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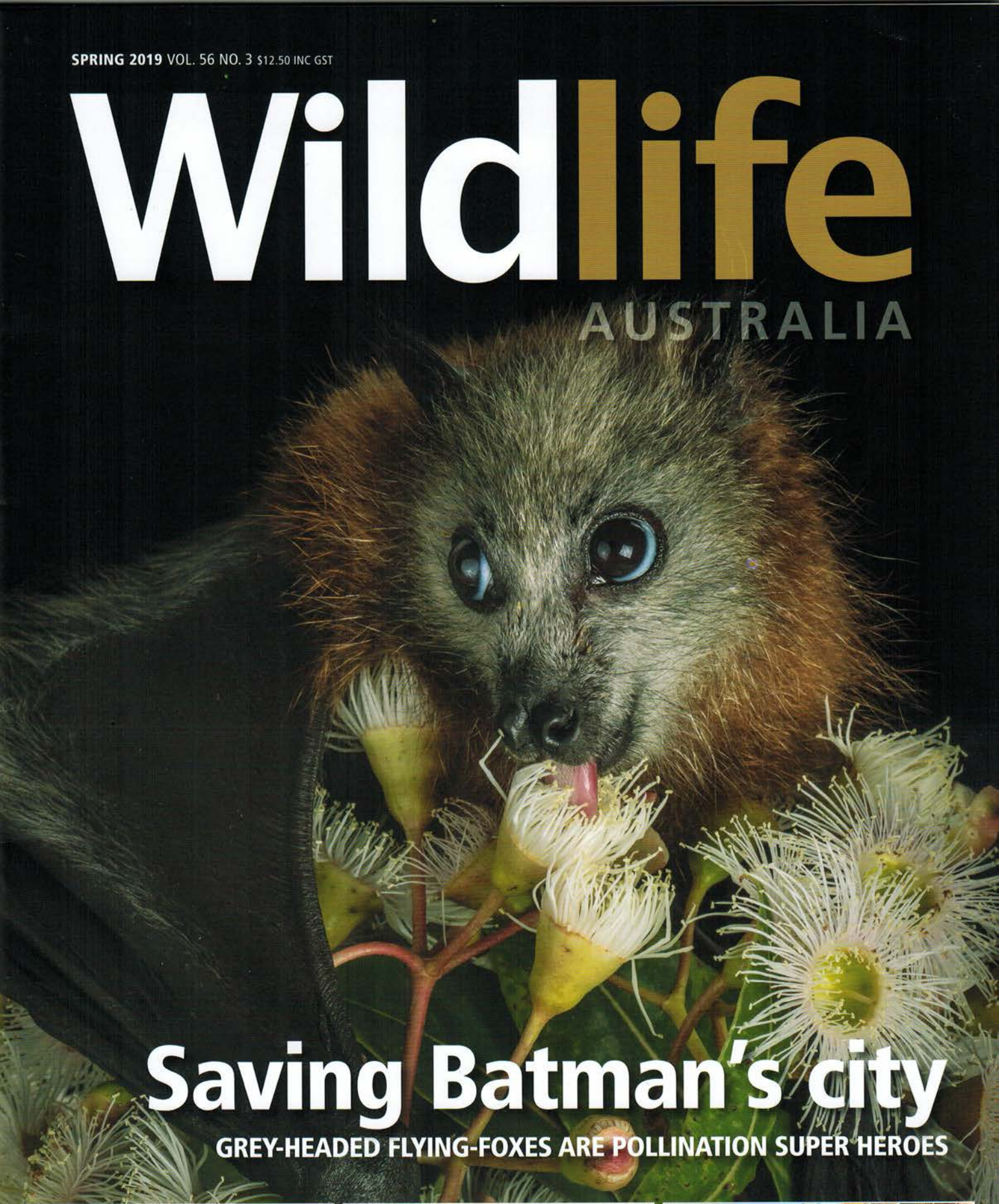
Wildlife AUSTRALIA



Saving Batman's city

GREY-HEADED FLYING-FOXES ARE POLLINATION SUPER HEROES

Parrots helped by 'cloud'

Native resilience to ferals

Nursing the Reef to life

Male Superb parrot.
Photo: Marjorie Kibby

A superb job on parrots by citizen scientists

› Female Superb parrot. The health of female superb parrots is key to survival of the species, which is estimated to be down to just 2000 birds today. *Photo: Rawshorty*

Photo: Dr Laura Rayner.

By Wendy John

A FLASH of brilliant green and yellow feathers activates a camera trap high in the tree tops in Gungahlin, an outer suburb of Australia's capital.

A superb parrot (*Polytelis swainsonii*) has entered a hollow in an old box gum tree to feed his mate nestled on four eggs inside. They're two of only 2000, or so, superb parrots left in the wild.

It's a dwindling number, due to the superb parrots' particular 'wild' having been reduced by 95 percent in recent decades.

"Superb parrot populations have been hammered by deforestation," lamented Dr Michael Mulvaney, senior conservation officer at Australian Capital Territory (ACT) Parks and Conservation. "It takes 100 to 150 years for a tree to create the kind of hollow these parrots nest in, so hollows are really prized real estate."

A few years ago, the parrots looked 800 metres down a ridge line from their nesting area to the Canberra city limits. With five new housing estates being built east of Gungahlin, the parrots' nest is now only 300m from urbanisation. But this pair is lucky. They've inadvertently become media stars, being photographed thousands of times each season by a motion activated camera trap.

The images are uploaded to 'the cloud' and analysed by an army of fans – citizen scientists volunteering on a research program that is monitoring the local housing development impact on superb parrots. They may also, quite possibly, ensure the future of the species.

Using camera traps for wildlife research is not new. But with countless images taken at the parrots' nesting hollows since 2015, Dr Mulvaney knew he needed to take a new approach to reviewing the data.

"There's no way I can look through a million images," Dr Mulvaney said.

And that's where Digivol stepped in to lend a hand – or, more accurately, lend thousands of hands.

Digivol is an online 'app' that crowd-sources volunteers to view wildlife footage taken by camera traps. These citizen scientists then document key information back into Digivol that is first validated by specialists and then made available for scientific research around the globe.

The app is also used to create digital records of vast museum collections where volunteers transcribe hand written descriptions of artefacts and field notes scribed by explorers.

"Museum collections are wonderous things," said Digivol founder Paul Flemon, manager of Digital Collections at the Australian Museum.

"The problem is that none of it is searchable online. It's useless to researchers and the community. Digivol is solving this problem."

A monumental 1,391,716 tasks have been digitised as of July this year.

"It's a really significant contribution to world science," Mr Flemon said. "And you can explore wild places in your pyjamas ..."

Injured, but she still made a difference

Tabitha-Ann Gooley, a 33-year-old university student in South Australia, would watch footage of the "cheeky" jewel-coloured superb parrots via Digivol. Although she can't recall ever volunteering in her pyjamas, the accessibility of the 'Superb Parrot Digivol Expedition' worked in her favour.

Ms Gooley signed up to Digivol in 2017 after suffering a spinal injury. Prior to the injury she had been working as a registered nurse and also studying a Post Graduate Diploma in Library and Information Management.

"When you're out of work for some time and dealing with chronic pain, you kind of get down on yourself and feel a bit useless," she said. "But with Digivol I feel like I'm part of a team."

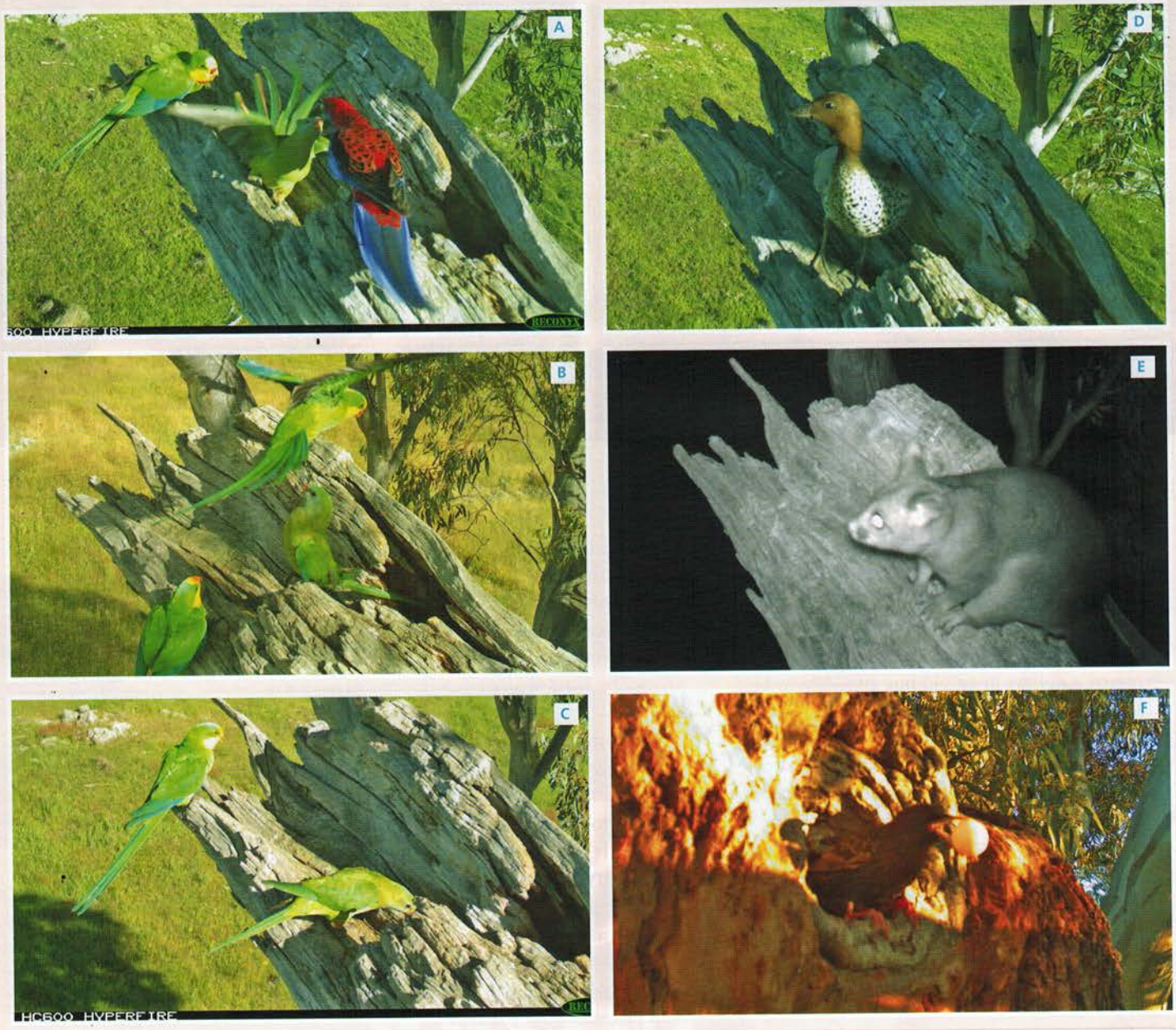
Ms Gooley's further education was also compromised by her injury. She had one last subject to complete her qualification, a work-experience placement that seemed impossible. Fortunately, the sheer quantity and quality of her Digivol work was recognised by the University of South Australia in lieu of an internship. Ms Gooley graduated in September 2017. ▶

^ Superb parrot chicks may be hatched in healthy numbers, but protection from predators is the challenge. Citizen scientists' data work has discovered that when nest hollow entrances are greater than the ideal 11.5cm, the young parrots are at far greater risk.

Fast fact

Cameras recorded the first definitive proof of a European starling destroying a superb parrot nest, fighting with the nesting parrots and eventually taking over the hollow.

v Superb parrot female. *Photo: Original by Dr Laura Rayner. Deep etch edit by Screamer Media.*



Captured by the camera trap: (A) Superb parrot pair defending their hollow from a crimson rosella, (B) superb parrots competing for hollows and (C) a parrot pair attending their hollow. Among the predators that invade superb parrot nests are: (D) Australian wood duck at hollow, (E) brushtail possum at hollow and (F) a European starling stealing a superb parrot egg from the parrot's nest. *Camera stills: ACT Parks & Conservation.*

"I'm hoping Digivol will open up opportunities for other people unable to do courses due to disabilities or living situations," Ms Gooley. said. "And it's fun. Some of the photos are hilarious," she said about the antics superb parrots can get up to.

"I'm helping researchers and scientists around the world. I'm contributing to something important."

Digivol enables citizen scientists

Digivol is the brainchild of the Australian Museum and Living Atlas of Australia. It harnesses a global trend for citizen science, where volunteers digitally log their observations of the natural world.

So far, more than 4000 citizen scientists, like Tabitha-Ann Gooley, have gone on 'virtual expeditions' as varied as digitising the Australian National Insect Collection, to transcribing field notes of Antarctic explorers scratched in pencil on freezing paper, to studying the impact of housing developments on the breeding of superb parrots.

"We now have quality, scientific evidence to help us make better, informed decisions," ACT Parks and Wildlife's Dr Mulvaney said. Evidence fed back to the ACT and Australian Governments is helping to create survival strategies for superb parrot populations – and assess the real impact of housing developments.

"There have been some interesting findings," Dr Mulvaney said. "But so far, the parrots seem to be doing fine. There was a decline in numbers in 2016 but they seem to have bounced back in 2017 and 2018."

Dr Mulvaney suggested the lower numbers in 2016 had more to do with good conditions for the parrots in other regions, with rainfall creating a better seed crop. He does have some concern, however, that the crimson rosella might get the advantage with nesting hollows over the superb parrots as housing developments advance.

When there are only 1000 pairs left of a bird species, every nesting opportunity matters.

Superb parrot chick in caring hands. *Photo: Original by ACT Parks and Conservation Service. Deep etch edit by Screamer Media.*

Wildlife 'housing crisis'

The Superb Parrot Digivol research is providing scientific evidence of Australia's wildlife housing crisis. Tree hollows are prime real estate for a quarter of all Australian birds, half of our mammals, such as possums and bats, and a third of our reptiles, according to Dr Mulvaney.

Camera trap images show superb parrots aggressively fighting other competing species to hold on to their hollow.

Usually, once a superb parrot has chosen a hollow, it is able to hold on to the nest. However, the parrots are a nomadic bird, which leaves the prized hollows free for the taking outside of nesting season.

Alongside extreme competition for nesting hollows, superb parrots are also up against predators. Rich information about predators has been gleaned, with cameras recording the first definitive proof of a European starling destroying a superb parrot nest, fighting with the nesting parrots and eventually taking over the hollow.

Other predators photographed poking their heads into nesting hollows include kookaburras, brown goshawks, ravens, brushtail possums and currawongs.

For superb parrots, the contribution of citizen scientists has already revealed a surprise discovery. Predators have only plundered superb parrot nests when their nesting hollow is larger than usual.

The average entrance size of hollows nested in by superb parrots is 11.5cm in diameter, although some parrots nest in hollows with much wider entrances – making it easier for other species to enter.

"It's spurred our thinking," Dr Mulvaney said. "Maybe we could put designer sized covers over the top of larger hollows to exclude some predators?"

Given the outstanding results from the first three years of research, 10 additional cameras have been placed outside nesting hollows on the south eastern slopes of the ACT.

And Dr Mulvaney is deeply grateful to the "army of volunteers" supporting the Superb Parrot Digivol research.

"The opportunities for citizen scientists are endless," Dr Mulvaney said. "We can have people from around the world, contributing to enhancing our understanding of our environment here in Canberra."

Dr Mulvaney is confident this research, with the help of citizen scientists, enables more informed decision making.

"There's hope for the superb parrot yet." ■

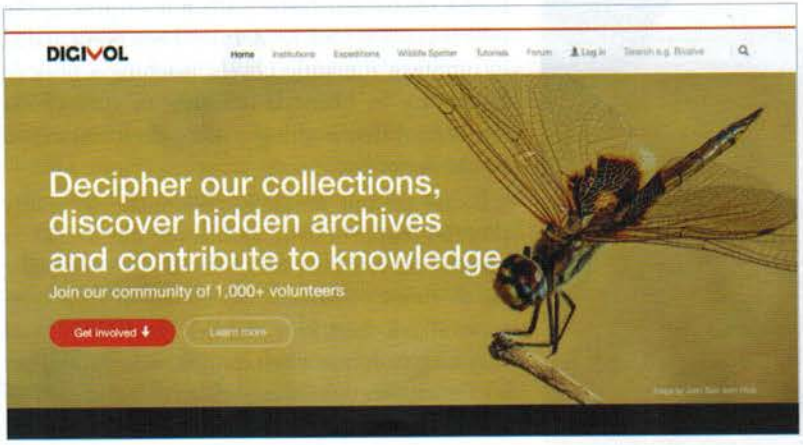
WENDY JOHN describes herself as a "journalist, presenter, podcaster and geek" who is also an avid wildlife and nature enthusiast. Her articles on topics as diverse as travel and art to wildlife preservation and natural wonders have appeared in Australian and international newspapers, magazines and websites. Apart from her own website www.wendyjohn.com.au she also has a Twitter following – @wendyjohn8 – and a lively Instagram account: wendywahoooo.

^ **Top left:** Superb parrot male is observed and noted by field researchers.

Top right: A superb parrot mating pair, utilising a seemingly 'made to fit' tree hollow.

Above: Camera trap still image showing a superb parrot male feeding a female.

Photos: ACT Parks and Conservation Service.



v Screen capture of the Digivol website. The 'cloud' collection and processing of data by citizen scientists is a game-changer for wildlife preservation, because volunteers can get involved at any time, from anywhere with an internet connection.