

Grassy Woodlands Trail



MULLIGANS FLAT
WOODLAND SANCTUARY
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The Grassy Woodlands Trail

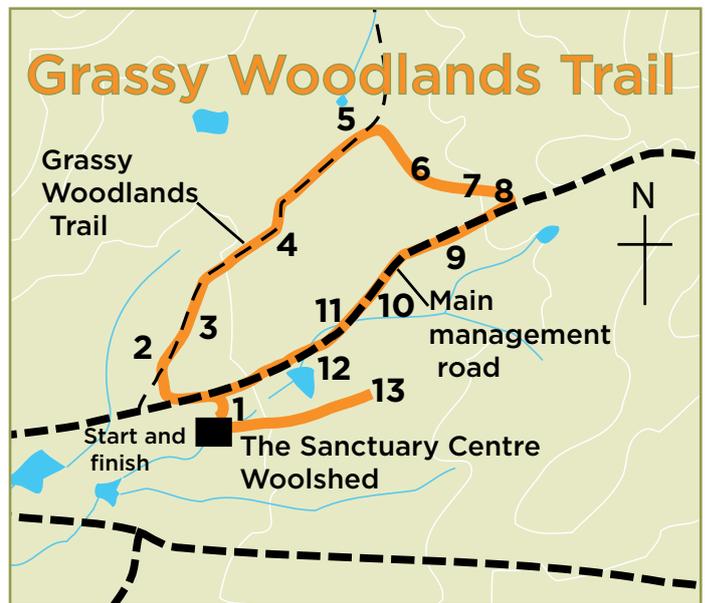
925 metres, 40 minutes

This trail is a great way to discover the diversity and complexity of this woodland community. It passes through several habitat types including grassy woodland, open grasslands and forests and includes many micro-habitats such as wetter gullies, heathland and drier ridges. Each habitat comes with its own native plant and animal life such as Red-necked Wallabies and Swamp Wallabies in denser vegetation, and Eastern Grey Kangaroos in open grassy areas. Of course over the years, people have made use of the natural resources found in this area and, as a result, their activities have changed the land.

Follow the markers and numbered posts.

1. The Woolshed and the woodland Just outside the Woolshed

This woolshed that is now used as the Sanctuary Centre, was once located in the nearby 'Forest View' property on Old Gundaroo Road (now the central heritage walkway through Forde). Constructed around 1930 from local timber, it is likely that the roof was replaced at a later date. In June 2010, the woolshed was transported in one piece to its current site. Before this, another woolshed and yards existed here but they were destroyed by fire during the 1996-97 summer. In the open area around the woolshed the large trees are mainly mature Yellow Box *Eucalyptus melliodora* with their characteristic shaggy brown bark on the trunk and lower limbs. Yellow Box, along with Blakely's Red Gum *E. blakelyi*



(the smoother trunked trees with grey bark and cream coloured patches) and some other eucalypt species are the dominant component of what is now a critically endangered ecological community.

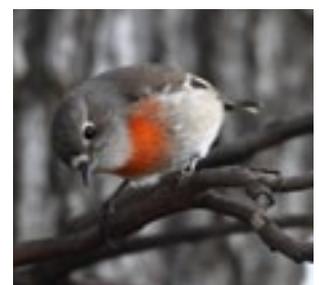
Large eucalypts are like supermarkets for native wildlife. When flowering, Yellow Box provides a rich nectar source for many species of mammals, birds and insects. The trunk contains sap which is tapped by animals such as Sugar Gliders; leaves provide food for possums; bark and leaves give shelter to many insects and these are then eaten by other animals; flowers give sugary nectar for honeyeaters and later seeds are a food source; and fallen bark, limbs and leaf litter create places for foraging.

Cross the road, head west for 40 metres then follow the grassy woodlands markers along a minor management trail.

2. Useful after death

Standing dead tree 20 metres to left of track

Even in death, this standing dead tree (or stag), contributes to the woodland community. Its branches fall to the ground where termites, fungi and bacteria invade and promote wood decay, hasten the rotting process and return nutrients to the soil. Lichens can be seen on the dead branches and the roots are still holding the soil together. Small birds such as the threatened Varied Sittella like to forage in small flocks for insects in dead branches of trees. Many eucalypt stags also have hollows that are used by birds and arboreal mammals for nesting and shelter.



Male Scarlet Robin (left) and female (right). Photos: G Dabb

3. Hollows in the making

Large Brittle Gum five metres to the right of track

As their name suggests, Brittle Gums *Eucalyptus mannifera*, with their chalky white and grey trunks, are prone to losing their limbs often after damage due to natural events like fires, windstorms or mistletoe infections. As a result, hollows form where the limb used to be. This tree has very small hollows but more and larger ones are likely to form when the dead branches drop off.

Hollows form in many mature eucalypt trees (often taking over 120 years) but amazingly they do not harm the tree as movement of water and nutrients through the tree takes place just under the bark, not in the centre of the limbs and trunk.

This tree has also created a large amount of leaf and bark litter—a naturally protective mulch that helps retain moisture and return nutrients to the soil. Both hollows and mulch add to the complexity of the woodland.

Sugar Gliders, Brush-tailed Possums and small insectivorous bats also use hollows for nesting and shelter. Signs of chewing around the entrance to a hollow or smoothed wear marks indicate that an animal is using it.

Look for hollows in other trees.

Just ahead to the left of the track, a tree has fallen. A common practice in woodlands was to remove fallen dead timber for firewood and in an attempt to 'tidy up'. It looked neater but actually simplified the habitat. Fallen trees are excellent places for animals to find shelter and they provide perching sites for small birds.

As part of scientific research in the Sanctuary, 1000 tonnes of large dead logs have been put back in the woodlands and the immediate environment around them is being studied. The research has shown that the logs create micro-climates around them, affecting soil temperature and moisture and supporting highly diverse communities of beetles. We now know that fallen dead timber adds to a woodland's structural complexity which is good for species diversity and essential for some species including the Brown Treecreeper.



Beetles found in Mulligans Flat. Photos: P Barton

4. Red stringybark forest

Red Stringybark forest with large mature tree right of track

Red Stringybark *Eucalyptus macrorhyncha* can be



The Brown Treecreeper and Superb Parrot (above) are just two bird species found in the reserve that use tree hollows for nesting. Photo: H Fallow

recognised by its rough, deeply fissured grey to cinnamon-red bark. Some red patches under the grey bark can also be seen—this is where it gets its common name. Stands of Red Stringybark are common on the dry, higher ridges and foothills at Mulligans Flat, found in association with other eucalypts such as Broad-leaved Peppermint *E. dives*. The young trees here are all probably the same age as the last bushfire (in the early 1980s), the evidence of which can still be seen on the trunks of some trees. The fibrous bark encourages fire to spread to the canopy where the heat forces the gumnuts to open and release millions of seeds.

This forest is typical habitat for White-throated Treecreepers. They ascend a tree trunk using their long sharp claws to cling to the trunks, then probe for insects with their curved bill before flying to the base of the next tree to repeat the process.

5. What grows where and why?

Candlebark

The denser patch of trees on the left include Candlebarks *Eucalyptus rubida*. Rough, flakey bark around the base resembling the drippings from a candle and the horizontal 'chop' marks (scars caused by burrowing insects) on the trunks give clues to its identity. In the autumn, the trunks develop attractive pink or reddish patches. The juvenile leaves are round, stalkless and waxy blue-grey. What tree species grows where is a clue to subtle differences in the landform. Candlebarks are an uncommon tree at Mulligans Flat and may thrive in this spot as the land is lower and not well-drained.

Watch and listen for mixed flocks of small birds including Scarlet Robins, weebills and several species of thornbills as they forage together in the foliage. In the cooler months, Golden Whistlers and White-eared Honeyeaters are sometimes found in this area.

Turn off the minor management trail on to a smaller walking track to the right.



Weebill. Photo: G Dabb

6. Fixing nitrogen

Blakely's Red Gum and Silver Wattle regrowth

In the open area here is a patch of Silver Wattle *Acacia dealbata* which has blue-grey and feathery divided leaves. Acacias are significant understorey trees or shrubs in many parts of Australia and play a role in maintaining the productivity of woodlands as they 'fix' nitrogen from the air and return it to the soil. Nitrogen is an essential plant nutrient.

Silver Wattle is one of several acacia species that are quite common at Mulligans Flat. Acacia leaves, flowers, seeds and sap provide food for many insects, mammals and birds. Small birds like thornbills



Silver Wattle

and robins often forage in patches of wattles like these. Although not long-lived (around 15 to 20 years), acacias are soon replaced by fast growing seedlings. The main groundcover here is Kangaroo Grass *Themeda australis* which turns a rusty red during winter.

To the right of the track there is also a dense stand of Blakely's Red Gum. The leaves of this species are often attacked by insects and as a result, the canopy may appear unhealthy or even dead.

7. A living crust

Where lichens and mosses can be seen on the ground

At certain times of the year this patch of ground might look bare, but look closely at the soil and you will find lichens and mosses just a few millimetres tall. A lichen is



Lichens are some of the most successful life forms on earth

an extraordinary organism, comprising two completely different life forms—a fungus and an alga. They grow in such total inter-dependence that both have long since lost the ability to survive alone. The fungus provides the structure and takes up food through a root-like network of threads called mycelia. The alga uses the sun's energy through the process of photosynthesis and stores it in sugars.

In dry spells lichens and mosses can become completely dehydrated and appear dead. However, a shower of rain will miraculously bring them back to life. Desiccation can be an advantage to lichens as broken-off fragments may blow away and start a new colony elsewhere. Mosses, lichens and liverworts are known as cryptogams (from the Greek words 'kryptos' meaning hidden, and 'gamos' meaning marriage). They do not produce flowers or seeds and early botanists did not know how they reproduced, hence the name. Soil cryptogams form a living crust which helps to bind the soil surface, prevent erosion and maintains soil productivity.

8. Where's the diversity?

Meat ant nest

Over 600 different types of native plants and animals have been found in lowland woodlands and grasslands in the southern tablelands of NSW and the ACT. More than 90% of the biodiversity in woodlands is invertebrates, including meat ants.

The bare patch of ground covered with uniform sized stones is a meat ant nest. Meat ants are omnivorous. They play a vital role in recycling nutrients and, as their name suggests, are particularly good at 'cleaning up' dead animals. Many plants, including some acacias, produce seeds with special edible attachments (elaiosomes) that are attractive to ants and other insects. Meat ants carry them into their nests where the edible pieces are eaten and the seeds discarded. When the seeds germinate, their location in or near an ant nest provides protection to the young seedlings and may increase their survival.

Ants from the genus to which meat ants belong also have mutually beneficial relationships with some species of caterpillars. The caterpillars supply sugary fluids to the ants, which in turn protect the caterpillars from predators.

Look for other invertebrates in the woodland.

Yellow Box—Blakely's Red Gum Grassy Woodlands similar to those now protected at Mulligans Flat were once highly prized for grazing and farming and were greatly modified by the addition of pasture plants and fertilisers. They were also partially or totally cleared. Now only about 5% of the original extent of this type of woodland is left in Australia. Fortunately, woodland and forest trees here weren't heavily cut for timber, but the vegetation was modified by grazing sheep. The cut stump to the left of the track is probably from a mature Yellow Box tree that may have been felled for fence posts, railway sleepers, firewood or to increase the area of grassy vegetation suitable for grazing stock. The wood from Yellow Box trees is very hard, heavy, strong and durable.

Also growing in this patch are small shrubs typical of a woodland understory, including Urn Heath *Melichrus urceolatus*, Heathy Bushpea *Pultenaea procumbens*, Parrot Pea *Dilwynia* spp. and Peach Heath *Lissanthe strigosa* as well as Ploughshare Wattle *Acacia gunnii*.



Urn Heath (left) and Parrot Pea (below)



9. Another species of eucalypt

Broad-leaved Peppermint forest

Along the roadside, the large spreading eucalypts with the fibrous, interlaced, grey-brown bark on the trunk and larger branches are Broad-leaved Peppermints *Eucalyptus dives*. Their leaves have a high oil content which can be seen as tiny clear dots when a leaf is held up to the light. Yet another example of the diversity of eucalypts at Mulligans Flat, it is one of nine species that occur naturally here.



Interlaced bark and oil dots, Broad-leaved Peppermint



10. Erosion gully on the mend

Erosion gully 10 metres to the left of the management road

Here you can see the extent of the tree roots in the eroded gully beside the road. In the 1960s, contour banks were constructed here to control runoff and erosion caused by rabbits and sheep-grazing.

By reducing the level of grazing by rabbits, hares and kangaroos in the Sanctuary, plants are able to establish themselves on the bare ground and gradually the gully is able to be stabilised.

11. Indigofera adds nitrogen

A group of Indigofera plants five metres to the right of the management road

Like other plants of the pea family, and the acacias, Austral Indigo *Indigofera australis* is able to 'fix' nitrogen with the help of bacteria in the root nodules. The bacteria provide the plant with nitrogen while the plant is a source of sugar for the bacteria. Nitrogen is a limiting factor for plant growth and is needed to make amino acids, proteins and DNA. Other plants obtain the nitrogen they need by absorbing inorganic nitrates dissolved in the water or soil substrates surrounding their roots.

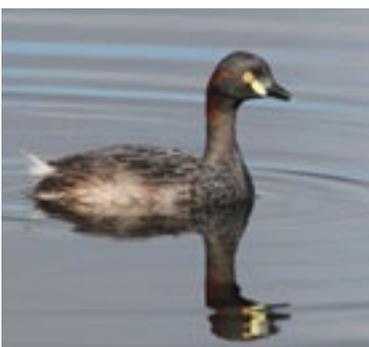


Austral Indigo has showy purple-pink flowers in October.

12. A cool dam

Dam and grassy area

The dams in Mulligans Flat were established for stock when this area was part of the pastoral industry and also to control runoff and erosion. They now provide habitat for water plants and animals. Approach the dam slowly and quietly and you might see or hear Long-necked Turtles, frogs and birds such as the Australasian Grebe, Australian Wood Duck and Pacific Black Duck.



Australasian Grebe. Photo: G Dabb

Australasian Grebes don't like leaving the protection of water as they are poor flyers. They feed mostly at dawn and dusk either diving for or chasing their prey on the surface. They eat small fish and aquatic snails and insects. The Australasian Grebe, like most grebes,

also eats its own feathers and feeds them to its young. This is thought to help prevent injury from any sharp fish bones they swallow. The nest is made of floating plant material which is anchored by reeds.

Return to the Sanctuary Centre

13. Typical woodland

For a wonderful springtime wildflower experience, follow the marked trail 150 metres to the east of the Sanctuary Centre keeping the dam to your left and then return the same way.

The trail leads to one of the best examples of Yellow Box—Blakely's Red Gum Grassy Woodland in Mulligans Flat, displaying the typical structure of a woodland (trees with canopies not touching) and a diverse understorey of flowering shrubs, herbs, native grasses, daisies, orchids and more. On the edge of the woodland, native grasses such as Red Anther Wallaby Grass *Rytidosperma pallidum* and other wallaby grasses *Austrodanthonia* spp. grow.

In 2012, Eastern Bettongs were released into the Sanctuary after being extinct in this area for over 80 years. This small rat-kangaroo is nocturnal, sleeping in thick grass during the day and emerging at night to feed on native underground fungi (truffles). They are thought to be the 'ecosystem engineers' in the woodland, aerating the soil, improving soil moisture and distributing fungal spores. You may find evidence of their night-time activities in the form of disturbed soil and leaf mulch.



Eastern Bettongs. Photo: D Watts

Further information

www.mulligansflat.org.au

Canberra Connect: 13 22 81

www.tams.act.gov.au

Join the Friends of Mulligans Flat ParkCare Group:

<http://www.mulligansflat.org.au/get-involved>

