Hi-tech nest boxes to help greater gliders

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A Greater Glider found in burnt bushland, Meroo National Park, NSW. Credit: George Lemann / WWF-Australia

The humble wildlife nest box has been given a hi-tech overhaul to help greater gliders severely impacted by Australia's bushfire disaster recover.

The nest boxes are the result of a new project partnership between The Australian National University (ANU), Greening Australia and the World Wide Fund for Nature-Australia.

More than 30 percent of greater glider habitat burned in the 2019–20 bushfires, raising concerns that the species—which was already under extinction pressure—faces an even greater shortage of the tree hollows crucial to their survival.

Tree hollows that are used by greater gliders can take over 100 years to form.

Nest boxes can provide an alternative shelter to natural hollows but traditional models, constructed with thin walls, lack thermal protection and can become far hotter than a tree hollow, exposing greater gliders to extreme temperatures.

Heat-stressed greater gliders eat less and with naturally low fat stores can perish after a few days of not feeding.

This project channels scientific knowledge of modern building standards using insulation, air gaps, and heat-reflective, fire-resistant, non-toxic coatings to create a safer nest box.

One-hundred-twenty hi-tech nest boxes have been mounted in fire-affected forests in Tallaganda National Park and state forest in New South Wales and a further 120 near Bendoc in East Gippsland, Victoria.

Specialist teams had to maneuver the 15 kilogram nest boxes into place up to 30 meters above ground because greater gliders spend most of their time high up in the canopy.

The areas with nest boxes will be monitored and compared to control sites (with no nest boxes) by ANU Ph.D. student Jenna Ridley, to test if providing a readymade home can increase greater glider numbers.

"Producing and installing high quality nest boxes is costly so this project

is very important because it will help us understand if expensive interventions like nest boxes are the best use of funding in our urgent mission to save greater gliders," ANU research fellow Dr. Kara Youngentob said.

Dr. Kara Youngentob with one of the hi-tech nest boxes. Credit: Jamie Kidston/ANU

Greening Australia has been collaborating with contracted partners to develop and refine nest box design to maximize usage by greater gliders for years. Working with WWF-Australia and Australian National University, Greening Australia provided the nest box design for this project, which then underwent tweaks and rigorous laboratory testing by ANU prior to being deployed.

Heat chamber tests showed that fully insulated nest boxes exhibited less temperature variability, remained cooler, and importantly never reached the above 40°C heat extremes of less-insulated nest boxes

Fully insulated nest boxes also maintained heat longer than any other nest box type in a cold room.

"I've affectionately been calling this design the Goldilocks box because we hope it will keep greater gliders not too hot and not too cold and will help to increase the species' resilience in a changing climate," Dr. Kita Ashman, Threatened Species and Climate Adaptation Ecologist at WWF-Australia, said.

Everyone involved in this project is passionate about saving the world's largest gliding marsupial, sometimes described as the "clumsy possum," which is under threat from land clearing, logging and the climate change impacts of more extreme droughts, heatwaves and bushfires.

"Since I was a child I've always loved being out in the bush and I've been fascinated with Australia's incredible nocturnal animals," Greening Australia Senior Program Officer Drew Liepa, who led the installation of nest boxes in East Gippsland, said.

"However in the past 20 years we have seen an 80 percent decline in greater glider populations and these recent bushfires have been devastating. So undertaking this recovery work is not only critical to support this already vulnerable species, it's also very important and personal to me."

Dr. Kita Ashman said: "I grew up looking at greater gliders all throughout the Dandenong Ranges. So they have a really special place in my heart. We hope this project can help them persist while the forest recovers and get them moving back into areas that were burnt."

Greater gliders are nocturnal and survive on a low-calorie diet of eucalypt leaves, conserving energy by gliding.

They're largely unknown compared to koalas, as Kansas-born Kara Youngentob discovered, with many Australians still unaware greater gliders exist.

"I would talk to people about them and they'd say 'what are you talking about?' We'd go spotlighting and see these incredible, magical creatures that would glide from tree to tree. They're a treasure for this country. And I think the more people know about them, the more that they will fall in love with them and want to protect them too," Dr. Youngentob said.

Provided by Australian National University