. Cut each stem off as close as possible to the ground and immediately (within 15 seconds) apply a suitable herbicide (e.g. glyphosate) mixture liberally to the cut surface paying particular attention to getting good coverage around the outer edge or cambium layer.

**Basal bark** is a useful method to use for controlling woody weeds with a trunk up to 10 centimetres in diameter. A suitable chemical (e.g. Access® mixed with diesel) is carefully applied in a 30 to 40 centimetre band around the base of each stem making sure that complete coverage is achieved.

**Stem injection** is the method whereby herbicide is injected directly into the stem of the plant. Cuts are made around the stem or trunk with an axe at regular intervals leaving a gap of 2 to 5 centimetres between each cut. Care should be taken that the axe leaves a "pocket" into which the herbicide is immediately injected. A number of chemicals are available for stem injection treatment of weeds. Check with your local farm supplies agent, agronomist or extension officer as to the most appropriate chemical to use for your needs.

**Scrape and paint** is a useful technique to use on vines and scrambling plants with a woody stem. Starting at the base, scrape 2 to 100 centimetres of one side of the stem to expose the sap layer and apply a suitable herbicide to the scraped area within 10 seconds. Take care not to ringbark the stem. Stems greater than 1 centimetre can be scraped on 2 sides.

**Hand pulling** is suitable for small infestations or where there is an abundant source of labour. It is a useful technique for seedlings or other small weeds. Asparagus fern can be controlled by cutting the crown of the plant out with a sharp implement.

**Foliar spray** is a method that can be used to control large areas of weed infestations. Good coverage of the weed with chemical is required for optimal control.

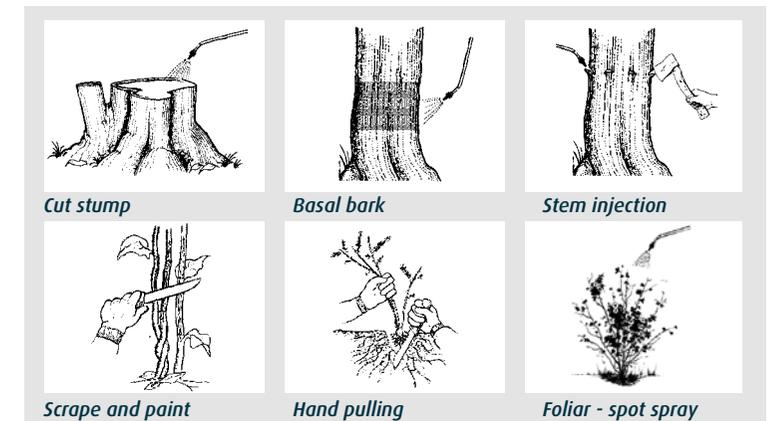


Figure 15: Six methods of treating woody weeds and vines.

**PESTS CLASSES**

The *Land Protection (Pest and Stock Route Management) Act 2002* identifies three classes of pest species that landholders need to be aware of and their responsibilities in relation to these pests. These pest classes are:

**Class 1 pests** that are not commonly present in Queensland which, if introduced, would cause an adverse economic, environmental, or social impact. Class 1 pests established in Queensland are subject to eradication from the state and landholders must take reasonable steps to keep their land free of these pests.

**Class 2 pests** that are established in Queensland and have, or could have, an adverse economic, environmental or social impact. Their management requires coordination and they are subject to existing programs. They may also be new pests requiring state coordination, and subject to local government, community or landholder-led programs. Landholders must take reasonable steps to keep their land free of Class 2 pests.

**Class 3 pests** are those plant species that are established in Queensland and have, or could have, an adverse economic, environmental, or social impact. Their impact is primarily environmental.

**NINE POINT CHECK BEFORE UNDERTAKING CHEMICAL CONTROL**

1. Identify the target weed
2. Is treatment time right for growth stage of plant or season?
3. Are you using the correct rate?
4. Is a wetting agent required?
5. Are weather conditions suitable - is it windy or rain imminent?
6. Do you have suitable personal protective equipment and clothing for the chemicals being used?
7. Have storage and container disposal been considered?
8. Cleaning of equipment on completion of the task.
9. What is your post treatment management?

**WHAT I CAN DO**

- ✓ Identify weeds or plants on my property with weedy potential.
- ✓ Find out what the weed's life cycle or biology is.
- ✓ Establish the extent of the problem – is it minor or major?  
Can I realistically eradicate it?
- ✓ Identify the most appropriate method/s of control.
- ✓ Plan the control program - proper planning ensures value for each dollar spent.
- ✓ Follow up to prevent re-establishment.
- ✓ Use local native plants for landscaping and farm plantings.
- ✓ Limit activities likely to contribute to weed establishment  
e.g. minimise areas of disturbance.

**Weed Species of Cambooya Shire and methods of control**

COMMON NAME	SCIENTIFIC NAME	Weed Status	Priority	Growth Habit	Spot Spray	Physical removal	Cut stump	Basal bark	Stem injection	Foliar Spray	Biological control
Chilean Needle Grass	<i>Nassella neesiana</i>	1	H	G	✓	✓			✓		
Honey Locust Tree	<i>Gleditsia triacanthos</i>	1	H	T		✓	✓	✓	✓		
African Boxthorn	<i>Lycium ferocissimum</i>	2	M	S	✓	✓	✓	✓	✓	✓	
Annual Ragweed	<i>Ambrosia artemisiifolia</i>	2	M	H	✓	✓					✓
Giant Rat's Tail Grass	<i>Sporobolus pyramidalis</i> & <i>S. natalensis</i>	2	M	G	✓	✓				✓	
Groundsel Bush	<i>Baccharis halimifolia</i>	2	L	S	✓	✓	✓	✓		✓	✓
Harrisia Cactus	<i>Eriocereus tortuosus</i>	2	M	Su	✓	✓					✓
Mother-of-millions	<i>Bryophyllum delagoense</i>	2	M	Su	✓					✓	
Parthenium	<i>Parthenium hysterophorus</i>	2	H	H	✓	✓				✓	✓
Prickly Pear	<i>Opuntia spp.</i>	2	M	Su	✓			✓	✓	✓	✓
Lantana	<i>Lantana camara</i>	3	L	S	✓	✓	✓	✓		✓	✓
Madeira Vine	<i>Anredera cordifolia</i>	3	L	C	✓	✓				✓	✓
Privet	<i>Ligustrum lucidum</i> & <i>L. sinense</i>	3	M	T	✓	✓	✓	✓	✓	✓	
African Lovegrass	<i>Eragrostis curvula</i>	LL	L	G	✓	✓				✓	✓
Bathurst Burr	<i>Xanthium spinosum</i>	LL	M	H	✓	✓					
Castor Oil Plant	<i>Ricinus communis</i>	LL	L	S	✓	✓	✓	✓			
Clockweed	<i>Gaura parviflora</i>	LL	L	RA	✓	✓					
Noogoora Burr	<i>Xanthium pungens</i>	LL	M	RA	✓	✓					✓
Patersons Curse	<i>Echium plantagineum</i>	LL	L	H	✓	✓				✓	✓
Saffron Thistle	<i>Carthamus lanatus</i>	LL	L	RA	✓	✓				✓	✓
Thornapples	<i>Datura spp.</i>	LL	M	RA	✓	✓				✓	
White Foxtail Grass	<i>Pennisetum villosum</i>	LL	L	G	✓						
Wild Tobacco Tree	<i>Solanum auriculatum</i>	LL	L	S	✓	✓	✓	✓			
Mimosa Bush	<i>Acacia farnesiana</i>	E		S	✓	✓	✓	✓		✓	
Sisal Hemp	<i>Agave sisalana</i>	E		Su	✓						
White Moth Plant	<i>Araujia hortorum</i>	E		C	✓	✓			✓	✓	
Lippia	<i>Phylla nodiflora</i>	E		C/H		✓				✓	
Willow	<i>Salix babylonica</i>	E		T		✓	✓	✓	✓		
Coolatai Grass	<i>Hyparrhenia hirta</i>	E		G	✓	✓				✓	

WEED STATUS	PRIORITY	GROWTH HABIT
1 Category 1 Must be eradicated	L Low	C Creeper
2 Category 2 Control required	M Medium	G Grass
3 Category 3 Environmental pest	H High	H Herbaceous plant
LL Local Law	Priority of individual weed species is identified in the Cambooya Shire Pest Management Plan	RA Robust annual
E Local environmental weed		S Shrub
		Su Succulent
		T Tree



*Lippia*

## Escaping Garden Plants and Native Alternatives

Some plant species that are commonly used in gardens and public landscaping have the potential to escape and become serious environmental weeds. Approximately 65% of our most serious environmental weeds are plants that escaped from gardens. Many species planted in gardens have become **naturalised** – that is, they are able to survive and reproduce outside of the garden environment. Some of these species have also become **invasive** – spreading rapidly through native vegetation, out-competing native plants, degrading wildlife habitat, contributing to poor landscape health and lost production.

There are currently over 1,000 different weed species in South East Queensland, and it is estimated that about 30 new plant species that have the potential to become environmental weeds are introduced into Queensland each year, many of them as saleable nursery stock.

Most people are aware of some plants that have escaped gardens to become major environmental weeds such as lantana, privet, camphor laurel and lippia (otherwise known as Condamine couch or no-mow grass).

However, it is not often realised that many of our current favourites are also starting to cause concern. These include *Murraya* (Mock Orange), *Duranta* (Sky flower), *Koelreuteria* (Golden rain tree), *Jacaranda* (Jacaranda), *Celtis* (Chinese elm), *Olea europaea* (European olive) and even the north Queensland *Corymbia torelliana* (Cadaghi). The environmental weed problem will only get worse, and the costs involved - financial, social and environmental - will continue to increase, unless there is a reduction in the weed pressure on our natural environments.

### WHAT I CAN DO

As responsible landholders, both urban and rural, there's plenty we can do.

#### ✓ 1. Know the plants on your property

If there are plants in your garden or on your property which you think may be weeds or have weed potential, have them identified by your local council weeds officer, local landcare coordinator or even the Queensland Herbarium.

#### ✓ 2. Keep on top of property maintenance

Regularly check your garden or property for plants which appear to be spreading, and ensure that measures are quickly taken to address any actual or potential weed problem – there is plenty of information and advice available from the Department of Natural Resources and Water Pest Fact Sheets, internet sources and local weeds officers.

#### ✓ 3. Plant only non-invasive species

Avoid planting species which are known to be invasive. Bear in mind that local native plants offer a safe alternative – they are adapted to the local conditions, provide suitable habitat and food for local birds and animals, and will not become weeds. Some commonly grown garden plants that have weed potential and suitable alternative native species are listed in the table on the following page.



GROWTH FORM	PLANTS TO AVOID	ALTERNATIVE (LN OR N)**	CHARACTERISTICS
Trees	African & European olive <i>Olea africana/europaea</i>	Native Olive (LN) <i>Notolea microcarpa</i>	Small (12m) weeping tree with a dense rounded crown; small cream flowers
	Cadaghi <i>Corymbia torelliana</i>	Moreton Bay ash (LN) <i>Corymbia tessellaris</i>	Attractive hardy tree (to 30m ) with stocking of tessellated bark and smooth white trunk and branches
	Camphor laurel <i>Cinnamomum camphora</i>	Crows Ash (LN) <i>Flindersia australis</i>	An attractive shade tree (to 20m); clusters of small white fragrant flowers and unusual woody fruits
	Chinese celtis <i>Celtis sinensis</i>	Yellow Cedar (LN) <i>Rhodospaera rhodanthema</i>	Large spreading deciduous tree to 20m (frost-tender when young); coppery new foliage
	Golden rain tree <i>Koelreuteria paniculata</i>	Native frangipani (LN) <i>Hymenosporum flavum</i>	Small tree (10m) with dark green leaves and highly perfumed creamy-yellow flowers
	Jacaranda <i>Jacaranda mimosifolia</i>	White cedar (LN) <i>Melia azedarach</i>	Attractive deciduous tree (10m) with lilac flowers and yellow berries
	Pepperina <i>Schinus terebinthifolius</i>	Green wattle (LN) <i>Acacia irrorata</i>	A medium-sized shade tree to 15m with dark green feathery leaves and golden flowers
Shrubs	Cotoneaster <i>Cotoneaster spp.</i>	Red ash / soap tree (LN) <i>Alphitonia excelsa</i>	Small weeping tree to 8m with fine willowy foliage and small white flowers clustered along stems
	Duranta <i>Duranta erecta</i>	Meemeei / Cattle bush (LN) <i>Pittosporum angustifolium</i>	A small, graceful tree with a rounded, weeping crown; creamy-yellow flowers, followed by orange capsules which split to reveal sticky, red seeds
	Lantana <i>Lantana camara</i>	Forest boronia (LN) <i>Boronia ledifolia</i>	Small understory shrub with fine leaves; 4-petalled pink flowers in winter and early spring.
	Orange firethorn <i>Pyracantha fortuneana</i>	Australian blackthorn (LN) <i>Bursaria spinosa</i>	A medium to tall shrub with shiny oval leaves; masses of creamy-white fragrant flowers and bronzy capsules.
	Orange Jessamine <i>Murraya paniculata</i>	Red Olive Plum (LN) <i>Elaeodendron australe var. australe</i>	A moderately slow growing, but hardy shrub, with characteristic horizontally layered branches and masses of white, heavily perfumed flowers.
	Plumbago <i>Plumbago auriculata</i>	Native Plumbago (LN) <i>Plumbago zeylanica</i>	Small to medium shrub with olive-green foliage and purple pea flowers
	Privet <i>Ligustrum sinense / lucidum</i>	Diamond-leaf Pittosporum (LN) <i>Auranticarpa rhombifolia</i>	Small tree (to 10m) with a layered, spreading canopy; leaves distinctively white on the underside; clusters of fragrant cream flowers in Autumn.

GROWTH FORM	PLANTS TO AVOID	ALTERNATIVE (LN OR N)**	CHARACTERISTICS
Vines	Cat's claw creeper <i>Macfadyena unguis-cati</i>	Wonga vine (LN) <i>Pandorea pandorana</i>	Fast-growing climber with shiny green foliage and creamy-white flowers often with reddish throats
	Dutchman's pipe <i>Aristolochia littoralis</i>	Pararistolochia <i>praevenosa (N)</i>	Large woody climber with a dense covering of brown hairs; flowers about 20 mm long, purplish.
	Japanese honeysuckle <i>Lonicera japonica</i>	Native clematis (LN) <i>Clematis glycinoides</i>	A beautiful climber with masses of starry white flowers
	Madeira vine <i>Anredera cordifolia</i>	Jasmine-leaved wonga vine (LN) <i>Pandorea jasminoides</i>	An attractive climber suitable for pergolas; deep green leaves and red-throated pink trumpet flowers
	Morning glory <i>Ipomea indica</i>	Native sarsaparilla (LN) <i>Hardenbergia violacea</i>	Hardy twining plants, useful as a ground-cover; clusters of purple pea flowers.
	Moth vine <i>Araujia sericifera</i>	Gargaloo (N) <i>Parsonsia eucalyptophylla</i>	An attractive climber with dense heads of creamy yellow flowers and long slender seedpods.
	Asparagus <i>Asparagus spp.</i>	Wombat berry (LN) <i>Eustrephus latifolius</i>	A reasonably vigorous twining plant or scrambling ground cover; white or pale pink flowers with hairy petals; orange berries held on plant for many months.
Ground cover	Blue billygoat weed <i>Ageratum houstonianum</i>	Austral bugle (LN) <i>Ajuga australis</i>	A great rockery plant, with attractive purplish-green foliage and purple flowers
	Creeping lantana <i>Lantana montevidensis</i>	Creeping boobialla (LN) <i>Eremophi; a debilis</i>	An attractive groundcover with pinkish berries; suited to rockeries and raised edges.
	Lippia <i>Phyla canescens</i>	Native pennyroyal (LN) <i>Mentha saturoides</i>	Low-growing herb, lovely to walk on as crushed leaves smell fresh and minty
	Tweedia <i>Oxypetalum coeruleum</i>	Australian bluebell (LN) <i>Wahlenbergia gracilis</i>	Annual herb with pretty blue bell-shaped flowers

\* **LN - Local Native** - a plant that naturally occurs in the area and is the preferred option to plant  
**N - Native** - an Australian native plant - a good option

## Legislation

Several items of legislation have been enacted in Queensland to manage vegetation across all land tenures. These are the Land Act 1994 that deals with management of leasehold and state lands, the Vegetation Management Act 1999 that regulates tree clearing on freehold land and the Integrated Planning Act 1997 that identifies when permits are required to clear native vegetation.

The Land Act 1994 is the principal legislation that provides for the management of non-freehold land in Queensland and includes sections that deal with vegetation management. Elements of the Act that relate to the management of trees on non-freehold land are:

- Maintaining productivity and allowing for development of the land.
- Preventing land degradation and maintaining biodiversity.
- Maintaining environmental and amenity values of the landscape.
- Maintaining scientific, recreational and tourism values of the land.

The Vegetation Management Act 1999 was introduced to regulate tree clearing on freehold land and has the intended purposes of:

- Preserving remnant endangered regional ecosystems, areas of high nature conservation value and areas vulnerable to land degradation.
- Ensuring that clearing does not cause land degradation.
- Maintaining or increasing biodiversity.
- Maintaining ecological processes.
- Allowing for ecologically sustainable land use.

The Integrated Planning Act 1997 has been amended to clarify the status of vegetation in a number of areas. It identifies what vegetation management works can be carried out, the exemptions that apply and permit requirements. The purpose of the Act is achieved mainly by providing:

- codes for the Planning Act relating to the clearing of vegetation;
- enforcement of vegetation clearing provisions;
- a framework for decision making; and
- a range of exemptions where clearing for certain activities, including clearing for routine and essential management, can be carried out without a development permit.

## Regional Vegetation Management Plans (RVMP's)

The focus of Regional Vegetation Management Plans is strategic vegetation management on a bioregional scale.

These Plans provide guidance to landholders, local and State government agencies and others involved in vegetation management activities within a region.

The Plans establish specific strategies for each region based on State objectives. They contain statutory Codes for assessing applications to clear vegetation on freehold and leasehold land.

**It is important that landholders contact the Department of Natural Resources and Water before undertaking any vegetation treatment or clearing. Failure to do so could lead to the imposition of significant penalties under the Vegetation Management Act.**

## Especially for the workers

Road reserves and public lands often contain patches or remnants of native vegetation that have important natural values. Native vegetation on road reserves is valuable because it; can be a significant source of food and shelter for wildlife, links other areas of native vegetation together, and can contain rare and endangered plants and animals.

It is important to remember that native vegetation consists of more than just trees. Trees, shrubs and groundcover plants such as creepers, grasses, herbs and small plants combine to provide food and shelter (habitat) for a wide range of wildlife ranging from insects to frogs and reptiles, marsupial mice to birds and larger animals such as kangaroos and wallabies. Additionally, native vegetation helps to stabilise the soil and can help reduce erosion.

### Only do what you have to do.

Disturbing the soil and healthy native vegetation:

- Encourages weeds.
- Can prevent regeneration of native plants.
- Increases risk of soil erosion.

Avoid unnecessary earthworks and disturbance.



### Protect vegetation

Healthy vegetation is an asset. It is cheaper and easier to protect existing trees, shrubs, grasses and groundcovers than to replant them.

- Avoid working in the drip line of trees to reduce / minimise damage to roots, trunk and limbs.
- Avoid storing materials and equipment under trees.

### Before starting construction...

Walk the route and identify:

- Limits of vegetation removal.
- Extent of construction or maintenance activity.
- Significant areas to be protected.
- Location of stockpiles, access tracks, etc.

**Clear** only the minimum amount of vegetation required for road construction, safety and sight distances.

### Strip & Stockpile topsoil

Retaining and reusing topsoil from areas of native vegetation is important since it contains seeds of local native plants and organic matter.

- Strip the top 100 – 200 mm of topsoil before starting any major works.
- Locate soil stockpile sites on clear areas away from drainage lines and native vegetation.
- Where possible, stockpile topsoil for less than 12 months to retain maximum seed viability.

### 'Tidying up'

Tidying up creates unnecessary disturbance to soil and vegetation and can lead to soil erosion and the invasion and spread of weeds.

- Leave vegetation undisturbed wherever possible in construction and maintenance activities.
- Retain shrubs, logs, old or dead trees and small plants (unless they are a threat to safety or services) to provide habitat for wildlife.

### Machinery clean down

Dirty machinery can spread weeds and soil diseases. Clean earthmoving machinery, slashers and vehicles before moving to a new site by;

- Scraping and brushing off soil and accumulated vegetation matter.
- Washing down with water preferably under pressure.
- Using compressed air if available to clean away accumulated seeds, vegetative material and loose soil.

Identify areas that have:

- High conservation values.
- Rare and endangered plants.
- Erosion hazards.
- Cultural heritage values.



...and plan and carry out works taking these issues into account.

Be aware that State and Commonwealth legislation such as the *Vegetation Management Act (1999)*, *Nature Conservation Act (1992)* and the *Environment Protection Biodiversity Conservation Act (2000)* can have implications for civil construction works.

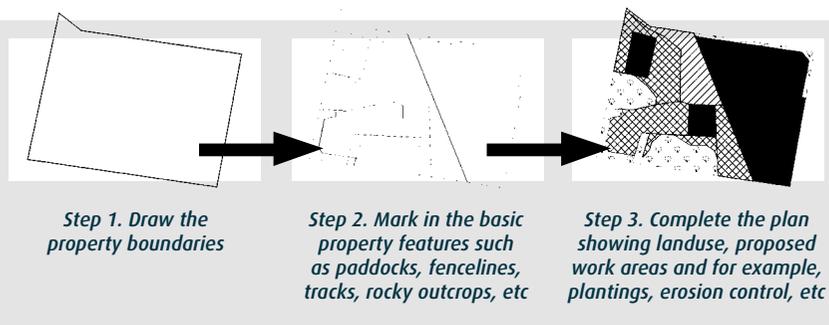
### WHAT I CAN DO

- ✓ Learn to identify plants that have high conservation value.
- ✓ Think about the impact of my activities on plants and animals in road reserves.
- ✓ Make sure that I am not responsible for spreading weeds and diseases.
- ✓ Be alert for new weeds occurring in the area.
- ✓ Work from 'clean' (weed free) areas to 'dirty' (weed infested) areas.

*(Illustrations for this section are from, Roadside Handbook – Environmental Guidelines for Construction & Maintenance Workers. Vic Roads 1992)*

## Planning for action

Start off by preparing a plan of the property, drawing in all the various features – fence lines, gullies, buildings, tracks, areas of native vegetation, areas of cultivation, etc. This provides a starting point for building or developing a property plan. It is also useful to take into consideration how your property fits into the landscape – for example, where are other patches of native vegetation in the local area, do some of the features of my property link in with other parts of the landscape, is there erosion impacting on my property from next door? We need to be aware of external impacts on our property, just the same as realising that what we do on our property can impact on our neighbours either for better or worse.



**Figure 16: Creating a basic property plan.**

The first step is to gather information to help in planning what we want to do. There are a large number of information sources. Some useful information sources are listed in the “Further Reading” section of this guidebook.

When planning priorities for conserving flora and fauna, use the three R’s. Retain the priority remnant vegetation, restore the quality of degraded areas and then revegetate cleared areas. The following principles need to be taken into consideration when planning for the sustainable management of native vegetation.

ISSUE	PRINCIPLE
<b>Remnants</b>	
Quality	Protect native vegetation in the best condition first.
Size and number	The larger the patch area the better. Diversity of habitat is desirable.
Shape and edges	Remnants that are square or round are better than long narrow or linear patches Take into consideration ‘edge effects’ and include buffer areas.
Position in landscape	Try to include representation of all land types and diversity of vegetation communities.
<b>Sites</b>	
Local significance	Include watercourses and ridges that provide landscape connectivity at a local level. Take into account all wildlife, both common and rare species.
<b>Linkages</b>	
Connectivity and corridors	The more connections and linkages between remnants in the landscape, the better. Include corridors and linkages in plans. Provide ‘stepping stones’ of vegetation to assist wildlife movement through the landscape.
Mosaics	Strive to integrate nature conservation areas with the surrounding landuse.

*Principles adapted from DNRE (2002)*

### ACTION – THE MOMENT WE’VE BEEN WAITING FOR

The planning is over for the time being and now it’s time to put plans into action. It’s easy to underestimate just how much time and effort is involved in carrying out and more importantly, maintaining the works. Be conservative in what you think that you can achieve, (at least initially until you know what you are capable of) – there’s no point in planting hundreds of trees and then discovering that you cannot maintain them through a drought, or controlling several hectares of woody weeds only to have them re-invade an area. After the work is done, be sure to celebrate your successes – you’ve earned the right to.

### MONITORING

Monitoring is used to make sure that our project is on target to achieve our goals and to record what is happening along the way. It’s easy to get caught up in the activity of a project and overlook what is actually happening and to not keep track of our progress. We need to keep a record of our activities and make assessments on the impact that they are having. Our records can take two forms: records of activities (outputs, for example how many trees were planted) and measuring the results of these activities (outcomes, for example how many trees survived).

### REVIEWING – HOW DID WE GO?

When we’ve completed a project, the tendency is to rush off into the next one without pausing to reflect on what we learnt. If the project was a disaster we may prefer to forget all about it, whilst if it went well, we may not think that there is any need to look closely as to why it succeeded. We can use the information that we have been gathering in the monitoring process to help us do this. Every project is a learning experience and by reflecting on and reviewing how our project or activity went, we can be in a better position for our next one.

So review – how did we go? Then, did we make a difference? Followed by, let’s celebrate! And finally, where to from here?

## Three principles of habitat management

Every place, no matter how small or how modified, has some value, because it can support the life of some native animal, plant or microbe.

### 1. Retain larger areas for large animal populations and long-term conservation

Large areas of habitat generally support greater numbers of individuals and species than small areas of similar habitat. Small wildlife populations are more prone to local extinction whereas larger populations are much more resistant to variation in numbers and are more likely to persist over time. This is most important for those species that have limited means or ways of re-establishing in the event that a local population disappears (such as geckoes, small mammals, ground-dwelling invertebrates).

### 2. Make sure that habitats meet the requirements of particular species

The size of a habitat influences the type of species that make up the animal community. Small blocks usually favour animals with small home ranges and generalist habitat requirements, or highly mobile species that move between multiple habitats. Species that need large areas of habitat or require specialised types of habitat are less likely to occur in small blocks.

### 3. Retain large blocks for more diverse animal communities

There is usually a direct relationship between the size of a remnant patch of vegetation and the number of wildlife species present. For this reason, larger areas of vegetation (or areas of revegetation combined with other vegetation) are required to support rich and diverse animal communities, while in contrast; small blocks may support only a few species.

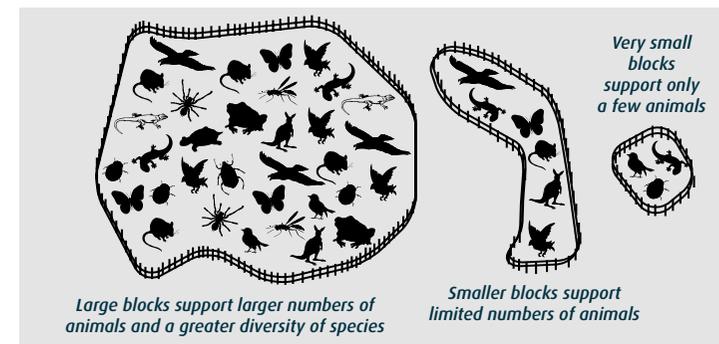


Figure 17: Habitat potential of varying sizes of vegetation remnants. (Redrawn from Bennett et al. 2000).

## Assessing vegetation condition

Knowing the condition and health of native vegetation on your property is important for determining how you are going to manage it. Healthy vegetation will need little management whereas vegetation in poor condition will require active management to preserve and restore it. Often vegetation health declines slowly over a number of years and is only noticed when it becomes severe. Taking photographs every year and comparing them with previous years helps to identify problems early as well as highlighting the positive effects of good vegetation management. (See section on monitoring).

The following score sheet will help in assessing the condition of native woodlands and forests.

NATIVE VEGETATION ASSESSMENT SHEET		
ATTRIBUTE:	RELEVANT TO:	PRESENT ✓
1. Trees of all ages present ( <i>i.e. seedlings through to old trees</i> ).	W & F	
2. Trees appear healthy and no sign of dieback.	W & F	
3. Large mature trees that contain hollows.	W & F	
4. Standing and/or fallen timber is common.	W & F	
5. Native shrubs present in understorey ( <i>even though they may not form a dense layer</i> ).	W,F & G	
6. Ground vegetation is mostly native grasses and herbs.	W,F & G	
7. There is a litter layer of leaves, bark and twigs.	W,F & G	
8. Few weeds are present or are confined to edges of remnant vegetation patches.	W,F & G	
9. The remnant area is connected to or within 100 metres of other areas of native vegetation.	W,F & G	
10. The area of remnant vegetation is larger than 5 hectares.	W,F & G	
TOTAL NUMBER OF ✓		

W & F – Woodlands and forests G - Grasslands

Notes: Trees are normally absent from native grasslands. In undertaking the above assessment, only score those attributes that are relevant to your property.



- Q1. Answer '✓' if there are young regenerating trees and mid-size trees present. The absence of young regenerating trees indicates that grazing pressure may be (or has historically been) too high.
- Q2. Signs of dieback indicate that the vegetation is under stress that may be due to a number of causes.
- Q3. If the oldest trees on site are fully mature, answer with '✓'. Most fully mature trees will contain hollows that are important shelter and nesting sites for birds and arboreal mammals.
- Q4. Dead trees, standing or fallen, provide valuable habitat for a large number of wildlife species. Fallen timber can protect seedlings from grazing.
- Q5. Most vegetation communities in their natural state have some shrubs. If shrubs are not present, this can indicate that grazing pressure may be or has been too high.
- Q6. Ground flora composed mainly of exotic species can indicate that natural regeneration of native species may no longer be occurring, and is difficult to promote. This is common on fertilised sites.
- Q7. The litter can range from sparse to almost total cover and provides habitat for a great diversity of birds, animals, reptiles and invertebrates (spiders, ants, centipedes, beetles, etc).
- Q8. Weeds are an indicator of past disturbance, and they usually out-compete native species, making natural regeneration of the site difficult.
- Q9. Connection or proximity to other areas of native vegetation assists regeneration.
- Q10. Small isolated patches of vegetation are more susceptible to edge effects and can degrade more readily.

### Interpreting what your score means – woodlands

SCORE	CONDITION	GENERAL DESCRIPTION
8-10	QUALITY BUSHLAND	<i>Quality bushland. Mostly undisturbed. There should be a good mix of tree ages, and natural regeneration should be occurring. The understorey is comprised of native grasses and herbs or native shrubs. The patch contains a range of habitats for wildlife (litter, logs, shrubs, tree hollows, etc.).</i>
	5-7 MODIFIED BUSHLAND	<i>Moderately disturbed bushland. Some regeneration of trees and shrubs. May be a regrowth area with trees of even age. Native shrubs and grasses present in the understorey, but there may be some weed invasion. Important habitat elements may be missing.</i>
	0-5 DEGRADED BUSHLAND	<i>Highly disturbed bushland. Cannot be sustained under current management practices. Native understorey removed and replaced with improved pasture species or weeds. Dead and dying trees present. No natural regeneration of trees or shrubs. Can be improved, but only with considerable time and effort.</i>
		

### Interpreting what your score means – grasslands

SCORE	CONDITION	GENERAL DESCRIPTION
8-10	QUALITY GRASSLAND	<i>Quality grassland. Mostly undisturbed. There should be a good diversity of native grasses and herbs present with few weeds. The patch provides habitat for a range of wildlife species.</i>
	5-7 MODIFIED GRASSLAND	<i>Moderately disturbed grassland. Some recruitment of native grasses and herbs may occur. Moderate numbers of weeds present. Important habitat elements may be missing.</i>
	0-5 DEGRADED GRASSLAND	<i>Highly disturbed grassland. Cannot be sustained under current management practices. Native grassland species have been replaced with improved pasture species or weeds. No recruitment of native grasses and herbs. Can be improved, but only with considerable time and effort.</i>
		

#### WHAT I CAN DO

##### Quality bushland and grassland

Well done, your bushland or grassland is in very good condition and should need little active management to keep it in good condition. Some suggested management actions to keep in mind are:

- ✓ Maintaining fences to control stock access.
- ✓ Keeping feral animals under control.
- ✓ Controlling small weed outbreaks as they occur.

##### Modified bushland and grassland

Your bushland or grassland is starting to become degraded and will need preventative action to avert further degradation. Acting now will be easier and more cost effective to restore native vegetation to good health than waiting a few more years.

##### Suggested management actions include:

- ✓ Fencing to manage livestock grazing.
- ✓ Controlling weeds and feral animals.
- ✓ Implementing an appropriate fire regime.
- ✓ Re-establishing native trees, shrubs, grasses and herbs.

##### Degraded bushland or grassland

Urgent action is required now to stabilise degraded native vegetation and commence restoring it to a more natural state. Suggested management actions include:

- ✓ Fencing to manage livestock grazing.
- ✓ Reducing grazing pressure
- ✓ Controlling weeds and feral animals.
- ✓ Re-establishing native trees, shrubs, grasses and herbs.

*(Based on 'Save the Bush Toolkit', Charles Sturt University 1997 and 'Rural Production and Native Vegetation Conservation', NSW Dept of Land and Water Conservation 1998)*

## Guidelines for sustainable land management

### 6 Principles for managing grassy woodlands

1. **Property planning and management should include a long-term vision, which considers the whole of the property and its place in the catchment.**
  - 1.1 Manage to the potential and limitations of the land, based on an understanding of ecological processes.
  - 1.2 The precautionary principle of conservative or delayed development should apply.
  - 1.3 Land uses of high intensity need to be balanced with significant areas of low intensity use across landscapes.
  - 1.4 Land uses can have influences that spread beyond their boundaries so their arrangement across landscapes is important.
  - 1.5 Vegetation representative of all the land types occurring on a property needs to be retained and managed.
2. **Manage soils to prevent erosion and to maintain productive capacity and water quality.**
  - 2.1 Keep the amount of bare ground exposed to no more than 30-40% of the ground surface.
  - 2.2 Place infrastructure in stable locations on the landscape to avoid erosion (e.g. buildings, access tracks, stock watering points, etc.).
  - 2.3 Some soil types require particular attention to avoid erosion and salinity problems.
3. **Manage pastures for production and to maintain the variety of plants and animals.**
  - 3.1 Graze conservatively to maintain dominance of tall and medium tussock grasses over 60-70% of the native pastures.
  - 3.2 Limit the extent of intensive land use (horticultural crops, sown pastures, forage crops) to a maximum of 30% of the property area.
  - 3.3 Vary the management of pastures to provide for a variety of species and a diverse range of fodder sources.

4. **Maintain local native trees for the long-term ecological health of the property and catchment.**

- 4.1 Woodland or forest should be maintained over at least 30% of the property area.
- 4.2 Always favour natural regeneration of existing trees over planting and re-creating habitat.
- 4.3 To be viable in the long term, woodland patches should be a minimum of 5-10 hectares.
- 4.4 Retain trees of different ages within stands to retain the long-term viability of tree populations.
- 4.5 Maintain or regenerate trees in appropriate places to minimise degradation and enhance primary production.

### 5. Manage at least 10% of the property for wildlife values

- 5.1 Where possible choose the areas on the property with the highest overall wildlife values for ongoing management.
- 5.2 Vegetation on good quality soils should be included in this 10%.
- 5.3 Standing and fallen dead timber is important for wildlife.
- 5.4 Wildlife areas need protection from heavy or continuous grazing.
- 5.5 Weed control and fire management may be required in wildlife areas.
- 5.6 Wildlife areas should be connected to others on the property or in the district.

### 6. Watercourses are particularly important to the ecosystem and grazing enterprise, and require special management.

- 6.1 As a general principle, livestock should be excluded from watercourses to reduce soil erosion and maintain water quality.
- 6.2 Vegetation should not be cleared up to the edges of watercourses.
- 6.3 Control of exotic species in riparian zones is important.

*Principles from, McIntyre S., McIvor J. G. & MacLeod N. D. (2000)*

## Measuring success

Measuring our success (commonly termed monitoring) is important for two main reasons:

1. It is a valuable tool for improving management practices, and
2. It allows us to know whether natural resource condition is stable, improving or declining.

Monitoring requires that consistent records are taken and maintained so that comparisons can be made over time. We think that we can notice changes over time, however the human memory is not as accurate as we would like to think! Monitoring can help us to:

- Record changes over time.
- Document the effect of management actions.
- Document the extent and severity of (and then recovery after) extreme events e.g. flood, fire, storm, frost or hailstorm.
- Develop a benchmark against which future performance can be measured.
- Use the information gained to determine management actions.
- Identify problems early.

A simple and very practical method for monitoring vegetation and management actions is to take a series of photographs, termed 'photo-point monitoring'.

### WHAT IS PHOTO-POINT MONITORING?

A photograph is a record of a particular site at a particular time. Any picture tells a story, but to take a good and useful monitoring photograph requires some thought. Using photographs takes the guesswork out of trying to recall how the property or vegetation used to look.

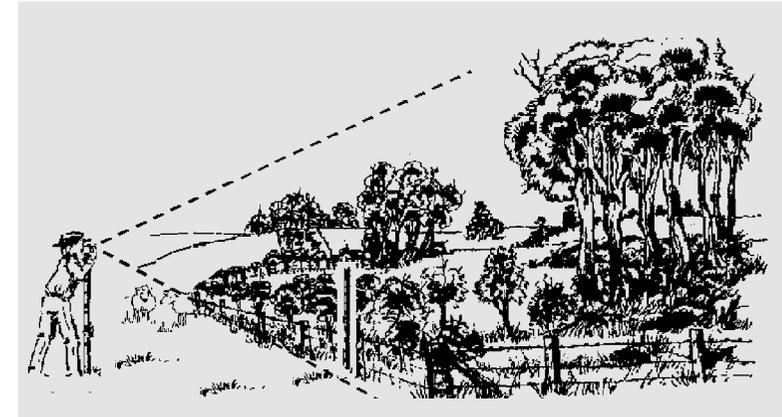
Photographs are best used for monitoring relatively slow changes to vegetation. They will build up into a valuable record that can be passed on to the next generation of the family or to new owners. Evidence of good management may also be useful when dealing with financial institutions! What photographs do not do is give exact details of species and sites, so each photo needs a precise set of notes to go with it.

### SOME POINTERS

Use two star pickets at least fifteen to twenty metres apart to mark the position of the camera and direction of the photograph. This will help you to always come back to the same point each time. If possible, take photographs from an elevated position such as from the back of a ute. Identify the site in each photograph by using a small notice board (A4 size or bigger). For example:

**Natural regeneration  
10 April 2005  
South Rock Paddock**

Think about what you are trying to find out and adapt your monitoring program accordingly.



**Figure 18: Photo-point monitoring.** Have fixed and clearly identified reference points for taking your photos from on a regular basis. (Redrawn from WWF 2000)

### GOLDEN RULES FOR MONITORING VEGETATION

1. Monitoring should be carried out at regular intervals (e.g. once or twice a year), at the same time each year, but be flexible to include major events such as heavy rainfall or bushfires.
2. Record your observations in a consistent manner that allows for easy comparison with previous results.
3. Observations and measurements must be written down, dated and stored together safely for future reference.
4. Compare the information recorded on several previous occasions to detect changes or reconsider management decisions and future actions.
5. Monitor features that relate to your goals, i.e. issues you are concerned with, such as native tree or shrub regeneration, spread of weeds, changes in the soil or the presence of certain plants or animals.

#### WHAT I CAN DO

- ✓ Establish a photo-point monitoring program to track the changes that occur on my property.
- ✓ Learn to identify the plants and animals that occur on my property and record their presence.
- ✓ Record the project activities that I undertake on my property to measure their success, for example number of trees planted and number surviving after 6, 12 and 24 months.

### Indigenous cultural heritage

The original inhabitants of the region have bequeathed a treasure trove to all Australians – the sacred sites and tools they left behind are unique to the area and can never be replaced. Landholders have a duty of care to ensure that cultural heritage items and values on their properties are preserved.

There are a number of heritage management practices that can be put into place to conserve and preserve Aboriginal Sites of Significance. However, the best way to manage these sites is to consult the Traditional Owners of the area, to ascertain their requirements to preserve specific sites.

There are a number of principles that can be followed that will reduce the risk of damaging a site:

- Minimise surface disturbance to a site,
- Reduce stock access to a site,
- Control feral animals,
- Erect fencing to keep out domestic and feral animals,
- Reduce weeds, pests and introduced plants around a site,
- Reduce the risk of fire near a site,
- Sandbagging if a site is threatened by water erosion,
- Get expert advice if a site, such as an art site, is degrading due to insect infestations,
- Erect temporary structures to prevent further environmental degradation of a site,
- Do not drive over a site, if a path is used regularly which has the potential to damage a site, block off the path and provide an alternative route away from the site,
- Regularly inspect the conditions, monitor the conditions and report to appropriate authorities if a site is further degrading,
- Restrict access of people to sites,
- Possibly allow indigenous people access to the site so that they may employ their own management practices,
- Keep natural environmental conditions similar, for example water flow through a fish trap, so that the integral part of the significance of a place is retained,
- Remove rubbish from the surrounding area,
- Repatriate cultural artifacts to the place where they were found, and
- Consult with traditional owners on the storage of artifacts if they need to be removed from an area.

**IF YOU FIND A SITE OF SIGNIFICANCE DO NOT REMOVE ITEMS OF CULTURAL HERITAGE FOR ANY REASON WITHOUT CONSULTING TRADITIONAL OWNERS.**

*(Leslie C. and McFadden L. 2006. Cultural Awareness Manual for Pastoralists and Farmers of the Condamine Catchment). Contact the Condamine Alliance's Regional Indigenous Facilitator for additional information and advice.*

## Further reading

**Managing and Conserving Grassy Woodlands.** S. McIntyre, J.G. Mclvor, K.M. Heard. CSIRO Publishing.

**The Grasses of Southern Queensland** J.C. Tothill & J.B. Hacker

**Pasture Plants of Southern Inland Queensland** D.R. Henry, T.J. Hall, D.J. Jordan, J.A. Milson, C.M. Scheffe, R.G. Silcock

**Weed Pocket Guide – South East Queensland.** Department of Natural Resources and Water.

**Flora of south-eastern Queensland Volumes 1, 2, 3.** Stanley & Ross

**Balancing production with nature conservation – Case studies from southern inland Queensland.** Kay Dorricott, Peter Voller and Bruce Lawrie. Environmental Protection Agency.

**Revegetation and Wildlife A guide to enhancing revegetated habitats for wildlife conservation in rural environments.** Research Report 2/00 Environment Australia

**How to plan wildlife landscapes – a guide for community organisations.** Victorian Department of Natural Resources and Environment.

**DNR fact sheets series on Erosion, Salinity, Management of Riparian Areas, Tree Planting and Management**

**Wildlife on Farms – How to conserve native animals.** David Lindenmayer, Andrew Claridge, Donna Hazell, Damien Michael, Mason Crane, Christopher MacGregor and Ross Cunningham

**Grow Your Own Wildlife – How to improve your local environment.** Peter Johnston and Alan Don (Greening Australia 1990)

**Field Guide to the Birds of Australia.** (Several guides are available by various authors)

**Reptiles and Amphibians of Australia.** Harold G. Cogger

**Roadside Handbook – Environmental Guidelines for Construction & Maintenance Workers** (Vic Roads 1992)

**Road Drainage Design Manual** (Main Roads 2002)

**Designing filter strips to trap sediment and attached nutrient.** Land & Water Australia (2001)

**Fauna Sensitive Road Design Volume 1** (Main Roads)

**Native Vegetation and Property Management – A guide to research and resources.** (Greening Australia 2005)

### Web sites

[www.deh.gov.au/publications](http://www.deh.gov.au/publications)

[www.nrm.qld.gov.au](http://www.nrm.qld.gov.au)

[www.epa.pld.gov.au](http://www.epa.pld.gov.au)

[www.dse.vic.gov.au](http://www.dse.vic.gov.au)

[www.csiro.au](http://www.csiro.au)

[www.greeningaustralia.org.au](http://www.greeningaustralia.org.au)

## Species Profiles

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## Introduction: Regional Ecosystem Descriptions and Plant Species Profiles

The following sections organise 69 plant species into 6 vegetation communities. Each of these vegetation types is an amalgamation of 1 or more Regional Ecosystems (RE's) as defined by the Queensland Herbarium. These descriptions are relevant to the occurrences of the RE's across Queensland so some of the species are not specifically relevant to the study area.

The sections are laid out with an initial page including a brief description of the typical makeup of the community, special values, threats and general comments. This includes a photo illustrating the community and a map showing the historic and remnant distribution of the vegetation type in Cambooya Shire. The maps show historic distribution in a lighter shade and remnant in a darker shade. For the Alluvial Grasslands and Dry Rainforest types it is difficult to see the very small remnants on the maps.

This is followed by individual species profiles of common and interesting species found in each vegetation type during fieldwork. These were selected to illustrate different species for each vegetation type although many species overlap. For example many Alluvial Grassland species can be found as part of the ground layer in Mountain Coolibah Woodlands.



*blue flax lilly*



*coolibah*

The species are sorted by vegetation layers so that the canopy species are first, followed by shrub/small tree species and then ground layer species. Each profile includes plant names, physical description and details of aboriginal and current uses where information is available. Every species is illustrated and in many cases detailed photos of buds, flowers, fruit and/or bark are presented. These photos were all taken during local fieldwork (2004 –2006).

The appendices list all the plant and animal species identified during the project. Some plants referred to in Regional Ecosystem descriptions and elsewhere in this book may not be listed in the appendices. This is because only plants with identifying features like flowers or fruit were able to be identified during field work. There were many more unidentified species encountered during field work that are not able to be represented here. Animal species including birds, mammals, reptiles and amphibians were identified during interviews with landholders using field guides to confirm species observations. The field guides used, along with the information sources for plant identification and descriptions are listed in the References section.

## Alluvial Grasslands



**REGIONAL ECOSYSTEMS:** 11.3.21 (endangered) and 11.3.24 (endangered)

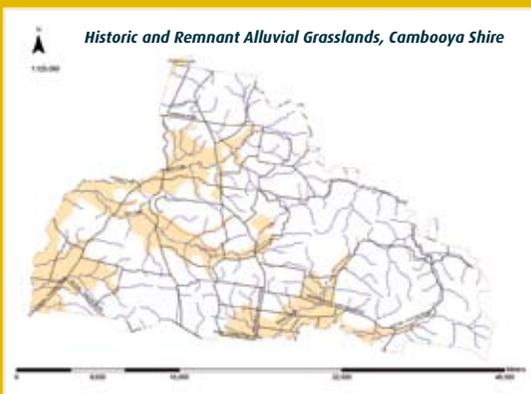
**DESCRIPTION:** Grasslands of *Dichanthium sericeum* and/or *Astrebla spp.* on Cainozoic alluvial plains and *Themeda avenacea* grassland on Cainozoic alluvial plains. *Themeda avenacea* tends to grow on hummocks and *Eleocharis pallens* in hollows.

**SPECIAL VALUES:** Habitat for rare and threatened flora species including *Thesium australe*, *Picris evae*, and *Stemmacantha australis*.

**THREATS:** Extensively utilized for cropping and pasture.

**FAUNA:** Habitat for Three-toed worm skink, Golden-Headed cristicola, Dunnarts, Red Naped snake and many others.

**COMMENTS:** Alluvial grasslands once covered almost ¼ of the shire and have been reduced to 0.15% of this (~13 000ha down to ~16 ha).



Richard and Jayne Thorpe 2005 Regional Ecosystem Data from Queensland Herbarium 2000



### *Dichanthium sericeum*

**FAMILY:** POACEAE

**COMMON NAME:** Qld. Blue Grass

**HEIGHT:** 0.8m

**WIDTH:** 0.5m

**FORM:** Tussock grass.

**FLOWERS:** Seedhead, 4-7cm.

**SEASONS:** Sep – Feb.

**CURRENT USES:** Waterways; Highly valued native pasture, crude protein 2-11%.

**HABITAT:** Birds; seed & shelter.

**FOLIAGE:** Pale blue-green.

**CONSERVATION STATUS:** Dominant species of the endangered grassland ecosystem 11.3.21.



### *Themeda avenacea*

**FAMILY:** POACEAE

**COMMON NAME:** Tall Oats Grass

**HEIGHT:** 2m

**FORM:** Tall tussock grass.

**SEASONS:** Sep – Feb.

**CURRENT USES:** Waterways, Native Pastures, Roadside verges.

**HABITAT:** Large seeds eaten – Birds and small Mammals.

**CONSERVATION STATUS:** Dominant species of the endangered grassland ecosystem 11.3.24.



### *Stemmacantha australis*

**FAMILY:** ASTERACEAE

**COMMON NAME:** Australian Cornflower

**HEIGHT:** 70cm

**WIDTH:** 30cm

**FORM:** Perennial Herb.

**FLOWERS:** Purple – pink.

**SEASONS:** Sep – Jan.

**CURRENT USES:** Protected plant.

**CONSERVATION STATUS:** Vulnerable plant (State and National) threatened by inappropriate fire regimes and grazing pressure, also found on stony soils in open grassy woodlands.





### *Picris evae*

**FAMILY:** ASTERACEAE  
**COMMON NAME:** Hawkweed

**HEIGHT:** 80 – 120cm.  
**FORM:** Annual Herb.  
**FLOWERS:** Yellow Daisy.  
**SEASONS:** Sep – Feb.  
**CURRENT USES:** Protected plant.  
**CONSERVATION STATUS:** Vulnerable plant (State and National), often found with *Stemmacantha australis* in grassy open woodlands.



### *Leiocarpa brevicompta*

**FAMILY:** ASTERACEAE  
**COMMON NAME:** Ixiolaena

**HEIGHT:** Prostrate plant – 30cm.  
**WIDTH:** 0.5 -1m.  
**FORM:** Perennial Herb.  
**FLOWERS:** Yellow, 1.5 - 2.5cm across, flower-heads have a relatively flat base.  
**SEASONS:** Aug – Nov.  
**FOLIAGE:** Woolly and Aromatic.  
**CURRENT USES:** Rockery, Native garden Ornamental.



### *Pimelea linifolia* subsp. *linifolia*

**FAMILY:** THYMELAEACEAE  
**COMMON NAME:** Slender Rice Flower

**HEIGHT:** 1m  
**WIDTH:** 1m  
**FORM:** Semi-prostrate Shrub.  
**FLOWERS:** White, in terminal clusters.  
**SEASONS:** All year-round.  
**ABORIGINAL USES:** Bark fibres used to make netting for Bogong Moth harvest.  
**CURRENT USES:** Rockery, Native garden Ornamental.



### *Schoenoplectus litoralis*

**FAMILY:** CYPERACEAE  
**COMMON NAME:** River Club-rush

**HEIGHT:** 1.5 - 2.5m  
**WIDTH:** 1.5 - 3m  
**FORM:** Perennial, Spreading, Clumping plant.  
**FLOWERS:** Chocolate-brown heads, Inflorescence - up to 8cm diam.  
**SEASONS:** Dec – May.  
**ABORIGINAL USES:** Tubers were roasted, pounded and eaten.  
**CURRENT USES:** Stabilise lower creek banks and lagoons.  
**HABITAT:** Waterbirds, nesting, shelter.



### *Eleocharis pallens*

**FAMILY:** CYPERACEAE  
**COMMON NAME:** Common Spike-rush

**HEIGHT:** 30 – 90 cm  
**FORM:** Perennial Clump.  
**FLOWERS:** Dark brown Spike, 1.5 -3cm long, 0.3 -0.7cm diam.  
**SEASONS:** Sep – May.  
**ABORIGINAL USES:** Tubers eaten raw or cooked and ground into cakes.  
**CURRENT USES:** Erosion control to stabilise lower creek banks.  
**HABITAT:** Waterbirds, Fish Refuge.



### *Indigofera linifolia*

**FAMILY:** FABACEAE  
**COMMON NAME:** Native Indigo

**HEIGHT:** 10cm  
**WIDTH:** 40cm  
**FORM:** Prostrate mat- forming Herb.  
**FLOWERS:** Small Red-Pink, pea flowers.  
**SEASONS:** Year Round.  
**ABORIGINAL USES:** Used as fish poison to stun fish in waterholes.  
**CURRENT USES:** Rockery, Native garden Ornamental; Palatable to sheep.

## Mountain Coolibah Woodlands

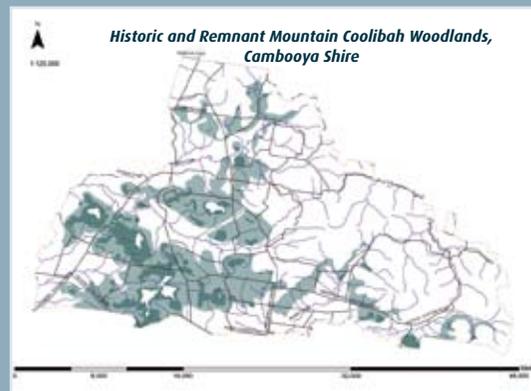


**REGIONAL ECOSYSTEM:** 11.8.5

**DESCRIPTION:** *Eucalyptus organophila* with *Corymbia erythrophloia* +/- *E. melanophloia* +/- *E. crebra* +/- *E. melliodora* grassy open woodland on Cainozoic igneous rocks. Undulating plains or low hills with clay soils.

**SPECIAL VALUES:** In southern part of bioregion, habitat for a number of rare and threatened flora species including *Bothriochloa biloba*, *Digitaria porrecta*, *Discaria pubescens*, *Indigofera baileyi*, *Picris evae*, *Stemmacantha australis* and *Thesium australe*.

**COMMENTS:** Extensively thinned, cleared or cultivated in many areas. Subject to weed invasion by *Opuntia stricta*, *Opuntia tomentosa* and *Lantana camara*.



Richard and Jayne Thorpe 2005 Regional Ecosystem Data from Queensland Herbarium 2000



### *Eucalyptus organophila*

**FAMILY:** MYRTACEAE

**COMMON NAME:** Mountain Coolibah

**HEIGHT:** 25m

**WIDTH:** 7 -15m

**FORM:** Medium, spreading Tree.

**FLOWERS:** Cream.

**SEASONS:** Mar – Aug.

**ABORIGINAL USES:** Food, medicine and utensils.

**CURRENT USES:** Shade; Windbreak; Erosion control; Timber durable, resistant to termites.

**HABITAT:** Medium source of honey, major source of pollen for bees. Leaves eaten by Koalas; Nesting for Galahs and Magpies.



### *Corymbia erythrophloia*

**FAMILY:** MYRTACEAE

**COMMON NAME:** Gum-topped Bloodwood

**HEIGHT:** 15m

**WIDTH:** 5 - 12m

**FORM:** Medium, large-crowned Tree.

**FLOWERS:** Large White, nectar-filled.

**SEASONS:** Sep – Feb.

**CURRENT USES:** Structural timber and fire-wood; Native gardens.

**HABITAT:** Flowers eaten by Rainbow and Scaly-breasted Lorikeets; Seeds eaten by Black Cockatoos and Pale-headed Rosellas; Leaves eaten by koalas; Medium source of honey and pollen for bees.



### *Eucalyptus melanophloia*

**FAMILY:** MYRTACEAE

**COMMON NAME:** Silver-leaved Ironbark

**HEIGHT:** 10 - 20m

**WIDTH:** 5 -10m

**FORM:** Medium Tree.

**FLOWERS:** White, in clusters -1.5cm diam.

**SEASONS:** Sep – Feb.

**FOLIAGE:** Silvery Blue; Slow growth.

**ABORIGINAL USES:** Aboriginal food, medicine and utensils.

**CURRENT USES:** Fence posts; Erosion control. Shade and Shelter tree;

**HABITAT:** Flowers eaten by Qld Blossom Bat; Leaves eaten by caterpillar of the Emerald Hairstreak Butterfly; Source of pollen and honey for bees.



### *Brachychiton populneus*

**FAMILY:** STERCULIACEAE  
**COMMON NAME:** Kurrajong

**HEIGHT:** 6 - 20m **WIDTH:** 3 - 6m  
**FORM:** Shrub - Tree.  
**FLOWERS:** 1 - 2cm long, - 5cm across. Cream Bell-shaped with Red flecks.  
**SEASONS:** Sep - Feb.  
**FOLIAGE:** Deciduous before flowering, New growth pink.  
**CURRENT USES:** Street tree; Windbreaks; Fire retarder, Shade and Fodder.  
**ABORIGINAL USES:** Seeds & Tuberous Roots edible; String and rope made from inner bark fibre; Firesticks and shields made from wood.



### *Alphitonia excelsa*

**FAMILY:** RHAMNACEAE  
**COMMON NAME:** Soap Tree

**HEIGHT:** 2 - 10m  
**FORM:** Small Tree.  
**FLOWERS:** Cream, in panicles.  
**SEASONS:** Feb - June.  
**ABORIGINAL USES:** Medicine; Leaves used to catch fish or crushed, soaked in water to make a hand wash.  
**CURRENT USES:** Palatable to stock; Erosion control; Timber suitable for ornamental craftwork.  
**HABITAT:** Leaves eaten by caterpillars of Small Green-banded Blue Butterfly; Source of pollen and nectar for bees.



### *Pittosporum phylliraeoides*

**FAMILY:** PITTOSPORACEAE  
**COMMON NAME:** MeeMee/Cattle Bush

**HEIGHT:** 3 - 15m  
**WIDTH:** 1.5 - 6m  
**FORM:** Weeping Shrub - Tree  
**FLOWERS:** Yellow, Star - 1.2cm diam. Pleasant aroma.  
**SEASONS:** June - Nov.  
**ABORIGINAL USES:** Seeds, Leaves and wood used to treat colds, cramps, sprains, eczema and itching.  
**CURRENT USES:** Ornamental; Shade; Attractive Orange berries, Palatable to stock.  
**HABITAT:** Butterflies and Birds - Nectar.



### *Canthium buxifolium*

**FAMILY:** RUBIACEAE  
**COMMON NAME:** Sweet Canthium.

**HEIGHT:** 5 - 8m.  
**FORM:** Shrub to small Tree, with distinctive Horizontal branches.  
**FLOWERS:** White, in panicles, Highly Perfumed.  
**SEASONS:** Nov - Feb.  
**FRUITS:** Black, shiny Drupe.  
**SEASONS:** Apr - Nov.  
**CURRENT USES:** Ornamental shrub for dry or stony native gardens.  
**HABITAT:** Birds - Nectar and seeds.



### *Geijera salicifolia var. salicifolia*

**FAMILY:** RUTACEAE  
**COMMON NAME:** Wilga

**HEIGHT:** 10 -25m  
**WIDTH:** 6 - 15m  
**FORM:** Broad Tree.  
**FLOWERS:** White, in panicles.  
**SEASONS:** Sep - Nov.  
**CURRENT USES:** Timber for fishing rods, flooring, bows & mallets. Drought resistant shade tree.  
**HABITAT:** Nesting and seeds eaten by Brush-turkeys, Crows, Ravens, Galahs, Crested Pigeon and Common Bronzewing; Pollen source for bees.



### *Xanthorrhoea glauca*

**FAMILY:** XANTHORRHOEACEAE  
**COMMON NAME:** Grasstree

**HEIGHT:** 5m  
**FORM:** Grasstree  
**FLOWERS:** Large woody spikes of Cream, nectar-filled flowers.  
**SEASONS:** June - Nov.  
**ABORIGINAL USES:** Growing point and leaf bases eaten; flowers soaked to collect nectar; edible grubs found in the trunk; gum used as glue; flower stalks used as firesticks and light fishing spear shafts.  
**HABITAT:** Flowers visited by nectar seeking birds and small mammals.  
**CONSERVATION STATUS:** Protected plant.  
**CURRENT USES:** Ornamental Plant.



### *Alyxia ruscifolia*

**FAMILY:** APOCYNACEAE  
**COMMON NAME:** Chain Fruit

**HEIGHT:** 2 - 4m

**FORM:** Shrub.

**FLOWERS:** White, sweetly perfumed.

**FRUITS:** Orange - Scarlet Berry, often in chain of up to 4 berries.

**SEASONS:** June - Dec.

**CURRENT USES:** Garden Ornamental, Revegetation, understorey shrub replacement for lantana.

**HABITAT:** Nesting and Shelter for small birds - Superb, Variegated and Red-backed Fairy Wrens.



### *Gahnia aspera*

**FAMILY:** CYPERACEAE  
**COMMON NAME:** Saw Sedge

**HEIGHT:** 40 - 80cm

**WIDTH:** 60cm

**FORM:** Tufted grass-like Sedge.

**FLOWERS:** Spike, 10 - 25cm long.

**FRUIT:** Dark Reddish-Brown Nut.

**SEASONS:** Sporadic, All Year.

**ABORIGINAL USES:** Food - Leaf bases edible; Nuts pounded into flour.

**CURRENT USES:** Revegetation and Native garden ornamental.

**HABITAT:** Seeds eaten - Pied Currawong, Brown Cuckoo-dove. Shelter for small mammals and reptiles; Leaves eaten - caterpillars of Flame and Varied Sedge-Skippers.



### *Cymbopogon refractus*

**FAMILY:** POACEAE  
**COMMON NAME:** Barbed Wire Grass

**HEIGHT:** 1 - 1.5m

**FORM:** Tussock Grass.

**FLOWERS:** Red-brown flower spikelets - resembles Barbed wire.

**SEASONS:** Sep - Feb.

**CURRENT USES:** Ornamental and Folk art. Palatable to stock when young.

**HABITAT:** Shelter - small mammals, frogs and birds, especially Brown and Stubble Quails; Seeds eaten by Pale-headed Rosellas.

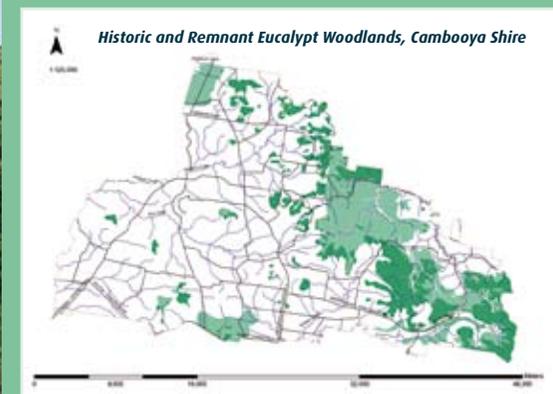
## Eucalypt Woodlands



**REGIONAL ECOSYSTEM:** 11.8.2, 11.8.8, 12.8.9 (Of concern), 12.8.14, 12.8.16, 12.8.17

**DESCRIPTION:** *Eucalyptus tereticornis*, *Eucalyptus albens*, *E. crebra* and *E. melliodora* +/- *E. saligna* +/- *E. longirostrata* +/- *Callitris baileyi*, *Lophostemon confertus*, *Eucalyptus eugenioides*, *E. melliodora*, *E. biturbinata*, *Allocasuarina torulosa* +/- *E. maluccana*, *E. melanophloia* +/- *E. erythrophloia*, *Corymbia tessellaris*, *C. clarksoniana*, grassy woodlands and open forests on Cainozoic igneous rocks.

**SPECIAL VALUES:** Habitat for rare and threatened flora species including *Plectranthus suaveolens*, *Sophora fraseri* and *Callitris baileyi*. Contains localised occurrences of *Eucalyptus laevopinea* and *E. banksii*.





### *Eucalyptus melliodora*

**FAMILY:** MYRTACEAE  
**COMMON NAME:** Yellow Box

**HEIGHT:** 10 - 30m  
**WIDTH:** 8 - 25m  
**FORM:** Medium Tree.  
**FLOWERS:** White or Cream, 1.5cm diam. in profuse clusters.  
**SEASONS:** Aug - Feb.  
**ABORIGINAL USES:** Food, medicine and utensils.  
**CURRENT USES:** Large, Shade and Shelter tree; Structural and Farm timber.  
**HABITAT:** Major source of honey and pollen for bees; Nectar seeking Birds - Rosellas and Lorikeets. Leaves eaten by Koalas.



### *Jacksonia scoparia*

**FAMILY:** FABACEAE  
**COMMON NAME:** Dogwood

**HEIGHT:** 2 - 5m  
**FORM:** Twiggy Shrub.  
**FLOWERS:** Orange-yellow pea flower.  
**SEASONS:** Aug - Oct.  
**ABORIGINAL USES:** Food - Gum and Flower Pollen.  
**HABITAT:** Leaves eaten by caterpillars of Fiery Jewel and Copper Pencilled Blue Butterflies. Minor honey and medium pollen source for bees.



### *Bursaria spinosa*

**FAMILY:** PITTOSPORACEAE  
**COMMON NAME:** Australian Blackthorn.

**HEIGHT:** 3 - 10m  
**WIDTH:** 1 - 5m  
**FORM:** Shrub - Tree.  
**FLOWERS:** White, Fragrant & Attractive, Star-shaped, 0.6 - 1cm diam.  
**SEASONS:** Sep - May.  
**ABORIGINAL USES:** Flowers soaked in water or sucked to collect nectar.  
**CURRENT USES:** Revegetation - Lantana replacement and floral art.  
**HABITAT:** Nectar eaten by Eastern Spinebill; Leaves eaten by caterpillars of Fiery Copper and Bright Copper butterflies.



### *Xanthorrhoea johnsonii*

**FAMILY:** XANTHORRHOACEAE  
**COMMON NAME:** Grass Tree

**HEIGHT:** 1 - 3m  
**FORM:** Single trunked Grass Tree.  
**FLOWERS:** White - Large flower spike;  
**SEASONS:** Apr - Dec.  
**ABORIGINAL USES:** Flowers soaked to collect nectar; Combined grubs and resin in trunk treated to form adhesive; Flower spikes woody, used as light fishing spears and rubbing sticks for making fire.  
**HABITAT:** Nectar seeking birds, insects and small mammals.  
**CONSERVATION STATUS:** Protected plant.  
**CURRENT USES:** Ornamental Plant.



### *Clerodendrum tomentosum*

**FAMILY:** VERBENACEAE  
**COMMON NAME:** Lolly Bush

**HEIGHT:** 2 - 10m  
**FORM:** Shrub or small Tree.  
**FLOWERS:** Tubular White, in clusters;  
**FRUITS:** Green, ripening to purple-black with large red fleshy calyx.  
**SEASONS:** Aug - Dec.  
**ABORIGINAL USES:** Leaves and inner bark used for medicine; Wood used as fire stick.  
**CURRENT USES:** Interesting Garden Ornamental with showy fruits.  
**HABITAT:** Leaves eaten by the caterpillar of the Fiery Jewel Butterfly.



### *Wahlenbergia gracilis*

**FAMILY:** CAMPANULACEAE  
**COMMON NAME:** Australian Bluebell

**HEIGHT:** 50cm  
**FORM:** Sprawling to tufted Herb.  
**FLOWERS:** Blue, 5 lobed  
**SEASONS:** Sep - May.  
**HISTORIC USES:** Flowers used to garnish salads; roots are edible raw.  
**CURRENT USES:** Ornamental, considered palatable to sheep.



### *Hardenbergia violacea*

**FAMILY:** FABACEAE  
**COMMON NAME:** Native Sarsaparilla

**HEIGHT:** 1 - 2m  
**WIDTH:** 1 - 2m  
**FORM:** Prostrate – Climber.  
**FLOWERS:** Purple, violet or white, pea flowers, up to 30 in racemes.  
**SEASONS:** Sep – Nov.  
**CURRENT USES:** Garden Ornamental.  
**HABITAT:** Nectar eaten by Eastern Spinebill; leaves eaten by caterpillar of the Common Grass-blue Butterfly.



### *Swainsona galegifolia*

**FAMILY:** FABACEAE  
**COMMON NAME:** Smooth Darling Pea

**HEIGHT:** 1m  
**WIDTH:** 1m  
**FORM:** Trailing legume, Shrub.  
**FLOWERS:** Red, Pink or Purple; Groups of 15 - 20 pea flowers in racemes.  
**SEASONS:** Sep – Feb.  
**CURRENT USES:** Hardy, low scrambling shrub for Native rockery gardens. Suitable for shallow or stony soils.  
**GRAZING NOTES/WARNING:** Darling pea poisoning can occur in stock that selectively graze this plant. Stock rotation of 2 weeks on, 4 weeks off is recommended for horses.



### *Themeda triandra*

**FAMILY:** POACEAE  
**COMMON NAME:** Kangaroo Grass

**HEIGHT:** -1m  
**WIDTH:** 50cm  
**FORM:** Tufted Perennial Grass.  
**FLOWERS:** Spikelets, Reddish-brown - resembles Kangaroo Paws.  
**SEASONS:** July – Feb.  
**CURRENT USES:** Ornamental grass, very palatable to stock when young. Native pastures, Fire resistant.  
**HABITAT:** Shelter for small mammals and Quails. Leaves eaten by Wallaby's and Grey Kangaroo.



### *Dianella longifolia*

**FAMILY:** PHORMIACEAE  
**COMMON NAME:** Blue Flax Lilly

**HEIGHT:** -1.5m  
**WIDTH:** -60cm  
**FORM:** Perennial, Tufted Lilly – Herb.  
**FLOWERS:** Blue, purple or lilac, with prominent yellow stamens.  
**SEASONS:** Sep – Feb.  
**CURRENT USES:** Garden ornamental.  
**ABORIGINAL USES:** Succulent Blue Berries eaten raw. Roots pounded and roasted. Leaves woven into baskets and dillybags.



### *Ajuga australis*

**FAMILY:** LAMIACEAE  
**COMMON NAME:** Australian Bugle

**HEIGHT:** 10 – 30cm  
**WIDTH:** 10 – 20cm  
**FORM:** Perennial Herb  
**FLOWERS:** Blue – Purple, 1 - 2cm long. Clusters of 6 - 20, in leafy spikes.  
**SEASONS:** Aug – Feb.  
**CURRENT USES:** Ornamental herb for Native rockery gardens. Suitable for shallow, calcareous soils.



### *Ranunculus lappaceus*

**FAMILY:** RANUNCULACEAE  
**COMMON NAME:** Common Buttercup

**HEIGHT:** 70cm  
**FORM:** Erect, perennial Herb.  
**FLOWERS:** Five-petalled open flowers, Golden Yellow.  
**SEASONS:** Sep – Feb.  
**CURRENT USES:** Creek plantings and damp areas.



**NOTES:** Considered poisonous to stock, but generally appears to be only unpalatable.

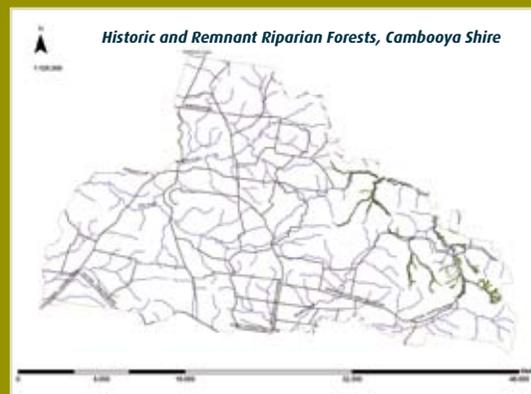
## Riparian Woodlands



**REGIONAL ECOSYSTEM:** 12.3.3 (Endangered), 12.3.7 and 12.3.9  
**DESCRIPTION:** *Eucalyptus tereticornis*, *Callistemon viminalis*, *Casuarina cunninghamiana* +/- *Waterhousea floribunda* and *Eucalyptus nobilis* open forest to woodland on Cainozoic alluvial plains. *Eucalyptus crebra*, *E. moluccana*, *Corymbia intermedia* and *Lomandra hystrix* sometimes present. Other species that may be present include *Angophora subvelutina* or *A. floribunda*, *Corymbia clarksoniana*, *C. tessellaris*, *Eucalyptus siderophloia*, *E. melanophloia*, *Lophostemon suaveolens*, *Melaleuca bracteata*, *M. linariifolia* var. *trichostachya* and *M. fluviatilis*.

**SPECIAL VALUES:** Habitat for rare and threatened flora species including *Stemmacantha australis*.

**COMMENTS:** While *Eucalyptus tereticornis* remains common in the landscape, very few intact stands remain. *Eucalyptus tereticornis* grows into a very large hollow-forming tree and has a special significance for fauna species, especially in drier areas. The type is variable, ranging from woodland in drier parts to tall open forest in higher rainfall areas and monospecific to intermixed with other canopy species. *Eucalyptus tereticornis* will regenerate readily but there is a lack of recruitment to replace old trees in stands that are logged, thinned or grazed and regularly burnt. The grasses and herbs associated with intact *Eucalyptus tereticornis* communities also persist in the landscape, so there is a potential for re-establishing the RE and increasing its remnant area. *Eucalyptus tereticornis* is replaced by *E. grandis* in highest-rainfall parts of the bioregion. *Eucalyptus nobilis* is endemic to northern tablelands of New South Wales and adjacent high country of southern Queensland.



Richard and Jayne Thorpe 2005 Regional Ecosystem Data from Queensland Herbarium 2000



### *Eucalyptus tereticornis*

**FAMILY:** MYRTACEAE  
**COMMON NAME:** Forest Red Gum

**HEIGHT:** 15 - 25m  
**WIDTH:** 10 - 20m  
**FORM:** Medium - Large woodland Tree  
**FLOWERS:** White, 1.5cm diam.  
 In Profuse Clusters.  
**SEASONS:** June - Nov.  
**ABORIGINAL USES:** Collected nectar to drink; timber used for firewood, shields and utensils.  
**CURRENT USES:** Windbreak, Shade tree.  
**HABITAT:** Diverse and important, refer to "Hollow Havens" section on page 15.



### *Angophora floribunda*

**FAMILY:** MYRTACEAE  
**COMMON NAME:** Rough-barked Apple

**HEIGHT:** 10 - 20m  
**WIDTH:** 6 - 12m  
**FORM:** Tree  
**FLOWERS:** White-cream, in clusters, <5cm long, 2.5cm diam.  
**SEASONS:** Aug - Nov.  
**CURRENT USES:** Shade and Shelter tree; Erosion control.  
**HABITAT:** Birds harvest beetles and larvae from the bark, especially Butcher Birds and Grey Crowned Babblers; Major source of pollen and nectar for bees.



### *Casuarina cunninghamiana*

**FAMILY:** CASUARINACEAE  
**COMMON NAME:** River She-Oak

**HEIGHT:** 10 - 30m  
**WIDTH:** 10 - 12m  
**FORM:** Tree  
**FLOWERS:** Red; Trees are either Male or Female (Dioecious).  
 Cones small - 1cm across.  
**SEASONS:** Mar - Aug.  
**CURRENT USES:** Windbreak; Shelter; Erosion control and revegetation.  
**HABITAT:** Bird nesting & seeds - important food source for Black Cockatoos. Pollen - bees.





### *Melaleuca bracteata*

**FAMILY:** MYRTACEAE  
**COMMON NAME:** River Tea Tree

**HEIGHT:** 2 - 15m  
**WIDTH:** 1.5 - 4m  
**FORM:** Dense, Compact Shrub - Tree.  
**FLOWERS:** Creamy-white, 1.5cm diam.  
Bottlebrush spike, 2 - 6cm long.  
**SEASONS:** Sept - Nov.  
**CURRENT USES:** Ornamental Hedge, Windbreak or Screen  
**HABITAT:** Birds - seed and nesting;  
Medium source of pollen for bees.



### *Callistemon viminalis*

**FAMILY:** MYRTACEAE  
**COMMON NAME:** Weeping Bottlebrush

**HEIGHT:** 1 - 12m  
**WIDTH:** 1.5 - 5m  
**FORM:** Weeping Shrub - Tree.  
**FLOWERS:** Red Bottlebrush, 3-6cm diam.  
5 - 20cm long.  
**SEASONS:** Sep - Apr.  
**ABORIGINAL USES:** Flowers sucked for nectar or infused in water.  
**CURRENT USES:** Ornamental; Shade and shelter; Windbreak and  
Erosion control; Creek revegetation.  
**HABITAT:** Birds feed on nectar; provides pollen for bees.



### *Exocarpos cupressiformis*

**FAMILY:** SANTALACEAE  
**COMMON NAME:** Native Cherry

**HEIGHT:** 4 - 8m  
**WIDTH:** 3 - 6m  
**FORM:** Upright, Weeping Shrub - Tree,  
Root parasite.  
**FLOWERS:** Tiny, creamy-green, in short  
racemes.  
**SEASONS:** Oct - May.  
**FRUITS:** Red berry with external nut.  
**ABORIGINAL USES:** Ripe fruits eaten, Sweet and palatable.  
**HABITAT:** Fruits - Wonga Pigeon, King Parrot, Pheasant Coucal  
and other birds; Leaves - caterpillars of Spotted Jezebel and  
Fiery Jewel Butterflies.



### *Acacia salicina*

**FAMILY:** MIMOSACEAE  
**COMMON NAME:** Sally Wattle

**HEIGHT:** 3 - 10m  
**WIDTH:** 3 - 5m  
**FORM:** Weeping Shrub - Tree.  
**FLOWERS:** Pale - Yellow, ball (heads).  
**SEASONS:** Apr - Sep, also sporadic.  
**ABORIGINAL USES:** Pale gum eaten and  
seeds roasted; timber used for weapons,  
boomerangs and utensils; bark used to stun fish.  
**CURRENT USES:** Revegetation pioneer species,  
shade and shelter.  
**HABITAT:** Birds - nesting and seeds.



### *Acacia maidenii*

**FAMILY:** MIMOSACEAE  
**COMMON NAME:** Maiden's Wattle

**HEIGHT:** 4 - 12m  
**WIDTH:** 3 - 5m  
**FORM:** Shrub - Tree.  
**FLOWERS:** Yellow, spike - 6cm long.  
**SEASONS:** Jan - May.  
**ABORIGINAL USES:** Pale Gum and Galls  
(*Uromycladium sp.*) eaten; Seeds roasted.  
**CURRENT USES:** Shade, shelter and windbreak  
tree; Erosion and effluent disposal control.  
**HABITAT:** Birds - nesting and seeds,  
Foraging, Grey-crowned Babblers.



### *Hovea lanceolata*

**FAMILY:** FABACEAE  
**COMMON NAME:** Hovea

**HEIGHT:** 1 - 2.5m  
**WIDTH:** 1 - 2m  
**FORM:** Upright Shrub.  
**FLOWERS:** Blue - Purple, 0.8cm diam.  
**SEASONS:** Aug - Oct.  
**ABORIGINAL USES:** Food - Young seed pods  
are eaten fresh.  
**CURRENT USES:** Native gardens, showy  
flowers - although short lived, 6 - 10 years.  
**HABITAT:** Pioneer species - regenerates  
from seed in response to fire.





### *Lomandra longifolia*

**FAMILY:** XANTHORRHOACEAE  
**COMMON NAME:** Spiny-headed Mat-rush

**HEIGHT:** 0.5 - 1m

**WIDTH:** 0.5 - 1m

**FORM:** Tufted grass-like Clump, Herb.

**FLOWERS:** Creamy Yellow, heavily scented 0.3 - 0.45cm long.

**SEASONS:** June - Nov.

**ABORIGINAL USES:** Food - Leaf bases and seeds eaten; Leaves split into strips, woven into dilly bags & mats.

**CURRENT USES:** Landslips and Erosion control; Creek bank rehabilitation, Landscape and garden ornamental.

**HABITAT:** Birds - nesting and seeds.



### *Eustrephus latifolius*

**FAMILY:** PHILESIACEAE  
**COMMON NAME:** Wombat Berry

**HEIGHT:** 1 - 2m

**WIDTH:** 1 - 2m

**FORM:** Climber, Ground creeper.

**FLOWERS:** Pink or White, 1.5cm diam.

**FRUITS:** Orange berry, seeds black.

**SEASONS:** Sept - Nov.

**ABORIGINAL USES:** Pulp of fruit and swollen roots eaten.

**HABITAT:** Birds - Fruits and seeds eaten.



### *Crinum flaccidum*

**FAMILY:** AMARYLLIDACEAE  
**COMMON NAME:** Murray Lilly

**HEIGHT:** 0.5 - 1m

**WIDTH:** 30 - 50cm

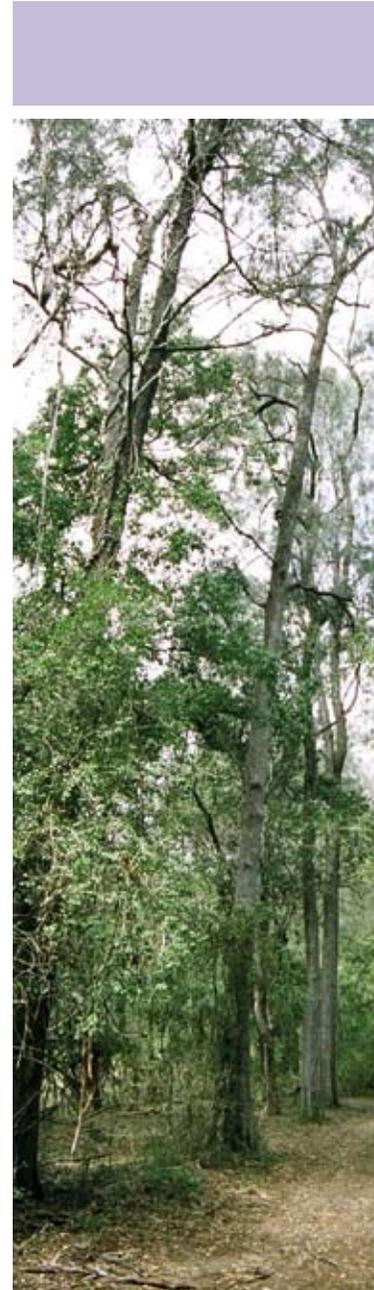
**FORM:** Perennial bulb, Herb.

**FLOWERS:** White, with yellow anthers.

**SEASONS:** Sept - Feb.

**ABORIGINAL USES:** Bulbs eaten; liquid made from crushed soaked bulb, used to clean wounds. Sheets of material peeled from roots and used as wound dressing.

**CURRENT USES:** Ornamental, Aromatic, Soakage areas, Native gardens.



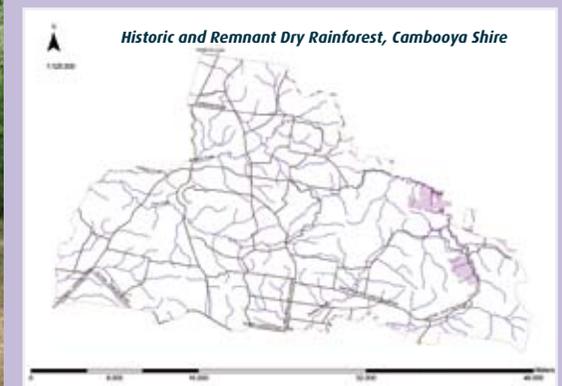
## Dry Rainforest

**REGIONAL ECOSYSTEM:** 12.8.21 (Endangered) and 12.9-10.15 (Endangered)

**DESCRIPTION:** Low microphyll rainforest and semi-evergreen vine thicket +/- *Araucaria cunninghamii* on Cainozoic igneous rocks, especially basalt and lateritised basalt. Characteristic species include *Brachychiton rupestris*, *Flindersia collina*, *F. australis*, *Alectryon diversifolius*, *A. subdentatus*, *Elattostachys xylocarpa*, *Erythroxylum australe*, *Canthium buxifolium*, *Diospyros geminata*, *Planchonella cotinifolia*, *Croton insularis*, *Briedelia exaltata*, and *Bursaria incana*.

*Melaleuca bracteata* is often present along watercourses.

**SPECIAL VALUES:** Habitat for rare and threatened flora species including *Callitris baileyi* and *Cryptocarya floydii*.

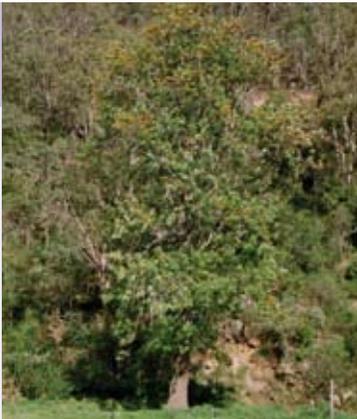




### *Brachychiton discolor*

FAMILY: STERCULIACEAE  
COMMON NAME: Lacebark

**HEIGHT:** 10 - 30m  
**WIDTH:** 5 - 15m  
**FORM:** Medium Tree, Deciduous.  
**FLOWERS:** Pink, Bell-shaped, 3 - 4 cm across.  
**SEASONS:** Nov - Feb.  
**ABORIGINAL USES:** Seeds roasted & eaten.  
**CURRENT USES:** Ornamental, street tree, shade and shelter.  
**HABITAT:** Seeds eaten by Regent and Satin Bower Birds, Paradise Rifle Birds; Leaves eaten by caterpillars of the Tailed Emperor and White-banded Plane Butterfly.



### *Grevillea robusta*

FAMILY: PROTEACEAE  
COMMON NAME: Silky Oak

**HEIGHT:** 8 - 20m  
**WIDTH:** 5 - 14m  
**FORM:** Upright Tree  
**FLOWERS:** Golden - Orange Brush, 10 - 15cm long.  
**SEASONS:** Sep - Feb.  
**ABORIGINAL USES:** Flowers sucked for nectar or infused in water.  
**CURRENT USES:** Ornamental shade tree for large gardens; Structural and cabinet timber.  
**HABITAT:** Nectar - Birds, possums and Flying foxes.



### *Elattostachys xylocarpa*

FAMILY: SAPINDACEAE  
COMMON NAME: White Tamarind

**HEIGHT:** 7 - 25m  
**FORM:** Medium Tree.  
**FLOWERS:** White, small racemes.  
**FRUITS:** Yellow, woody capsule.  
**SEASONS:** Dec - May.  
**CURRENT USES:** Native garden ornamental, Dry rainforest shade tree.  
**HABITAT:** Birds - seeds eaten.



### *Rhodospaera rhodantha*

FAMILY: ANACARDIACEAE  
COMMON NAME: Tulip Satinwood

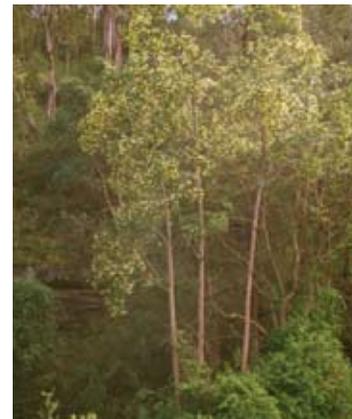
**HEIGHT:** 10 - 20m  
**WIDTH:** 5m  
**FORM:** Medium Tree.  
**FLOWERS:** Dark Pink, terminal sprays.  
**SEASONS:** Sep - May.  
**CURRENT USES:** Attractive Shade and Shelter tree; Hardy pioneer species for native gardens. Cabinet timber and fancy inlays; Dark brown panicles of dry fruit, used for ornamental floral arrangements.  
**HABITAT:** Birds - nectar.



### *Melia adzederach*

FAMILY: MELIACEAE  
COMMON NAME: White Cedar

**HEIGHT:** 8 - 10m  
**WIDTH:** 5 - 7m  
**FORM:** Spreading Tree.  
**FLOWERS:** Mauve, terminal sprays.  
**SEASONS:** Sep - Nov.  
**ABORIGINAL USES:** Bark used as fish stun poison, fruits poisonous.  
**CURRENT USES:** Ornamental Shade and Shelter tree; Cabinet timber.  
**HABITAT:** Yellow Drupes (fruits) attract some birds and possums.



### *Hymenosporum flavum*

FAMILY: PITTOSPORACEAE  
COMMON NAME: Native Frangipani

**HEIGHT:** 4 - 15m  
**WIDTH:** 3 - 7m  
**FORM:** Shrub - Tree.  
**FLOWERS:** Yellow or Cream - 3cm long, in loose panicles, pleasant aroma.  
**SEASONS:** Sep - Nov.  
**CURRENT USES:** Ornamental street and shade tree; Attractive, scented tree for large gardens.  
**HABITAT:** Seeds - Wonga Pigeon and other Birds generally.





### *Heterodendrum diversifolium*

**FAMILY:** SAPINDACEAE  
**COMMON NAME:** Scrub Boonaree

**HEIGHT:** 4m  
**WIDTH:** 4m  
**FORM:** Sparse Shrub  
**FLOWERS:** Yellow – Orange, very small axillary clusters along branches.  
**SEASONS:** Sep – May.  
**CURRENT USES:** Revegetation understorey shrub, dry vine scrub.  
**HABITAT:** Birds – nesting and seeds.



### *Callitris baileyi*

**FAMILY:** CUPRESSACEAE  
**COMMON NAME:** White Cypress Pine

**HEIGHT:** 8 - 15m  
**WIDTH:** 3 - 5m  
**FORM:** Slender Tree.  
**FEMALE CONES:** Solitary and terminal, 1 - 1.3cm diam. - splitting into 6, alternate shaped scales, prominent dorsal point below scale apex.  
**CONSERVATION STATUS:** Rare.  
**HISTORIC USES:** Construction timber.  
**CURRENT USES:** Garden Ornamental  
**HABITAT:** Birds - nesting and seeds.



### *Toona australis*

**FAMILY:** MELIACEAE  
**COMMON NAME:** Red Cedar

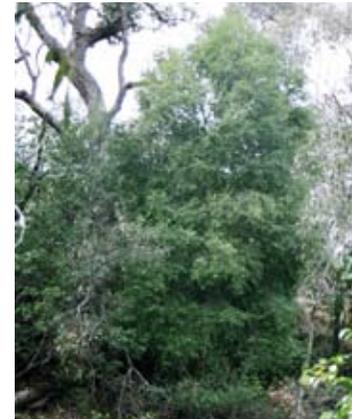
**HEIGHT:** 15 - 35m  
**WIDTH:** 8 - 10m  
**FORM:** Large Tree, Deciduous.  
**FLOWERS:** White - Pink, in large panicles.  
**SEASONS:** Oct – Nov.  
**HISTORIC USES:** Heavily logged, Cabinet timber .  
**CURRENT USES:** Ornamental, fast growing shade Tree. Highly prized - valuable cabinet, turning and inlay timber.  
**HABITAT:** Leaves and stems eaten by larvae of the Cedar Tip Moth.



### *Carrissa ovata*

**FAMILY:** APOCYNACEAE  
**COMMON NAME:** Currant Bush

**HEIGHT:** 3m  
**WIDTH:** 3m  
**FORM:** Shrub - spiny, scrambling.  
**FLOWERS:** White with 5 petals, perfumed.  
**SEASONS:** Jan – Feb.  
**FRUITS:** Purplish-black Berry.  
**SEASONS:** Apr – May.  
**ABORIGINAL USES:** Fruits eaten raw.  
**HABITAT:** Regent and Satin Bowerbirds eat the fruits; Caterpillar of the Common Crow Butterfly feeds on the leaves.



### *Elaeodendron australe var. australe*

**FAMILY:** CELASTRACEAE  
**COMMON NAME:** Red Olive Plum

**HEIGHT:** 8m  
**WIDTH:** 2m  
**FORM:** Small Tree.  
**FLOWERS:** Pale green, 4 petals.  
**SEASONS:** Aug – Nov.  
**FRUITS:** Orange-red drupe.  
**SEASONS:** Mar - July.  
**ABORIGINAL USES:** Edible fruits.  
**CURRENT USES:** Ornamental female trees for small native gardens.  
Upland creek-bank revegetation.



### *Capparis sarmentosa*

**FAMILY:** CAPPARACEAE  
**COMMON NAME:** Wild Orange

**HEIGHT:** 3 - 10m  
**WIDTH:** 5 - 10m  
**FORM:** Dense, wiry scrambler developing into a Shrub – Tree.  
**FLOWERS:** White, long showy stamens.  
**SEASONS:** Dec – Jan.  
**FRUITS:** Dark Green globular berry, 4 – 7cm across.  
**SEASONS:** Dec – Mar.  
**ABORIGINAL USES:** Edible fruit pulp.  
**HABITAT:** Leaves eaten by caterpillars of the Caper White Butterfly.



## Mixed Open Forest

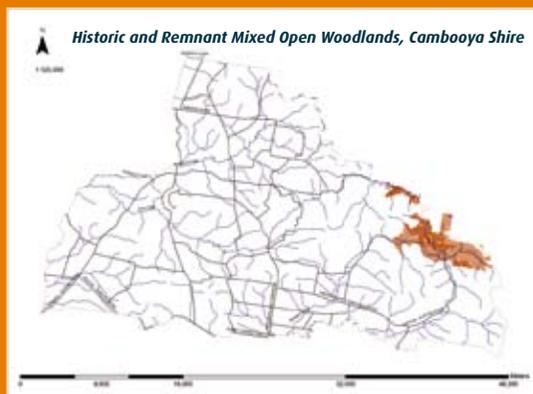


**REGIONAL ECOSYSTEMS:** 12.9-10.3 (Of Concern), 12.9-10.5, 12.9-10.6 (Endangered), 12.9-10.7 (Of Concern), 12.9-10.18, 12.9-10.19

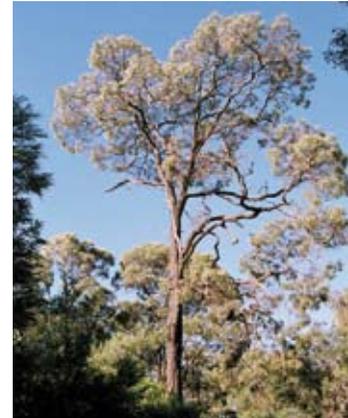
**DESCRIPTION:** *Eucalyptus moluccana* +/- *Corymbia citriodora* open forest; *Acacia harpophylla* open forest +/- *Casuarina cristata*; *Eucalyptus crebra*, *E. fibrosa* subsp. *fibrosa*, *E. acmenoides*, *Angophora leiocarpa*, *E. major*, *E. henryi*, *E. tereticornis* +/- *Corymbia tessellaris*, *Angophora* spp., *E. melanophloia* woodland on Cainozoic to Proterozoic sediments. Other species include *Eucalyptus siderophloia*, *E. tereticornis*, *Corymbia trachyphloia*. Understorey generally sparse but can become shrubby in absence of fire.

**COMMENTS:** Extensively cleared or thinned for grazing.

**SPECIAL VALUES:** Habitat for rare and threatened flora species including *Eucalyptus curtisii*, *E. melanoleuca*, *Leucopogon recurvisepalus*, *Paspalidium grandispiculatum*, *Phebalium obtusifolium* and *Grevillea singuliflora*.



Richard and Jayne Thorpe 2005 Regional Ecosystem Data from Queensland Herbarium 2000



### *Acacia harpophylla*

**FAMILY:** Mimosaceae  
**COMMON NAME:** Brigalow

**HEIGHT:** 25m

**FORM:** Medium Tree.

**FLOWERS:** Yellow, ball (heads) in racemes.

**SEASONS:** July – Dec.

**ABORIGINAL USES:** Gum and treated seeds eaten.

**CURRENT USES:** Windbreak and Shade tree; Fodder and Firewood; Timber used for fence posts.

**HABITAT:** Leaves eaten by larvae of the Pale Imperial Blue and the Icifilius Blue Butterflies.



### *Casuarina cristata*

**FAMILY:** Casuarinaceae  
**COMMON NAME:** Belah

**HEIGHT:** 20m

**WIDTH:** 6m

**FORM:** Tall Tree.

**FLOWERS:** Yellow, 1 - 3cm long.

**FEMALE CONES:** 1 - 1.8 x 1 - 1.7cm, Valves exerted – ovate.

**SEASONS:** Sep – Feb.

**CURRENT USES:** Windbreaks, Shelter, Erosion control, Drought Fodder; Fence posts & rough stockyards.

**HABITAT:** Seeds – Rosellas & Cockatoos, Nesting and shelter.



### *Flindersia collina*

**FAMILY:** Rutaceae  
**COMMON NAME:** Leopard Ash

**HEIGHT:** 20 - 30m

**WIDTH:** 5 - 10m

**FORM:** Medium - Tall Tree

**FLOWERS:** White, in large panicles – 17cm  
Seeds winged on both ends.

**SEASONS:** Sep – Nov.

**CURRENT USES:** Ornamental, Shade or Street tree; Cabinet timber, Flooring and Pick handles; Fruit capsules woody, used in folk art.

**HABITAT:** Leaves eaten by caterpillars of Orchard Swallowtail Butterfly.





### *Flindersia australis*

**FAMILY:** Rutaceae  
**COMMON NAME:** Crows Ash

**HEIGHT:** 20 - 40m **WIDTH:** 5 - 15m  
**FORM:** Medium - Large Tree  
**FLOWERS:** White-cream, panicles - 15cm. Seeds winged at apical end only.  
**SEASONS:** Sept - Feb.  
**CURRENT USES:** Ornamental, Shade & Street tree; Windbreaks & Shelter; Highly durable timber, Dance Flooring, Ship & Coach building. Woody capsules used in folk art.  
**HABITAT:** Seeds - Wonga Pigeon, White Cockatoos; Leaves - caterpillar of Orchard Swallowtail Butterfly.



### *Corymbia intermedia*

**FAMILY:** Myrtaceae  
**COMMON NAME:** Pink Bloodwood

**HEIGHT:** 10 - 25m  
**WIDTH:** 10m  
**FORM:** Spreading Tree.  
**FLOWERS:** White, in panicles.  
**SEASONS:** Dec - May.  
**ABORIGINAL USES:** Galls eaten and Gum (Kino) used as medicine.  
**CURRENT USES:** Structural timber.  
**HABITAT:** Leaves eaten by Koalas; Flowers eaten by Rainbow and Scaly-breasted Lorikeets, Grey-headed Flying Fox; Seeds eaten by Black Cockatoos and Pale-headed Rosellas; Source of pollen for bees.



### *Corymbia citriodora*

**FAMILY:** Myrtaceae  
**COMMON NAME:** Spotted Gum

**HEIGHT:** 15 - 30m **WIDTH:** 10 - 25m  
**FORM:** Open, Sparse Tree.  
**FLOWERS:** White - 2cm across.  
**SEASONS:** June - Nov.  
**CURRENT USES:** Structural timber; Landslips and Erosion control; Street tree.  
**HABITAT:** Flowers eaten by Yellow-bellied and Squirrel Gliders, Grey-headed Flying Fox, Scaly-breasted and Little Lorikeets, Noisy Friarbird, Brown and White-cheeked Honeyeaters; Seed eaten by Yellow-tailed Black Cockatoos and Pale-headed Rosella Leaves - Koalas, Brushtail Possum; Medium source of pollen and nectar for bees.



### *Eucalyptus crebra*

**FAMILY:** Myrtaceae  
**COMMON NAME:** Narrow-leaved Ironbark

**HEIGHT:** 20 - 35m  
**WIDTH:** 10 - 15m  
**FORM:** Tall Tree.  
**FLOWERS:** White, in racemes.  
**SEASONS:** Aug - Feb.  
**ABORIGINAL USES:** Food and Medicine. Utensils, spears and clubs.  
**CURRENT USES:** Farm and heavy structural timber, poles and railway sleepers.  
**HABITAT:** Flowers eaten by Little Lorikeet, Crimson Rosella, Noisy Friarbird; Leaves eaten by Koalas; Major source of pollen for bees.



### *Eucalyptus moluccana*

**FAMILY:** Myrtaceae  
**COMMON NAME:** Gum-topped Box

**HEIGHT:** 25 - 30m  
**FORM:** Tall Tree.  
**FLOWERS:** White, in racemes.  
**SEASONS:** Feb - May.  
**ABORIGINAL USES:** Food, Medicine, Utensils and Weapons.  
**CURRENT USES:** Shade and Shelter tree; Firewood and structural timber, Hard, durable, resistant to termites.  
**HABITAT:** Leaves eaten by koalas; Pollen and nectar source for bees.



### *Brachychiton rupestris*

**FAMILY:** Sterculiaceae  
**COMMON NAME:** Qld. Bottletree

**HEIGHT:** 10 - 20m  
**WIDTH:** 5 - 10m  
**FORM:** Tree, Bottle-shaped trunk.  
**FLOWERS:** Cream, blotched red inside, Bell-shaped and small.  
**SEASONS:** Sep - Feb.  
**ABORIGINAL USES:** Seeds eaten roasted; Tuberous roots contain water, swollen roots edible when young.  
**CURRENT USES:** Ornamental Street tree; Leaves fed to stock in drought.  
**HABITAT:** As for *Brachychiton populneus*.





### *Acacia pravifolia*

**FAMILY:** Mimosaceae  
**COMMON NAME:** Coil-pod Wattle

**HEIGHT:** 0.5 - 2m  
**FORM:** Low Shrub.  
**FLOWERS:** Bright Yellow, ball (heads).  
**SEASONS:** Sep – Nov.  
**FOLIAGE:** Phyllodes sessile and prickly.  
**ABORIGINAL USES:** Food and medicine.  
**CURRENT USES:** Native rockery gardens.  
Tolerates shallow sandy soils.  
**HABITAT:** Birds – seed and pollen source for Bees.



### *Acacia fimbriata*

**FAMILY:** Mimosaceae  
**COMMON NAME:** Fringed Wattle

**HEIGHT:** 4 - 6m  
**WIDTH:** 3 - 5m  
**FORM:** Shrub - Tree.  
**FLOWERS:** Lemon - Yellow, ball (heads).  
**SEASONS:** June – Nov.  
**ABORIGINAL USES:** Treated seeds and Gums eaten.  
**CURRENT USES:** Native garden ornamental Pioneer understory species for Revegetation and erosion control.  
**HABITAT:** Seeds eaten by King Parrot and Crimson Rosella;  
Leaves eaten by caterpillars of Imperial Hairstreak Butterfly;  
Source of pollen for bees.



### *Myoporum montanum*

**FAMILY:** Myoporaceae  
**COMMON NAME:** Western Boobialla

**HEIGHT:** 1 - 4m  
**WIDTH:** 1 - 3m  
**FORM:** Upright, Spreading Shrub.  
**FLOWERS:** White, Bell with purplish dots.  
**FRUITS:** Pink - Purple, Drupe – 8mm.  
**SEASONS:** June – Feb.  
**ABORIGINAL USES:** Fruits eaten raw when completely ripe;  
White Gum used as glue; Leaves used as medicine.  
**CURRENT USES:** Native garden ornamental,  
Bird attracting and Bush foods.  
**HABITAT:** Birds eat the dark pink fruits.



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## Appendix 1: Native Plants Recorded in Cambooya Shire, 1999-2006

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<i>Abutilon tubulosum</i>	Marshmallow	<i>Alphitonia excelsa</i>	Soap tree
<i>Acacia catenulata</i>	Bendee	<i>Alternanthera nana</i>	Hairy joyweed
<i>Acacia crassa</i> <i>subsp longicorma</i>	Black wattle	<i>Alyxia ruscifolia</i>	Chain fruit
<i>Acacia decora</i>	Western silver wattle	<i>Amyema lucasii</i>	Mistletoe on Flindersia collina
<i>Acacia falciformis</i>	Mountain hickory	<i>Amyema sp. 1</i>	Mistletoe on Eucalyptus microcarpa
<i>Acacia fimbriata</i>	Fringed wattle	<i>Amyema sp. 2</i>	Mistletoe on Eucalyptus orgadophila
<i>Acacia harpophylla</i>	Brigalow	<i>Angophora floribunda</i>	Rough-barked Apple
<i>Acacia implexa</i>	Lightwood	<i>Angophora subvelutina</i>	Broadleaf Apple
<i>Acacia irrorata</i> <i>sub sp. irrorata</i>	Green wattle	<i>Apophyllum anomalum</i>	Broom bush
<i>Acacia ixiophylla</i>	Umbrella wattle	<i>Aristida calycina</i>	Dark wiregrass
<i>Acacia jucunda</i>	Delightful wattle	<i>Aristida cuput-medusea</i>	Many-headed wiregrass
<i>Acacia leiocalyx</i>	Black wattle	<i>Aristida latifolia</i>	Feathertop Wiregrass
<i>Acacia leucoclada</i> <i>subsp. argentifolia</i>	Silvery wattle	<i>Aristida leptopoda</i>	White Speargrass
<i>Acacia longifolia</i> <i>subsp. sophorae</i>	Coast wattle	<i>Aristida queenslandica</i>	Wiregrass
<i>Acacia loroloba</i>	Strap-pod wattle	<i>Aristida vagans</i>	Coarse wiregrass
<i>Acacia maidenii</i>	Maiden's wattle	<i>Asperula charophyton</i>	Woodruff
<i>Acacia melanoxylon</i>	Blackwood	<i>Asperula conferta</i>	Common woodruff
<i>Acacia neriifolia</i>	Oleander wattle	<i>Atriplex muelleri</i>	Saltbush
<i>Acacia pendula</i>	Weeping myall	<i>Auranticarpa</i> <i>rhombofolia</i>	Diamond leaf pittosporum
<i>Acacia pravifolia</i>	Coiled pod wattle	<i>Austrodanthonia linkii</i>	Wallaby grass
<i>Acacia salicina</i>	Sally wattle	<i>Austrodanthonia sp.</i>	Wallaby grass
<i>Acacia victoriae</i>	Elegant wattle	<i>Austrostipa aristiglumis</i>	Plains grass
<i>Adiantum aethiopicum</i>	Maidenhair fern	<i>Austrostipa</i> <i>ramosissima</i>	Stout bamboo grass
<i>Ajuga australis</i>	Australian bugle	<i>Austrostipa rudis</i> <i>subsp. nervosa</i>	Stipa
<i>Alchornea ilicifolia</i>	Native Holly	<i>Austrostipa verticellata</i>	Bamboo grass
<i>Alectryon diversifolius</i>	Scrub Boonaree	<i>Bidens pilosa</i>	Cobblers pegs
<i>Alectryon oleifolium</i> <i>subsp microcalyx</i>	Boonaree	<i>Boerhavia diffusa</i>	Tar vine
<i>Alectryon pubescens</i>	Boonaree	<i>Boerhavia dominii</i>	Tar vine
<i>Alectryon subdentatus</i>	Alectryon	<i>Bothriochloa biloba</i> <sup>v</sup>	Lobed bluegrass
<i>Allocastraria torulosa</i>	Forest Sheoak		

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<i>Bothriochloa decipens</i>	Pitted bluegrass	<i>Chamaesyce</i> <i>drummondii</i>	Caustic weed
<i>Bothriochloa</i> <i>erianthoides</i>	Satintop grass	<i>Cheilanthes sieberi</i>	Mulga fern
<i>Bothriochloa ewartiana</i>	Desert bluegrass	<i>Chloris truncata</i>	Windmill grass
<i>Brachychiton discolor</i>	Lacebark	<i>Chloris ventricosa</i>	Tall chloris
<i>Brachychiton populneus</i>	Kurrajong	<i>Chrysocephalum</i> <i>apiculatum</i>	Common everlasting daisy
<i>Brachychiton rupestris</i>	Queensland Bottletree	<i>Clematis glycinoides</i>	Headache vine
<i>Brachyscome dentata</i>	Brachyscome	<i>Clerodendrum</i> <i>cunninghamii</i>	Lollybush
<i>Breynia oblongifolia</i>	Coffee Bush	<i>Clerodendrum</i> <i>tomentosum</i>	Lollybush
<i>Bulbine alata</i>	Native leek	<i>Commelina diffusa</i>	Wandering Jew
<i>Bursaria incana</i>	Prickly Pine	<i>Convolvulus erubescens</i>	Australian bindweed
<i>Bursaria spinosa</i>	Australian blackthorn	<i>Corymbia citriodora</i>	Spotted gum
<i>Callistemon</i> "Emu Ck form"	Emu Creek Bottlebrush	<i>Corymbia erythrophloia</i>	Gum-topped Bloodwood
<i>Callistemon viminalis</i>	River Bottlebrush	<i>Corymbia intermedia</i>	Pink Bloodwood
<i>Callitris baileyi</i>	Cypress Pine	<i>Corymbia tessellaris</i>	Moreton bay ash
<i>Callitris endlicheri</i>	Black cypress pine	<i>Craspedia uniflora</i>	Billy button
<i>Calotis cuneata</i>	Purple Daisy Bur	<i>Crinum flaccidum</i>	Murray lily
<i>Calotis dentex</i>	White Daisy Bur	<i>Crotalaria dissitiflora</i>	Grey rattlepod
<i>Calotis lappulacea</i>	Yellow Daisy Bur	<i>Cudrania</i> <i>cochinchinensis</i>	Cockspur thorn
<i>Calotis scabiosifolia</i>	Rough Daisy Bur	<i>Cullen tenax</i>	Emufoot
<i>Camptacra barbata</i>	Camptacra daisy	<i>Cuscuta campestris</i>	Dodder
<i>Canthium buxifolium</i>	Canthium	<i>Cymbonotus</i> <i>lawsonianus</i>	Bear's ear
<i>Canthium odoratum</i>	Sweet Susie	<i>Cymbopogon refractus</i>	Barbwire grass
<i>Canthium vacciniifolium</i>	Canthium	<i>Cynodon dactylon</i>	Couch
<i>Capillipedium</i> <i>spicigerum</i>	Scented top grass	<i>Cyperus bifax</i>	Western nutgrass
<i>Capparis sarmentosa</i>	Wild Orange	<i>Cyperus clarus</i>	Native nutgrass
<i>Carissa ovata</i>	Current Bush	<i>Cyperus lucidus</i>	Native nutgrass
<i>Cassia coronilloides</i>	Cassia	<i>Cyperus odoratus</i>	Nutgrass
<i>Cassinia laevis</i>	Coughbush	<i>Cyperus vaginatus</i>	Native nutgrass
<i>Cassinia quinquefaria</i>	Coughbush	<i>Desmodium</i> <i>brachypodum</i>	Hairy trefoil
<i>Casuarina cristata</i>	Belah		
<i>Casuarina cunninghamiana</i>	River sheoak		

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<i>Dianella caerulea</i>	Blue flax lilly	<i>Eucalyptus albens</i>	White box
<i>Dianella longifolia</i>	Blue flax lilly	<i>Eucalyptus amplifolia</i>	Cabbage gum
<i>Dianella revoluta</i>	Flax Lilly	<i>Eucalyptus camaldulensis</i>	River Red Gum
<i>Dichanthium aristatum</i>	Angleton grass	<i>Eucalyptus crebra</i>	Narrow leaved ironbark
<i>Dichanthium sericeum</i>	Queensland Bluegrass	<i>Eucalyptus fibrosa subsp fibrosa</i>	Broad-leaved ironbark
<i>Digitaria bicornis</i>	Umbrella grass	<i>Eucalyptus melanophloia</i>	Silver-leaf ironbark
<i>Digitaria coenicola</i>	Finger panic grass	<i>Eucalyptus melliodora</i>	Yellow box
<i>Digitaria divaricatissima</i>	Umbrella grass	<i>Eucalyptus microcarpa</i>	Grey box
<i>Digitaria porrecta</i> <sup>ER</sup>	Branched finger panic	<i>Eucalyptus moluccana</i>	Gum-topped box
<i>Dodonea triangularis</i>	Hop bush	<i>Eucalyptus orgadophila</i>	Mountain coolibah
<i>Dodonea triquetra</i>	Forest Hop bush	<i>Eucalyptus pilligaensis</i>	Narrow leaved white box
<i>Dodonea truncatiales</i>	Hop bush	<i>Eucalyptus populnea</i>	Poplar Box
<i>Dodonea viscosa</i>	Sticky hop bush	<i>Eucalyptus propinqua</i>	Grey gum
<i>Echinopogon nutans</i>	Nodding Hedgehog grass	<i>Eucalyptus radiata</i>	Narrow leaved peppermint
<i>Einadia hastata</i>	Berry Saltbush	<i>Eucalyptus tereticornis</i>	Forest Red Gum
<i>Elaeodendron australe var. australe</i>	Red Olive Plum	<i>Eucalyptus thozetiana</i>	Yapunyah
<i>Elatostachys xylocarpa</i>	White tamarind	<i>Eucalyptus watsoniana</i>	Large fruited yellow jacket
<i>Elymus scabrus</i>	Wheatgrass	<i>Eustrephus latifolius</i>	Wombat berry
<i>Enneapogon nigricans</i>	Bottlewashers	<i>Evolvulus alsinoides</i>	Tropical speedwell
<i>Enneapogon polyphyllus</i>	Leafy nineawn	<i>Exocarpos cupressiformis</i>	Native cherry
<i>Enneapogon robustissimus</i>	Bottlewashers	<i>Exocarpos latifolius</i>	Broad-leaved cherry
<i>Epilobium billardierianum</i>	Willow herb	<i>Ficus obliqua</i>	Small-leaved Fig
<i>Eragrostis cilianensis</i>	Stinking lovegrass	<i>Ficus rubiginosa</i>	Rock Fig
<i>Eragrostis lacunaria</i>	Purple lovegrass	<i>Ficus virens var. virens</i>	White Fig
<i>Eragrostis leptocarpa</i>	Drooping lovegrass	<i>Fimbristylis aestivalis</i>	Summer fringerush
<i>Eragrostis trachycarpa</i>	Rough grain lovegrass	<i>Fimbristylis dichotoma</i>	Common fringerush
<i>Eremophila debilis</i>	Winter apple	<i>Flindersia australis</i>	Crows Ash
<i>Eriochloa crebra</i>	Spring grass	<i>Flindersia collina</i>	Broad-leaved leopard tree
<i>Eriochloa procera</i>	Liverseed grass	<i>Gahnia aspera</i>	Saw sedge
<i>Erodium crinitum</i>	Blue crowfoot		

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<i>Geijera parviflora</i>	Wilga	<i>Lomandra filiformis</i>	Matrush
<i>Geijera salicifolia var. latifolia</i>	Scrub wilga	<i>Lomandra hystrix</i>	Hill lomandra
<i>Geijera salicifolia var. salicifolia</i>	Scrub Wilga	<i>Lomandra longifolia</i>	Long leaved matrush
<i>Geitonoplesium cymosum</i>	Scrambling lilly	<i>Lomandra multiflora subsp multiflora</i>	Many-flowered matrush
<i>Geranium solanderi</i>	Native geranium	<i>Lotus australis</i>	Australian trefoil
<i>Glossocardia bidens</i>	Native cobbler's pegs	<i>Maireana microphylla</i>	Small-leaved cottonbush
<i>Glycine tabacina</i>	Glycine pea	<i>Marsilea drummondii</i>	Nardoo
<i>Glycine tomentella</i>	Woolly glycine	<i>Melaleuca bracteata</i>	River tea-tree
<i>Gnaphalium luteo-album</i>	Jersey cudweed	<i>Melia adzederach</i>	White cedar
<i>Goodenia sp.</i>	Goodenia	<i>Mentha satuireiodes</i>	Native pennyroyal
<i>Grevillea robusta</i>	Silky Oak	<i>Muellerina eucalyptoides</i>	Mistletoe
<i>Haloragis aspera</i>	Raspweed	<i>Murdannia graminea</i>	Grass Lilly
<i>Hardenbergia violacea</i>	Native sarsparilla	<i>Myoporum montanum</i>	Boobialla
<i>Heteropogon contortus</i>	Black spear grass	<i>Neptunia gracilis</i>	Native sensitive plant
<i>Hibiscus trionum</i>	Bladder Ketmia	<i>Notelea sp.</i>	Native olive
<i>Hovea longifolia</i>	Hovea	<i>Notolea johnsonii</i>	Native Olive
<i>Imperata cylindrica</i>	Blady grass	<i>Olearia sp.</i>	Daisy bush
<i>Indigofera linifolia</i>	Indigofera	<i>Palmeria scandens</i>	Vine
<i>Ipomoea plebeia</i>	Bellvine	<i>Pandorea jasminoides</i>	Jasmine leaved wonga vine
<i>Iseilema membranaceum</i>	Small flinders grass	<i>Pandorea pandorana</i>	Wonga vine
<i>Jacksonia scoparia</i>	Dogwood	<i>Panicum decompositum</i>	Native millet
<i>Jasminum suavisimum</i>	Jasmine	<i>Panicum prolutum</i>	Rigid panic
<i>Juncus aridicola</i>	Juncus	<i>Panicum queenslandicum</i>	Yabila grass
<i>Juncus usitatus</i>	Common rush	<i>Paspalidium globoideum</i>	Shotgrass
<i>Kennedia rubicunda</i>	Red Kennedy Pea	<i>Paspalidium gracile</i>	Small shotgrass
<i>Leiocarpa brevicompta</i>	Flat billybuttons	<i>Paspalum longifolium</i>	Paspalum
<i>Leiocarpa panitoides</i>	Stalked plover daisy	<i>Passiflora suberosa</i>	Passion vine
<i>Lepidum africanum</i>	Peppergrass	<i>Phragmites australis</i>	Cane grass
<i>Leptomeria acida</i>	Native Current	<i>Phyllanthus subcrenulatus</i>	Spurge
<i>Lespedeza juncea</i>	Perennial Lespedeza		

## Appendix 2: Introduced Plants Recorded in Cambooya Shire 1999-2006

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<i>Picris evae</i> <sup>V</sup>	Hawkweed	<i>Sorghum ritidulum</i>	Brown sorghum
<i>Pimelea linifolia</i>	Slender riceflower	var. <i>aristatum</i>	
<i>Pimelea neo-anglica</i>	Scrub kurrajong	<i>Sporobolus creber</i>	Western rat's-tail grass
<i>Pittosporum angustifolium</i>	Cattle bush	<i>Stemmacantha australis</i> <sup>V</sup>	Australian cornflower
<i>Portulaca oleracea</i>	Pigweed	<i>Striga parviflora</i>	Small witchweed
<i>Pseudocarapa nitidula</i>	Incensewood	<i>Swainsoa galegifolia</i>	Smooth Darling pea
<i>Ranunculus inundatus</i>	River buttercup	<i>Templetonia stenophylla</i>	Templetonia
<i>Ranunculus lappaceus</i>	Common buttercup	<i>Teucrium sp.</i>	Native germander
<i>Rhagodia spinescens</i>	Berry Saltbush	<i>Themeda avenacea</i>	Tall oats grass
<i>Rhodosphaera rhodanthema</i>	Tulip Satinwood	<i>Themeda triandra</i>	Kangaroo grass
<i>Rhynchosia minima</i>	Rhynchosia	<i>Thesium australe</i>	Austral toadflax
<i>Rostellularia adscendens</i>	Rostellularia	<i>Thysanotus tuberosus</i>	Fringe lily
<i>Rubus parvifolius</i>	Pink-flowered native raspberry	<i>Toona australis</i>	Red Cedar
<i>Rumex dumosiformis</i>	Native Dock	<i>Tragus australianus</i>	Burr grass
<i>Salsola kali</i>	Soft rolypoly	<i>Tribulus terrestris</i>	Caltrop
<i>Santolom lanceolatum</i>	Chinese sandalwood	<i>Tripogon loliformis</i>	Five minute grass
<i>Schoenoplectus litoralis</i>	Clubrush	<i>Typha sp.</i>	Cumbungi/Bulrush
<i>Sclerolaena muricata</i>	Black roly poly	<i>Verbena gaudichaudii</i>	Native vervain
<i>Sehima nervosum</i>	Single-spike grass	<i>Vicia monanthos</i>	Vetch
<i>Senecio quadridentatus</i>	Cotton fireweed	<i>Viola betonicifolia</i>	Purple Violet
<i>Senna barclayana</i>	Pepperleaf senna	<i>Vittadinia sulcata</i>	Vittadinia
<i>Sida cunninghamii</i>	Ridge sida	<i>Wahlenbergia communis</i>	Australian Bluebell
<i>Sida rhombifolia</i>	Common sida	<i>Wahlenbergia gracilis</i>	Australian Bluebell
<i>Sida rohlenae</i>	Sida	<i>Wahlenbergia spp.</i>	Bluebell
<i>Sida subspicata</i>	Spiked sida	<i>Wahlenbergia stricta</i>	Tall Bluebell
<i>Sida trichopoda</i>	High sida	<i>Xanthorrhoea glauca</i>	Blue Grasstree
<i>Smilax australis</i>	Austral Sarsparilla	<i>Xanthorrhoea johnsonii</i>	Forest Grasstree
<i>Solanum papaverifolium</i> <sup>NE</sup>	Solanum papaverifolium		
<i>Sonchus oleraceus</i>	Milk thistle		
<i>Sorghum leiocladum</i>	Wild sorghum		

Notes: The first letter of a superscript indicates status under the EPBC Act and the second letter indicates status under the Nature Conservation Act.

N - Not listed E - Endangered  
V - Vulnerable R - Rare

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<i>Acroptilon repens</i>	Creeping knapweed	<i>Eleusine tristachya</i>	Goosegrass
<i>Amaranthus powellii</i>	Amaranth	<i>Eragrostis curvula</i>	African Lovegrass
<i>Ammi majus</i>	Bishops weed	<i>Eragrostis tenuifolia</i>	Elastic grass
<i>Anredera cordifolia</i> <sup>C3</sup>	Madeira Vine	<i>Gaura parviflora</i>	Clockweed
<i>Araujia hortorum</i>	White moth plant	<i>Gomphocarpus physocarpus</i>	Balloon Cotton bush
<i>Argemone ochroleuca</i>	Mexican Poppy	<i>Gomphrena celosioides</i>	Gomphrena weed
<i>Brassica tournefortii</i>	Wild turnip	<i>Heliotropium amplexicaule</i>	Blue heliotrope
<i>Bryophyllum delagoense</i> <sup>C2</sup>	Mother of Millions	<i>Hyparrhenia hirta</i>	Coolatai grass
<i>Carduus sp.</i>	Thistle	<i>Ipomoea indica</i>	Morning Glory
<i>Centaurea melitensis</i>	Maltese Cockspur	<i>Lactuca saligna</i>	Willow lettuce
<i>Centaurea solstitialis</i>	St. Barnaby's thistle	<i>Lantana camara</i> <sup>C3 WONS</sup>	Lantana
<i>Chenopodium album</i>	Fat hen	<i>Ligustrum lucidum</i>	Privet
<i>Chloris gayana</i>	Rhodes grass	<i>Lycium ferocissimum</i> <sup>C2</sup>	African Boxthorn
<i>Chloris virgata</i>	Feathertop Rhodes grass	<i>Malva parviflora</i>	Marshmallow
<i>Cirsium vulgare</i>	Spear thistle	<i>Medicago sativa</i>	Lucerne
<i>Conium maculatum</i>	Hemlock	<i>Megathyrsus maximus var pubiglumis</i>	Green panic
<i>Conyza bonariensis</i>	Flaxleaf fleabane	<i>Melilotus albus</i>	Bokhara clover
<i>Cotoneaster sp.</i>	Cotoneaster	<i>Melinis repens</i>	Red natal grass
<i>Cyclosporum leptophyllum</i>	Slender celery	<i>Misopates orontium</i>	Lesser snapdragon
<i>Datura ferox</i>	Thornapple	<i>Modiola caroliniana</i>	Mallow
<i>Datura stramonium</i>	Stramonium	<i>Opuntia aurantiaca</i>	Tiger pear
<i>Echinochloa colona</i>	Awnless Barnyard grass	<i>Opuntia stricta</i> <sup>C2</sup>	Spiny pest pear

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<i>Opuntia tomentosa</i>	Tree pear	<i>Solanum nigrum</i>	Blackberry nightshade
<i>Oxalis sp.</i>	Oxalis	<i>Solanum sarrachoides</i>	Nightshade
<i>Paspalum dilatatum</i>	Paspalum	<i>Sorghum halepense</i>	Johnsons grass
<i>Pavonia hastata</i>	Pale pavonia	<i>Stachys arvensis</i>	Staggerweed
<i>Pennisetum clandestinum</i>	Kikuyu	<i>Tagetes minuta</i>	Stinking Roger
<i>Pennisetum villosum</i>	Foxtail grass	<i>Tragopogon porrifolius</i>	Salsify
<i>Phylla nodiflora</i>	Lippia	<i>Urochloa panicoides</i>	Urochloa
<i>Plantago lanceolata</i>	Plaintain	<i>Verbascum virgatum</i>	Twiggy mullein
<i>Portulaca pilosa</i>	Pigweed	<i>Verbena aristigera</i>	Mayne's pest
<i>Prunus persica</i>	Wild Peach	<i>Verbena bonariensis</i>	Purpletop
<i>Rapistrum rugosum</i>	Turnip Weed	<i>Verbena litoralis</i>	Verbena
<i>Rumex sp.</i>	Dock	<i>Verbena officinalis</i>	Common Verbena
<i>Salix babylonica</i>	Willow	<i>Verbena rigida</i>	Veined verbena
<i>Salvia coccinea</i>	Red salvia	<i>Vicia monanthos</i>	Spurred vetch
<i>Salvia reflexa</i>	Mintweed	<i>Xanthium pungens</i>	Noogoora burr
<i>Schinus molle</i>	Pepperina	<i>Xanthium spinosum</i>	Bathurst burr
<i>Senna pendula var glabrata</i>	Easter Cassia	<i>Zinnia peruviana</i>	Zinnia
<i>Senna occidentalis</i>	Cassia		
<i>Setaria incrassata</i>	Purple pigeon grass		
<i>Setaria italica</i>	Italian millet		
<i>Setaria sphacelata</i>	South African pigeon grass		
<i>Silybum marianum</i>	Variiegated thistle		

Notes: Superscripts indicate weed status under Queensland or National Legislation as follows:  
 C2 – Landowners must take reasonable steps to keep land free of these plants. Max \$30 000 fine applies.  
 C3 – Landholders must control IF their land is adjacent to an environmentally sensitive area, plants may not be sold.  
 WONS – Weed of National Significance.

### Appendix 3: Birds Recorded in Cambooya Shire 2004-2006 Survey

COMMON NAME	SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME
<b>CORMORANTS, HERONS AND ALLIES</b>		<b>MOUND-BUILDERS AND BUSTARDS</b>	
Little Pied Cormorant	<i>Phalacrocorax melanoleucos</i>	Australian Brush-Turkey	<i>Alectura lathami</i>
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>	Australian Bustard	<i>Ardeotis australis</i> <sup>R</sup>
Great Cormorant	<i>Phalacrocorax carbo</i>	<b>QUAILS</b>	
Australian Pelican	<i>Pelecanus conspicillatus</i>	Brown Quail	<i>Coturnix ypsilophora</i>
Cattle Egret	<i>Ardea ibis</i>	Stubble Quail	<i>Coturnix pectoralis</i>
Great Egret	<i>Ardea alba</i>	Little Button-Quail	<i>Turnix velox</i>
White-Faced Heron	<i>Egretta novaehollandiae</i>	<b>GALLINULES AND LAPWINGS</b>	
White-Necked Heron	<i>Ardea pacifica</i>	Dusky Moorhen	<i>Gallinula tenebrosa</i>
Nankeen Night Heron	<i>Nycticorax caledonicus</i>	Purple Swampphen	<i>Porphyrio porphyrio</i>
Royal Spoonbill	<i>Platalea regia</i>	Masked Lapwing	<i>Vanellus miles</i>
Yellow-Billed Spoonbill	<i>Platalea flavipes</i>	<b>PIGEONS AND DOVES</b>	
Straw-Necked Ibis	<i>Threskiornis spinicollis</i>	Crested Pigeon	<i>Ocyphaps lophotes</i>
Australian White Ibis	<i>Threskiornis molucca</i>	Common Bronzewing	<i>Phaps chalcoptera</i>
<b>DUCKS</b>		Wonga Pigeon	<i>Leucosarcia melanoleuca</i>
Plumed Whistling-Duck	<i>Dendrocygna eytoni</i>	Rock Dove	<i>Columba livia</i> <sup>*</sup>
Australian Wood Duck	<i>Chenonetta jubata</i>	Peaceful Dove	<i>Geopelia striata</i>
Pacific Black Duck	<i>Anas superciliosa</i>	Bar-Shouldered Dove	<i>Geopelia humeralis</i>
Grey Teal	<i>Anas gracilis</i>	<b>COCKATOOS AND PARROTS</b>	
<b>EAGLES, HAWKS AND FALCONS</b>		Galah	<i>Cacatua roseicapilla</i>
Collared Sparrowhawk	<i>Accipiter cirrocephalus</i>	Sulphur-Crested Cockatoo	<i>Cacatua galerita</i>
Brown Goshawk	<i>Accipiter fasciatus</i>	Little Corella	<i>Cacatua sanguinea</i>
Grey Goshawk	<i>Accipiter novaehollandiae</i> <sup>R</sup>	Yellow-Tailed Black Cockatoo	<i>Calyptorhynchus funereus</i>
Pacific Baza ~ Crested Hawk	<i>Aviceda subcristata</i>	Red-Tailed Black Cockatoo	<i>Calyptorhynchus banksii</i>
Black Kite	<i>Milvus migrans</i>	Glossy Black-Cockatoo	<i>Calyptorhynchus lathami</i> <sup>V</sup>
Wedge-Tailed Eagle	<i>Aquila audax</i>	Rainbow Lorikeet	<i>Trichoglossus haematodus</i>
Black-Shouldered Kite	<i>Elanus axillaris</i>	Musk Lorikeet	<i>Glossopsitta concinna</i>
Brown Falcon	<i>Falco berigora</i>	Scaly-Breasted Lorikeet	<i>Trichoglossus chlorolepidotus</i>
Australian Kestrel / Nankeen	<i>Falco cenchroides</i>	Little Lorikeet	<i>Glossopsitta pusilla</i>

COMMON NAME	SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME
Australian King-Parrot	<i>Alisterus scapularis</i>	<b>WHISTLERS AND MONARCHS</b>	
Cockatiel	<i>Nymphicus hollandicus</i>	Golden Whistler	<i>Pachycephala pectoralis</i>
Eastern Rosella	<i>Platycercus eximius</i>	Rufous Whistler	<i>Pachycephala rufiventris</i>
Pale-Headed Rosella	<i>Platycercus adscitus</i>	Black-Faced Monarch	<i>Monarcha melanopsis</i>
Crimson Rosella	<i>Platycercus elegans</i>	<b>FLYCATCHERS AND FANTAILS</b>	
Red-Rumped Parrot	<i>Psephotus haematonotus</i>	Jacky Winter	<i>Microeca fascinans</i>
Budgerigar	<i>Melopsittacus undulatus</i>	Restless Flycatcher	<i>Myiagra inquieta</i>
<b>CUCKOOS</b>		Satin Flycatcher	<i>Myiagra cyanoleuca</i>
Fan-Tailed Cuckoo	<i>Cacomantis flabelliformis</i>	Leaden Flycatcher	<i>Myiagra rubecula</i>
Channel-Billed Cuckoo	<i>Scythrops novaehollandiae</i>	Grey Fantail	<i>Rhipidura fuliginosa</i>
Pheasant Coucal	<i>Centropus phasianinus</i>	Rufous Fantail	<i>Rhipidura rufifrons</i>
Common Koel	<i>Eudynamis scolopacea</i>	Willie Wagtail	<i>Rhipidura leucophrys</i>
<b>KINGFISHERS, BEE-EATERS AND ROLLERS</b>		<b>WHIPBIRDS AND BABBLERS</b>	
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	Eastern Whipbird	<i>Psophodes olivaceus</i>
Sacred Kingfisher	<i>Todiramphus sanctus</i>	Grey-Crowned Babbler	<i>Pomatostomus temporalis</i>
Forest Kingfisher	<i>Todiramphus macleayii</i>	<b>WARBLERS AND CISTICOLAS</b>	
Red-Backed Kingfisher	<i>Todiramphus pyrrophygia</i>	Australian Reed-Warbler	<i>Acrocephalus australis</i>
Rainbow Bee-Eater	<i>Merops ornatus</i>	Golden-Headed Cisticola	<i>Cisticola exilis</i>
Dollarbird	<i>Eurystomus orientalis</i>	<b>FAIRY-WRENS AND SCRUBWRENS</b>	
<b>OWLS AND ALLIES</b>		Superb Fairy-Wren	<i>Malurus cyaneus</i>
Barn Owl	<i>Tyto alba</i>	Variiegated Fairy-Wren	<i>Malurus lamberti</i>
Southern Boobook	<i>Ninox novaeseelandiae</i>	Red-Backed Fairy-Wren	<i>Malurus melanocephalus</i>
Australian Owlet-Nightjar	<i>Aegotheles cristatus</i>	White-Browed Scrubwren	<i>Sericornis frontalis</i>
Tawny Frogmouth	<i>Podargus strigoides</i>	Speckled Warbler	<i>Chthonicola sagittata</i>
<b>SWALLOWS, PIPITS AND SONGLARKS</b>		<b>GERYGONES AND THORNBILLS</b>	
Welcome Swallow	<i>Hirundo neoxena</i>	White-Throated Gerygone	<i>Gerygone olivacea</i>
Richard's Pipit	<i>Anthus novaeseelandiae</i>	Striated Thornbill	<i>Acanthiza lineata</i>
Brown Songlark	<i>Cinclorhamphus cruralis</i>	Yellow Thornbill	<i>Acanthiza nana</i>
<b>CUCKOO-SHRIKES AND TRILLERS</b>		Yellow-Rumped Thornbill	<i>Acanthiza chrysorrhoa</i>
Black-Faced Cuckoo-Shrike	<i>Coracina novaehollandiae</i>	Brown Thornbill	<i>Acanthiza pusilla</i>
White-Winged Triller	<i>Lalage sueurii</i>		

COMMON NAME	SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME
<b>SITTELLAS AND TREECREEPERS</b>		<b>SPARROWS, STARLINGS AND MYNAS</b>	
Varied Sittella	<i>Daphoenositta chrysoptera</i>	House Sparrow	<i>Passer domesticus*</i>
White-Throated Treecreeper	<i>Cormobates leucophaeus</i>	Common Starling	<i>Sturnus vulgaris*</i>
<b>HONEYEATERS, WHITE-EYES AND FLOWERPECKERS</b>		Common Myna	<i>Acridotheres tristis*</i>
Spiny-Cheeked Honeyeater	<i>Acanthagenys rufogularis</i>	<b>ORIOLES AND DRONGOS</b>	
Red Wattlebird	<i>Anthochaera carunculata</i>	Olive-Backed Oriole	<i>Oriolus sagittatus</i>
Little Friarbird	<i>Philemon citreogularis</i>	Figbird	<i>Sphecothes viridis</i>
Noisy Friarbird	<i>Philemon corniculatus</i>	Spangled Drongo	<i>Dicrurus bracteatus</i>
Blue-Faced Honeyeater	<i>Entomyzon cyanotis</i>	<b>MUD-NEST BUILDERS</b>	
Noisy Miner	<i>Manorina melanocephala</i>	Magpie-Lark	<i>Grallina cyanoleuca</i>
Lewin's Honeyeater	<i>Meliphaga lewinii</i>	White-Winged Chough	<i>Corcorax melanorhamphos</i>
Yellow-Faced Honeyeater	<i>Lichenostomus chrysops</i>	Apostlebird	<i>Struthidea cinerea</i>
Scarlet Honeyeater	<i>Myzomela sanguinolenta</i>	<b>WOODSWALLOWS, BUTCHERBIRDS AND CURRAWONGS</b>	
Brown Honeyeater	<i>Lichmera indistincta</i>	Dusky Woodswallow	<i>Artamus cyanopterus</i>
Striped Honeyeater	<i>Plectorhyncha lanceolata</i>	Pied Butcherbird	<i>Cracticus nigrogularis</i>
Silvereye	<i>Zosterops lateralis</i>	Grey Butcherbird	<i>Cracticus torquatus</i>
Mistletoebird	<i>Dicaeum hirundinaceum</i>	Pied Currawong	<i>Strepera graculina</i>
<b>PARDALOTES</b>		Australian Magpie	<i>Gymnorhina tibicen</i>
Striated Pardalote	<i>Pardalotus striatus</i>	<b>BOWERBIRDS</b>	
Spotted Pardalote	<i>Pardalotus punctatus</i>	Regent Bowerbird	<i>Sericulus chrosocephalus</i>
<b>FINCHES</b>		Satin Bowerbird	<i>Ptilonorhynchus violaceus</i>
Red-Browed Finch	<i>Neochmia temporalis</i>	<b>RAVENS AND CROWS</b>	
Double-Barred Finch	<i>Taeniopygia bichenovii</i>	Australian Raven	<i>Corvus coronoides</i>
Zebra Finch	<i>Taeniopygia guttata</i>	Torresian Crow	<i>Corvus orru</i>
Plum-Headed Finch	<i>Neochmia modesta</i>		
Chestnut-Breasted Mannikin	<i>Lonchura castaneothorax</i>		

**Status:** Status of species is indicated by the following code symbols:

- V** – Vulnerable species
- R** – Rare species
- \*** – Introduced species.

## Appendix 4: Fauna Recorded in Cambooya Shire 2004-2006 Survey

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<b>AMPHIBIANS</b>		<b>MICROBATS</b>	
<i>Bufo marinus</i>	Cane Toad *	<i>Mus musculus</i>	House Mouse *
<i>Crinia sp.</i>	Small brown frogs	<b>NATIVE MICE</b>	
<i>Limnodynastes dumerilii</i>	Banjo frog	<i>Petaurus breviceps</i>	Sugar glider
<i>Limnodynastes fletcherii</i>	Barking marsh frog	<i>Petaurus norfolcensis</i>	Squirrel glider
<i>Limnodynastes sp.</i>	Large brown frog	<i>Phascolarctos cinereus</i>	Koala
<i>Limnodynastes terraereginae</i>	Scarlet-sided Pobblebonk	<i>Planigale maculata</i>	Common Planigale
<i>Litoria caerulea</i>	Green Treefrog	<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum
<i>Litoria chloris</i>	Southern Orange-eyed Treefrog	<i>Pteropus poliocephalus</i>	Grey-Headed Flying-Fox
<b>CRAYFISH</b>		<i>Pteropus scapulatus</i>	Little Red Flying-Fox
<i>Cherax destructor</i>	Yabby	<i>Rattus fuscipes</i>	Bushrat
<b>FISH</b>		<i>Rattus rattus</i>	Black rat*
<i>Anguilla reinhardtii</i>	Eels	<i>Rattus tunneyi</i>	Pale Field Rat
<i>Cyprinus carpio</i>	Carp *	<i>Sminthopsis murina</i>	Common Dunnart
<i>Gambusia holbrooki</i>	Mosquito fish *	<i>Sus scrofa</i>	Wild Pig*
<i>Macquaria ambigua</i>	Yellowbelly	<i>Tachyglossus aculeatus</i>	Short-Beaked Echidna
<i>Tandanus tandanus</i>	Eel-tailed Catfish	<i>Trichosurus vulpecula</i>	Brush-tail Possum
<b>MAMMALS</b>		<i>Vulpes vulpes</i>	Red Fox *
<i>Actrobates pygmaeus</i>	Feather tail Glider	<i>Walabia bicolor</i>	Swamp wallaby
<i>Canis lupus dingo</i>	Dingo	<b>REPTILES</b>	
<i>Felis catus</i>	Feral Cat *	<i>Acanthophs antarcticus</i>	Southern Death Adder <sup>R</sup>
<i>Isodon macrourus</i>	Northern Brown Bandicoot	<i>Amphibolurus nobbi</i>	Nobbi
<i>Lepus capensis</i>	Brown Hare *	<i>Anomalopus sp.</i>	Wormskinks
<i>Macropus giganteus</i>	Eastern Grey Kangaroo	<i>Antaresia maculosa</i>	Eastern Small-blotched Python
<i>Macropus parryi</i>	Whiptail Wallaby	<i>Cacophis harriettae</i>	White-crowned Snake
<i>Macropus rufogriseus</i>	Red-necked wallaby	<i>Carlia sp.</i>	Rainbow skink
<i>Megabats</i>	Fruit bat	<i>Carlia tetradactyla</i>	Rainbow skink

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<i>Chelodina expansa</i>	Broad-shelled Snake-necked Turtle	<i>Pseudechis guttatus</i>	Blue-bellied Black Snake
<i>Chelodina longicollis</i>	Eastern Snake-necked Turtle	<i>Pseudechis porphyriacus</i>	Red-bellied Black Snake
<i>Ctenotus robustus</i>	Robust Ctenotus	<i>Pseudonaja textilis</i>	Eastern Brown Snake
<i>Ctenotus sp.</i>	Ctenotus	<i>Ramphotyphlops sp.</i>	Blind snake <sup>R</sup>
<i>Demansia psammophis</i>	Yellow-faced Whipsnake	<i>Rhinoplocephalus nigrescens</i>	Eastern Small-eyed Snake
<i>Dendrelaphis punctulata</i>	Common Tree snake	<i>Saiphos equalis</i>	Three-toed Skink
<i>Diplodactylus vittatus</i>	Wood Gecko	<i>Tiliqua scincoides</i>	Eastern Blue-tongued Lizard
<i>Egernia cunninghami</i>	Cunningham's Skink	<i>Varanus gouldii</i>	Sand Monitor
<i>Emydura macquarii</i>	Murray Turtle	<i>Varanus varius</i>	Lace Monitor
<i>Eulamprus tenuis</i>	Bar-sided Forest Skink	<i>Vermicella annulata</i>	Bandi Bandi
<i>Furina diadema</i>	Red-naped Snake	<b>SHELLS</b>	
<i>Gehyra variegata</i>	Variiegated Dtella	<i>Alathyria jacksoni</i>	River Mussel
<i>Lialis burtonis</i>	Burton's Legless Lizard	<b>Status:</b> Status of species is indicated by the following code symbols: <b>R</b> – Rare species * – Introduced species	
<i>Morelia spilota</i>	Carpet Python		
<i>Oedura robusta</i>	Robust Velvet Gecko		
<i>Oedura tryoni</i>	Southern Spotted Velvet Gecko		
<i>Pogona barbata</i>	Eastern Bearded Dragon		

*eastern bearded dragon*



## Glossary

**Annual:** A plant that completes its life cycle in one season.

**Anther:** Pollen bearing part of a stamen.

**Axillary:** Of buds or flowers arising from between the upper surface of a leaf or bract and the stem to which it is attached.

**Berry:** A fleshy fruit often containing many seeds.

**Biodiversity:** The variety of life forms. The different plants, animals and micro-organisms, the genes they contain, and the ecosystems they form. It is usually considered at three levels: genetic diversity, species diversity and ecosystem diversity.

**Bract:** A modified, often reduced leaf.

**Buffer strip:** A vegetated strip of land that functions to absorb sediment and nutrients.

**Calcareous soils:** Soils containing calcium carbonate segregations.

**Calyx:** Outermost whorl of flower parts, below the petals, the group of sepals.

**Canopy:** The uppermost layer of foliage formed by the crowns of the trees.

**Capsule:** A dry fruit that splits open at maturity to release the seeds.

**Climber:** A plant that tends to climb over other plants or structures.

**Clusters:** A small close group of flowers.

**Conservation:** The 'protection and maintenance of nature while allowing for its ecologically sustainable use'.

**Conservation status:** The legislated threat level of a species, classified as endangered, vulnerable, rare or common.

**Deciduous:** Of plants that seasonally shed their leaves.

**Dioecious:** With the male and female sex organs on separate plants.

**Dispersal:** The spread of organisms to new areas.

**Drought:** A prolonged shortage of water, continuous dry weather.

**Drupe:** A fleshy fruit with a single hard seed in the centre.

**Ecosystem:** A dynamic complex of plant, animal, fungal, and micro-organism communities and the associated non-living environment interacting as an ecological unit.

**Edge effect:** Impacts or disturbances to the edges of areas of remnant vegetation caused by for example, nutrients, exotic plants, domestic and feral animals, wind, etc

**Endangered:** Of populations or species, which are facing extinction.

**Endemic:** Restricted to a specified region or locality.

**Exotic species:** A species occurring outside its known natural range.

**Fauna:** The species of animals of an area.

**Flora:** The species of plants of an area.

**Garden escape:** An introduced garden plant that now grows and reproduces freely outside cultivation, invading natural bushland (eg; Lantana, Duranta, Jacaranda, Privet and Tweedia).

**Galls:** An outgrowth of plant tissue enclosing the eggs and larvae of a range of insects. May also be caused by fungi.

**Gum:** A sticky complex of various sugars and oxidised sugars exuded by some trees and shrubs.

**Habitat:** Is the environment in which a species can occur, survive and reproduce. It consists of the various components of the environment that native flora and fauna require for different parts of their life cycle. Native fauna require areas for feeding, roosting, migration and the rearing of young.

**Heads:** A dense cluster of flowers usually with very short or no stalks.

**Herb:** Any green plant that flowers, bears seeds and does not make wood. Grasses are included as herbs.

**Indigenous:** Native to a specific area.

**Inflorescence:** A flowering shoot with more than one flower.

**Invertebrates:** A very diverse group of creatures that have no internal skeleton including, insects, spiders, mites, worms, snails, centipedes, etc.

**Legume:** A dry fruit which splits along both sides at maturity, also called a pod.

**Nectar:** A sugary liquid often produced by flowers. An important food resource for a range of birds, mammals and insects.

**Nut:** Hard, dry one-seeded fruit that does not split open at maturity.

**On-ground works:** The physical activities undertaken to rehabilitate the environment (e.g. fencing, weeding, planting, etc).

**Panicle:** A much-branched inflorescence with each branch being a raceme.

**Perennial:** A plant with a normal life span of more than two years.

**Phyllode:** A flattened, modified leaf stalk. The foliage of many wattles (Acacia sp.) are of phyllodes, the true leaf is bipinnate and only seen on seedlings.

**Pod:** A fruit that splits open at maturity along two sides to release the seeds.

**Pollen:** The collective name for the pollen grains that develop within the anthers of a flower.

**Population:** A group of organisms, all of the same species occupying a particular area.

**Prostrate:** A plant whose stems lie along the ground.

**Protected plant:** A declared plant protected by legislation. Permits are required to collect seed or any vegetative material from these plants. Penalties apply.

**Raceme:** A non-branching inflorescence of stalked flowers with the youngest at the top.

**Rare:** Seldom found in an area, not common.

**Regeneration:** The recovery of native vegetation by encouraging processes of natural colonisation. Methods include disturbance (either fire or mechanical), weed removal or providing better conditions for seeds to germinate and successfully establish (e.g. restoring the natural fire regime).

**Regional ecosystem:** The vegetation community that is consistently associated with a particular combination of geology, landform and soil.

**Rehabilitation:** Repairing or re-establishing key elements or aspects of an original ecological community (e.g. wildlife habitat values, an important native plant species, soil structure, etc).

**Remnant:** A patch or area of native habitat that is variable in size, but remains relatively intact in a largely cleared or disturbed landscape.

**Revegetation:** The process of re-introducing vegetation to a site. It may be achieved by direct seeding, planting or regeneration to re-establish vegetation at a site. Generally this refers to locally native vegetation.

**Riparian:** The zone or vegetation on either side of a creek or river that is directly influenced by the waterway. This is often restricted to the banks.

**Sedges:** Grass-like plants, annual or perennial of the sedge family, Cyperaceae.

**Seed:** The reproductive unit of a plant containing an embryo with food reserves.

**Sessile:** Flowers or leaves without a stalk.

**Spikelet:** The unit of the inflorescence of grasses, sedges and other monocot families.

**Spike:** A simple inflorescence of sessile flowers with the youngest at the top.

**Sporadic:** Not continuous or scattered, usually in response to changes in climatic conditions.

**Stamen:** The male reproductive organ of a flower made up of a stalk (filament) and an anther.

**Tufted:** Held or growing together at the base, having a bunching habit.

**Tussock Grass:** Perennial clumping grasses with a tufted habit.

**Understorey:** The layer of vegetation between the canopy and the ground layers.

**Understorey shrub:** A much-branched woody plant, usually less than 8m that forms a vital component of healthy ecosystems.

**Vertebrates:** A very diverse group of creatures that have an internal skeleton. They include mammals, reptiles, amphibians, fish and birds.

**Wing:** A membranous expansion of a seed or fruit that aids in its dispersal.



*Vulnerable species establishment trial.*

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