



Wilderness Twilight at Kanangra — silkscreen print on Stonehenge paper. "When I was drawing the orchids and habitats out there I loved the calm during the alpenglow and twilight which follows on the Kanangra Walls. The sketch for this piece happened on one of those evenings."

FREEDOM WILSON & the Buttercup Doubletail



Mycorrhizal: Futurae – Ferox – Inferius Fungus Root: Future – Wild – Below

Freedom Wilson's recent exhibition at the Blue Mountains City Art Gallery *Mycorrhizal: Futurae - Ferox - Inferius* came about through her chance meeting with ecologist Anna Murphy at Canberra's Handmade Market in December 2017 where she had gone to introduce her printmaking studio, Laughing Bird. '

Our conversation was brief but what she had to say about the threatened Orchid Species and their dependence on Mycorrhizal fungus for seed germination was so

compelling that I had to find her again and learn more. I sent an email to the Head of the Office of Environment, describing this lovely orchid ecologist with blonde hair; cargo shorts and a white t-shirt. They knew exactly who I meant and passed my email on.

'Anna replied, asking if I would like to come out and survey for orchids with her. We had some wonderful survey adventures and many conversations unfolded as we surveyed.



Monotypes on stonehenge paper representing the six Buttercup Doubletail orchids found flowering at the Wombeyan Caves Karst Conservation Reserve in November 2017, and silk screen prints representing three Buttercup Doubletail orchids found flowering on a private property at Jaunter:

At the Bioblitz survey in 2017 we found six flowering *Diuris aequalis* plants (Buttercup Doubletail orchids) which I drew on location. Back in the studio I cut out much magnified stencils of these drawings and printed monotypes for the flowering orchid plants and a representative print for the Mycorrhizal growing (and being eaten) below each orchid plant.

Left, three smaller silk screen prints on the other wall are taken from drawings of three flowering plants found in December 2017 on a private property out at Jaunter, near Oberon.



'This has all been an extraordinary experience for me, and I hope now to make this a ten-year print project, surveying and drawing orchid numbers each year, until they are (hopefully) a recovered species.'

Anna Murphy describes the *Diuris Aequalis* as a 'canary in a coalmine' because its declining numbers are indicative of a species losing equilibrium in the natural environment.

In October and December 2017 Wilson and Murphy met for a field trip in the Kanangra Boyd National Park, the Gumang State Forest, the Wombeyan Karst Conservation Area and a private property with conservation protection near Oberon.

Each orchid found was drawn in situ by Wilson and then as larger prints on return to her studio. Wilson learned how ecological communities evolve and their impact on the natural world, above and below the soil. In the case of the *Diuris aequalis*, germination is dependent on its tiny seeds falling onto soil containing the mycorrhizal network which has evolved specifically to meet this species' needs.

Orchids exist in symbiosis with fungi. Depending on the parent plant, the fungus receives from 10-20% of the nutrients generated through photosynthesis.

Despite the orchid's adaptive morphology and evolutionary prowess, Wilson learned that as with so many species of flora and fauna, the conditions which had once allowed the Orchidaceae family to dominate the natural world no longer exist. Australia is home to over 1,700 recorded species of orchids, more than any other temperate region in the world, with 1,300 - including the *Diuris aequalis* - endemic to Australia, making the fact that a quarter of global orchid species extinctions have occurred here particularly distressing.

For the orchids endemic to Australia, there has been a loss of 75% of original tropical rainforest and 60% of casuarina forests and woodland, tall closed shrublands and low closed forests with a grassy understory - which are the habitat of the *Diuris aequalis* in particular.

Anna Murphy:
Conservation efforts for *Diuris aequalis* depend on a thorough understanding of the specific, ecological communities that have evolved with the orchid over millennia. Orchid seed is microscopic and its size means that whilst it can be dispersed by wind, it contains insufficient energy reserves to germinate without the mycorrhizal network. It is that relationship which allows the plant to continue receiving nutrients during the

period of dormancy after flowering, crucial in times of low rainfall as this allows the plant to 'sleep' through adverse conditions.

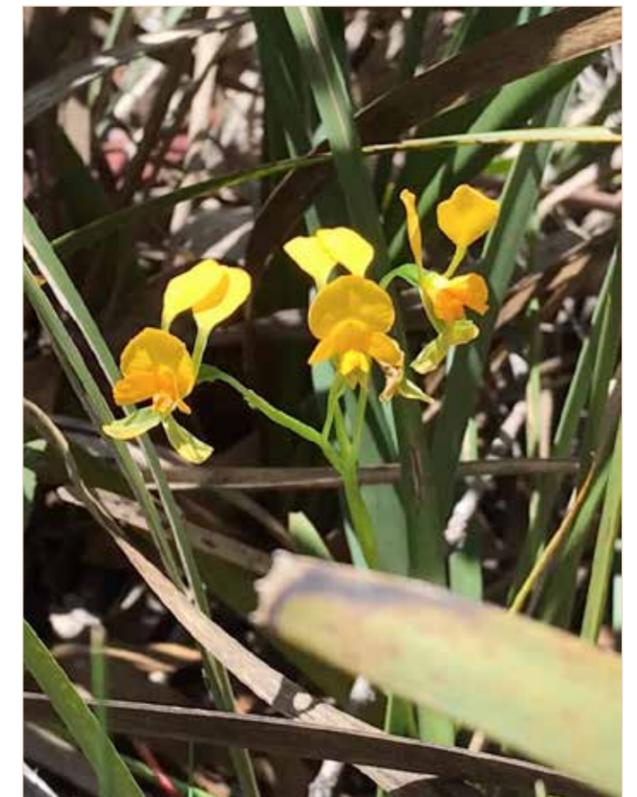
Advances in research have seen orchid propagation rates and translocation techniques improve for many species and this year *Diuris aequalis* seeds were successfully germinated by Karen Sommerville and her team at the Australian PlantBank. Wilson's monoprint 'Seed' celebrates this achievement.

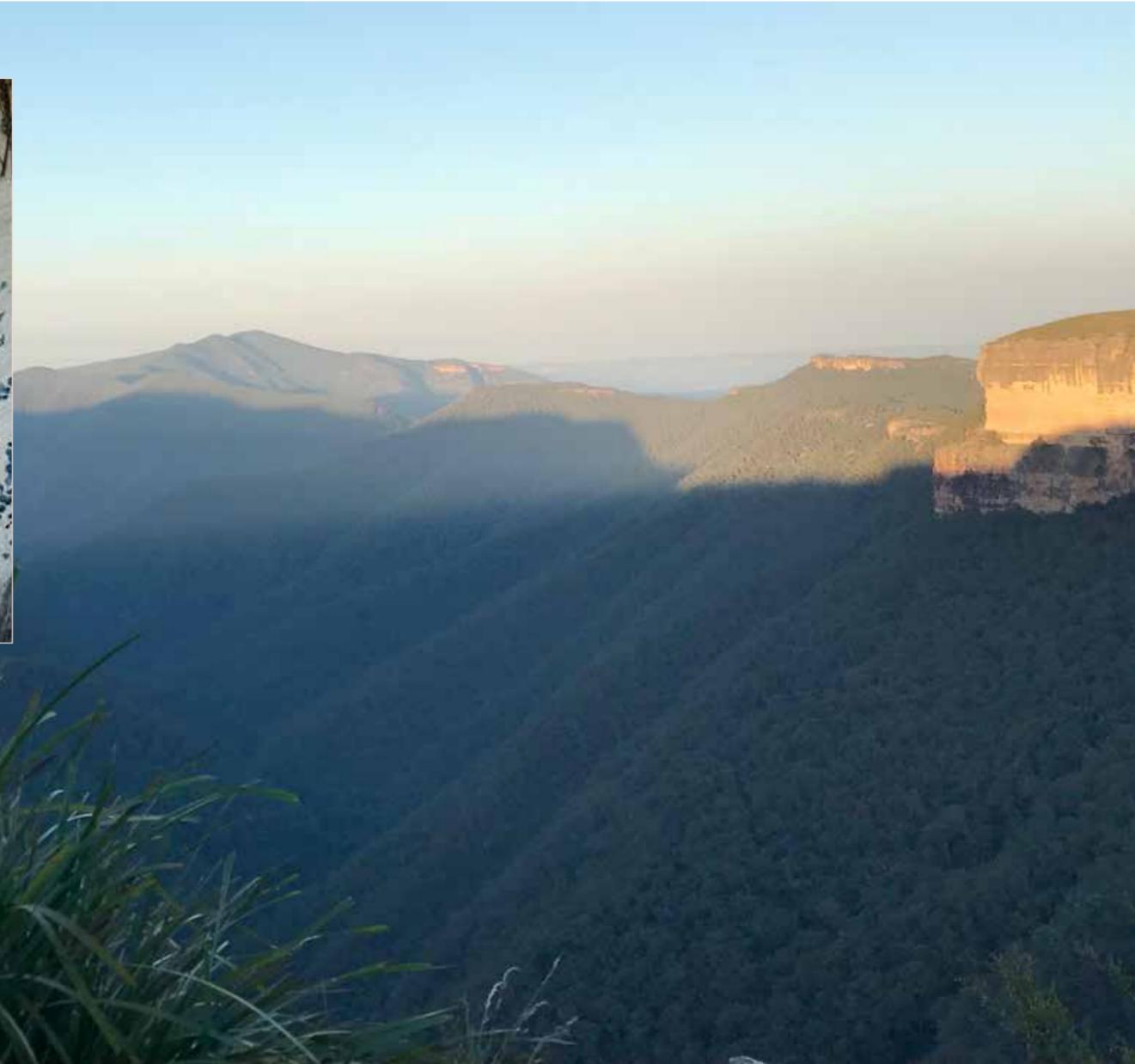
This page:
From the Freedom Wilson Mycorrhizal exhibition at Blue Mountains City Art Gallery:

Left wall, The Buttercup Doubletail orchid habitat at the Wombeyan Caves Karst Conservation area, drawn over three months so the plants which grow in this habitat varied over the time of the drawing.

Right wall, Six monotypes based on the drawings of the six Buttercup Doubletail orchids found growing at the Kanangra Boyd Wilderness area in December 2017.

Centre, hanging transparent silkscreen print 5m, of much magnified Mycorrhizal fungus below the ground of the Kanangra Boyd wilderness area.





The Print Orchid Recovery Project: Freedom Wilson hopes to encourage a conversation about conservation happening above and below ground and the importance of micro organisms within the Australian bush. Freedom intends 'to spend any time I can researching, drawing and printing up threatened and endangered orchids and their habitat and to use my artwork to tell the story about any remarkable people implementing recovery projects, in the hope of saving them from extinction'.

Above: Wilson's large format habitat drawings in pencil and watercolour suggest the scale of the landscape in which the endangered Buttercup Doubletail is found. These are artistic surveys of the ecological communities that make up the *Diuris aequalis*'s habitat.

Left: Freedom Wilson and Anna Murphy in the field



The buttercup doubletail is an endangered, terrestrial orchid found in forests and woodlands near the Great Dividing Range on the NSW Southern and Central tablelands. Very few plants remain in the wild.

The buttercup doubletail grows to 45 cm high. It has golden-yellow flowers but, unlike similar orchids, it does not have dots or stripes on the petals.

The species is known as a 'donkey orchid' for its two widely-spaced ear-like petals at the top of the flower. The term 'doubletail' refers to the two long, green leaf-like sepals found at the base of the flower which

often curve across each other. The buttercup doubletail flowers between mid-October and mid-November in the southern part of its range and between mid-November and early December in populations north of the Abercrombie River.

If you think you have found a buttercup doubletail, you can notify the Office of Environment and Heritage (OEH) at buttercup.doubletail@environment.nsw.gov.au

The buttercup doubletail has been found in very small populations in Kanangra Boyd National Park and bushwalkers are encouraged to report any sightings.