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Land of the **giants**

In the depths of Tasmania's forests lurk living giants – swamp gums can grow to 100m tall and are the world's tallest flowering plants. The AGS-supported Tasmanian Tree Project is raising the profile of these titans even further by capturing the first full-length photographic portrait.

STORY AND PHOTOGRAPHY BY THE **TASMANIAN TREE PROJECT TEAM**



The twisted tops of
giant Styx Valley trees
claw their way through the
gathering fog to catch the
first rays of the morning sun.

WE WERE PERCHED like birds in the crown of an ancient eucalypt, clinging on as we took in the vista across Tasmania's Styx Valley. Here we began to plan our next move. It had taken many days of searching – crawling over logs and pushing past ferns – to find this perfect specimen of the world's tallest flowering plant, a giant *Eucalyptus regnans*. Our aim was to create the first single photograph showing off one of these giants in all its wondrous botanical glory.

On the hunt for this specimen, we'd lost all perspective over what could be considered a big tree, as larger and larger gums towered overhead. But not only did we need to find the right tree, we also had to find a matching 'satellite' tree beside it and then work out how to string a rope between them. From that, we could fix an elevator line to carry a pair of heavy cameras. Often we found a beautiful subject tree but no satellite tree, or – even more frustrating – a perfect pair, but with other trees blocking the view of the subject's base.

Eventually, and with much deliberation, the optimal tree revealed itself: it was named Gandalf's Staff. Soaring 87m into the sky from the emerald rainforest, it checked all the boxes – accessible by foot, climbable, visible from top to base, and photogenic, too. Gandalf's Staff is a very special tree. Not only is it a landmark on the popular Tolkien Track, but it was also home to a five-month long tree-sit campaign in 2003.

Tasmanian Tree Project photographer Steve Pearce and coordinator Jen Sanger had participated in environmental demonstrations in the area and had both seen Gandalf's Staff. "I recall one bitterly cold morning looking up and seeing the tremendous trunk disappearing into the silent mist," says Steve, of a visit he made to the site in 2002. "It left a profoundly deep impression. To be very honest, during our initial search we had struck Gandalf's Staff from the list, because it had been an iconic tree of the Tasmanian forest protests – and I really wanted the project to be apolitical."

The matching satellite tree was 60m away. It was itself a spectacular specimen, but in a far more advanced state of decay. Splitting into two trunks at 40m, it had one relatively climbable vertical trunk, and one gnarled, dead shard.

It wasn't the first time we'd attempted to create such a special image. In 2015 we had made a high-resolution portrait of a 41m rimu tree within the last remnants of the North Island rainforests as part of the New Zealand Tree Project. Here in Tasmania, we had to double the scale to capture these 80m giants. It required more of everything: a bigger team, more equipment, more preparation, and more time in the field. It looked so simple on paper during planning, but it turned out to be so much more complicated in reality.

AMONG OUR TEAM of ecologists and filmmakers, climbing trees is a familiar process, but the challenge of rigging the horizontal line was magnified by the sheer scale of the distances and the complexity of the forest habitat.

We gathered together the ropes and equipment and, in several



▲ Using a narrow nylon parachute cord, Steve Pearce controls the custom-built camera assembly as it begins its vertical path.

► Dan Haley prepares the ropes and climbing hardware that will take him safely up into the treetops and return him to the ground once more.

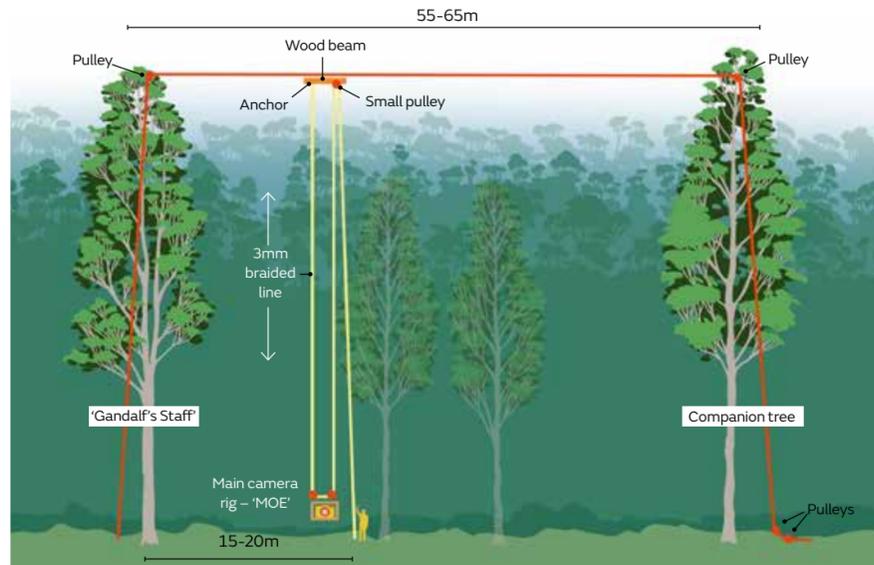
stages, we hauled the gear into the forest. We first set a thin cord in the lower branches, and then pulled up a long climbing rope. We then had a pathway into the crown of Gandalf's Staff, and once inside the tree itself, we could sequentially set lines on higher and higher branches.

For the first 10m of the climb, we were surrounded by the crown of a moss-covered myrtle. When we pushed our way past its uppermost twigs, emerging from the dark and cool lower forest into a clear, brilliant sky framed by towers of wood, we finally had a sense of the Staff's scale. The tree's slight lean meant that as we climbed we hung in space, unable to control spinning from any twist in the rope. Inching past tumorous burls, sprouting fungi, and fragile, dead giant branches, we were utterly committed to the rope and our equipment.

The main branches of the tree were healthy, but there were also many dead branches stouter than most backyard trees. The largest of the living branches were so old that their surfaces had rotted away, leaving troughs of compost far from the forest floor. Countless animals had sought shelter in the tree's many small hollows and crevices. ▶



How a portrait of Gandalf's Staff was captured



The Tasmanian Tree Project's camera assembly – known as Margin of Error or 'MOE' – was suspended from a pulley system running along a rope

between Gandalf's Staff and another giant tree at a height that was great enough to clear two shorter trees between them. The camera

rig could be lowered to the ground or raised up to the full height of the canopy as needed, by an operator on the forest floor.

Tall tree species

Only 10 species are known to have trees taller than 85m. *Eucalyptus regnans* is the tallest flowering plant on Earth.

89 m

Manna gum
Eucalyptus viminalis
Tasmania, Australia

94.1m

Yellow meranti
Shorea faguetiana
Borneo, Malaysia

94.9 m

Giant sequoia
Sequoiadendron giganteum
California, United States

99.8 m

Mountain ash
Eucalyptus regnans
Tasmania, Australia

115.7 m

Giant redwood
Sequoia sempervirens
California, United States

▶ **Stuart Liddell** shares a quick preview of documentary footage with Yoav Bar-Ness while Dan Haley sets up the next shot

▶▶ **Yoav** investigates the formation of habitats and the patterns of decay of an ancient branch high in the eucalypt forest canopy.



▼ **Jen Sanger** has a moment of reflection hanging alongside the massive lower stem.



▶ **Yoav** inches up towards the lowest branches after climbing through the rainforest canopy.



“We were utterly committed to the rope and our equipment.”



BY THE
NUMBERS

12,000

High-resolution
images shot
with MOE

The upper crown holds ▶
both healthy sunlit foliage
and the dying branches of
the uppermost stem.

8 NUMBER OF VOLUNTEERS

1500
Metres
of line used

6 Different
days
represented
in the final
image

The middle crown is an ▶
environment of peeling
bark, bright leaves and
massive old branches.

68

Days scouting,
rigging, and
photographing

34

Days waiting
for the wind to
settle

Below 40m, the tops of ▶
the rainforest trees are
still below the lowest
Eucalyptus branches.

87

Images blended
manually

5 Mornings with fog at the tree

87

Height of the
tree in metres



22M

168

Hours
merging
and editing
photographs

85

Vertical runs
for **MOE**

16.5

Circumference
of the tree base
in metres

At the forest floor, ►
mosses and giant tree
ferns thrive in the cool
shadows of the huge
rainforest trees.

0M





We climbed to the uppermost branches. The ultra-tall eucalypts are inevitably declining at their summits, so climbers have to be both humble and cautious. From here, we could see the forests and clearfells along the Styx Valley, and up to the high mountain peaks of dolerite that dominate the landscape of the Tasmanian south-west. Closer at hand, but still out of reach, we could see the satellite tree.

Setting the horizontal line over such a long span required a mirrored approach. We launched the line as far as we could from Gandalf's Staff and then descended, hauling over all the climbing gear to repeat the process in the satellite tree. On the ground, we tied the two lines together, and then faced the rather tricky puzzle of disentangling them from the branches between the two trees. Many curses and three hard days later, we had a horizontal line between the trees, but even then we were still a long way from completing the setup.

Because of the triangular angles, a taut horizontal line can generate massive forces on its anchor points. We were confident in the strength of the trees, but needed sturdy equipment. For the horizontal line, we used brute force to pull across a rope 20mm in diameter. It was twice the thickness and four times the weight of our climbing lines, and by far the heaviest and strongest rope we had ever handled.

INSTALLING THE CAMERA SYSTEM further tested the skills and patience of the team. The rig had been affectionately named MOE – margin of error – during the New Zealand Tree Project. On the horizontal line, a wooden beam was installed with attached pulleys through which ran more than 240m of fine

3mm cord. Running vertically from the stout horizontal line, this second lighter line carried the two cameras from the dark depths of the forest up to the sun-drenched canopy.

As cheers of elation rang out from the climbing team, Steve noticed a major problem. Despite all the efforts and at least 1km of cordage in play, the cameras were more than 1m away from the optimal position. Two trees blocked the view of the base and somehow the system, all of it, needed to be adjusted.

A week later, the set-up was complete, yet more needed to be done. Another week was spent climbing to the ends of the most delicate branches to attach yet another line to the wooden beam. This third line would be pulled over and through the forest about 70m south of the main horizontal line. There it was anchored to the ground, and as the entire system was put back under tension, it shifted the cameras into the perfect vertical line.

From their final position, the thin lines of the system had to bring MOE through a vertical column of clear canopy just 5m across. To make matters more difficult, they were only 1m from catching on a dangerously hooked dead branch high in a nearby tree. Any wind greater than a breath would render the system useless. More than half of our field days would be lost to the winds – we just couldn't risk entanglement.

It took 14 days to construct the camera system: nine days longer than planned. Finally, the photography could begin.

Twin cameras mounted side-by-side and each aimed 15° askew of centre would capture the tree. As they were raised, Steve would pause every 120cm, wait for MOE to stabilise, and then trigger the shutters via remote control. This process, with two slight adjustments to capture the very top and bottom of the tree, would



► **The MOE camera assembly at work in mid-air, imaging 'Gandalf's Staff'.**

◀ **High in the treetops, Yoav Bar-Ness reaches a sturdy branch that will serve as a safe anchor for a lifeline.**



“It took 14 days to construct the camera system: nine days longer than planned.”

take nearly 30 minutes to complete, and was repeated every time the weather allowed.

During the weeks we worked in Gandalf's Staff, we were constantly surprised by the activity and beauty of the forests. Completely exposed to the elements and gravity, we were in awe of the magic around us. Early mornings brought swirling mists and red-tinted sunshine. Midday, warm sunshine or chilling rain would alternate, and occasional gusts of bracing wind would strike in us a primal sense of terror. Late afternoons, cockatoos would swoop past, screeching at the novelty of a human in the treetops.

The crown of the tree was dry and parched – a sharp contrast to the mossy and soaked forest floor. We found familiar perches and reliable camera angles, and looked for the things that made Gandalf's Staff unique: the burls, the broken branch stubs, the troughs, the aerial plants, the immense fungi, the secret hollows, and the spectacular mega-branches as large as the understorey trees below.

AFTER EIGHT WEEKS of shooting in the field, it was time to bring it all together. Producing the final image took three weeks of editing. In total, 87 carefully chosen image sets, shot on seven different mornings, were blended by hand to create the full portrait.

The entire vertical height of the tree was broken down into 120cm increments, with a left and right image pair produced at each. These pairs were then blended into one row, and then each row blended with the ones above and below. With such a structurally complex subject and multi-perspective images traversing 75m, the final picture was beyond the scope of computerised

stitching software – it required human ability and attention.

Steve had to fine-tune the final image, spending weeks carefully matching up the tiniest of leaves while still keeping perspective of the greater structure of the gargantuan subject.

“My goal was to be accurate, to get as close as possible to the tree's true size,” he says. “If I had matched the branches closest to the camera, it would have warped the image with additional height because of the perspective and proximity of the cameras to the subject. I needed to only use the trunk as a reference to align the images to get the most accurate result.”

These post-production challenges were nothing compared with the long intervals Steve spent waiting for the optimal weather conditions to shoot. “With such a sparse canopy, the tree allowed clear views of the forest behind,” Steve says. “I needed very thick fog to help isolate the tree from the background.” While there was often morning fog in the valley below, on only five of the 49 mornings did the fog billow up to Gandalf's Staff.

The Tasmanian Tree Project's ultimate aim is to elevate these giants into the cultural consciousness of all Australians. “We'd like these trees to be recognised as icons of our natural heritage alongside Uluru and the Great Barrier Reef,” says Steve.

During the eight weeks in these ancient forests, no visitor was unmoved – these trees are something exceptional indeed. “That morning 15 years ago when I stood there marvelling at the tree disappearing into the mist,” says Steve, “that's the goosebump-inducing wonder I wanted to communicate.” 

► **Find a video** at www.australiangeographic.com.au/issue136 and learn more by visiting www.thetreeprojects.com