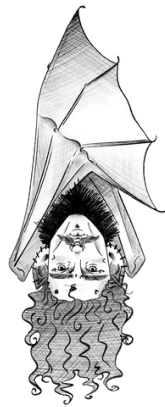


# World Builders

ess y by  
Tee M tc ell



Look up!

There's a camp of fruit bats on the banks of the Birrarung, at Yarra Bend. See how they dangle above, sheathing themselves in thin, black, membranous wings, with only their faces exposed to the late afternoon cold. Most are like this, silent and still, watching with inscrutably curious eyes.

A few others have risen  
early and started to  
preen, cheep and  
sneeze. An occasional  
cackle cuts across birds  
bolting between the  
mid-storey shrubs.  
Others languidly stretch  
out their wings,  
flashing rusty-red  
collars, grey fur, wiry  
feet.

The sun sinks lower and more noises come, huffing, trilling, shrieking, rustling and the soft thump of wings beating air. Nightfall brings a collective upswelling. Thousands of grey-headed flying foxes will disperse over Naarm, into backyards and bushland and suburban parks.

Their preferred foods are nectar, pollen and native fruits, but figs will do too. Each bat can travel up to 100 kilometres every night, foraging far from their roost. They're an industrious bunch. Not that you'd know it right now, with most half asleep.

Those fully roused start to climb and clamour, scrambling up and down branches. Vigorously rubbing their faces on sticks. Itching with a single dexterous thumb. Then the games, provocations and squabbles start. Someone gets shoved off a branch. With a few indignant flaps she alights on another tree and resumes resting, in that pendulous pose.

It's cold by the river where sun and drizzling rain lance through the gums. Late July is a quiet time. The bats still at this camp must be lazy or bold, having stayed for the winter while most of the others flew north. There are still thousands left, but far fewer than the 50,000 sometimes found here in summer. The females are pregnant and in two months they'll give birth. After this, they take flight with their pups, whose nascent claws cling to tufts of grey fur as they fly in tandem during their first weeks of life.

The bat created women in the Kulin nations, who call him Baliyang. One day, he was amusing himself by thumping the surface of the water on the Goulburn River on Taungurung Country. He kept at it and the water thickened to mud. When something stirred he took a bough, and, probing the mud, uncovered two women. He called one Kunnawarra, Black Swan, and the other, Kururuk, Brolga. Then Baliyang took these women to his brother Bunjil, the eaglehawk creator deity of the Wurundjeri people. In turn, Bunjil gave the women to men he'd created from clay.<sup>(1)</sup>

Both Baliyang and Bunjil were significant figures in Kulin moieties – social and ritual groupings with important implications for social organisation, marriage, and by extension, the particular relations, responsibilities and imbrications with Country subsequent children will have. Their actions continuously reshape the world.

Now Baliyang flies, soaring in circles around the camp. He swoops and wheels low in the brush, almost colliding with someone else, but never quite; grey-headed flying foxes have excellent eyesight, and a highly attuned sense of sound. They peel off into the night, away from a roost sited within 50 metres of the white-noise cacophonous cars streaming endlessly down the Eastern Freeway, and peopled by others who have their own cares.

## What is it like to be a bat?

Western ways of thinking have often framed bats as other-wordly and evil things, winged demons, shadow creatures, vampires, ingredients to be used by a witch. In 1974, the American philosopher Thomas Nagle famously threw a new question into this heady brew: 'What is it like to be a bat?'

The bat was cast as a prop in Nagle's treatise on the mind-body problem, which had garnered a gush of fresh interest just then. Again people were asking, how does consciousness arise from physical matter? What is the link between body and soul? And how do hard categorical boundaries between the human and animal fit with new evidence of creaturely consciousness?

1 This is the story as told by Aunty Lee Healy (Patterson-Edmonds) and Mudrooroo. Others including William Thomas have told it somewhat differently. Baliyang is the Wurundjeri preferred spelling; Balayang, Pallian and Pailian are also used.

Hovering over this discourse was the theological spectre of the Christian soul. Long the West had maintained humans were the most special creation of God, made in his divine image, set above beasts, and implanted with inalienable soulstuff that was ineffably separate from the unthinking chaff.

In his meditation, Nagle proposed that animals do possess consciousness, but one which is characterised by an 'irreducible subjectivity' that cannot be empirically known and understood. We have our minds, he argued, and bats have theirs, with the two separated by an inviolable canyon that can't be traversed.

'Occasionally one of them would lose its way and end up inside the house,' Nagle wrote, 'giving me an alarming experience of intimate contact with an alien creature. I suppose the bat felt the same.' No matter how tenaciously we might imagine being bats, we would never know the subjective texture, dimension and shape of a world sensorially apprehended through echolocation. In short, there were things we did not and couldn't know about the bat's experience. 'Namely, what it was like for the bat.'

## War tactics — eviction & resettlement

The scientific record of bats in Melbourne begins in 1884. In this region, grey-headed flying foxes are thought to have been infrequent visitors during the 150-odd years after colonisation. They were much more ubiquitous further north, in New South Wales and south-east Queensland, where the species quickly came under attack. Orchardists saw them as pests, and in 1929, the British biologist Francis Ratcliff was commissioned by the Commonwealth government to find ways of solving the flying fox 'problem'.

Ratcliff outlined a warlike approach. 'When a military commander plans an offensive, he must have certain information on which to work,' Ratcliff wrote. 'He needs to know, for instance, the size and strength of the enemy forces and the tactics they are likely to employ. In the same way, before a campaign is launched against an animal enemy, it is essential to have accurate knowledge of its numbers and habits.' He canvassed a range of 'solutions' that had been deployed, like camp destruction, disease introduction, bounties, poisonous gasses and baits, flame guns, explosives, barbed wire and shooting.

Many of these techniques continued to be used long after Ratcliff's government-funded scientific report, but during more recent decades, outright slaughter has fallen from favour. It has instead been replaced by the relocation of roosts. Flying foxes are increasingly common in urban environments, driving conflict with humans who complain of their noise, waste and smell.

Since 1992, many dispersal methods have been deployed, including ultrasonic, explosive or continuous noise; odour, water, smoke, paintballs and light; roost habitat clearing; even helicopters that would hover around for two to three hours per day. The hope was that downdraft and noise would cause the bats to flee, so they could be 'herded' in the desired direction.

A muted version of this pest perspective descended on Melbourne when a permanent colony appeared in 1986. Prior to this, any bats that did visit tended to return north over winter. The nearest known permanent camp was in Mallacoota, 450 kilometres away, so when 10 to 15 bats over-wintered in the Royal Botanic Gardens of Melbourne, it was seen as a significant southward expansion of the species' range. By the early 2000s, the camp had grown to house as many as 30,000 bats during summer.

This caused significant damage to the Botanic Gardens and prompted a program of culling. While it's difficult to know for sure, probably no more than 100 bats were killed in this way. One reason for this is that protests were called to protect them. Activists promised to kill a tree for every bat slain. They chopped down cacti 20 metres high, kicked other plants to the ground, and frequently broke in at night, until the culling was paused.

The exasperated director of the Botanic Gardens declared: 'Serious damage is continuing to happen to the gardens and it cannot continue much longer.' He said it was the greatest crisis the gardens had ever faced. By now, the bats had occupied 40 per cent of the gardens, and they were causing extensive damage to trees, plants and lawns. Culling would have to resume.

He said it was likely around 1,000 bats would be trapped or tranquilised then gassed or given lethal injections. As protests continued, activists also tried to protect the bats in another way. Citing surveys that found the species' population had collapsed by 30 per cent in 10 years, they lodged an application to have the grey-headed flying fox listed as a threatened species.

This intensified pressure to stop the culling and helped drive the development of an alternative plan, camp dispersal. A spokesperson for the Department of Natural Resources and Environment said: 'This is the first attempt in the world to relocate a flying fox colony to a pre-selected site.' They explained their hope that by creating a fledgling, caged colony at Ivanhoe, they could attract other bats, and those born in this roost would return.

Dr Rodney van der Ree was one of the ecologists at the Botanic Gardens who became involved in the relocation attempt after he began working there in the year 2000. He recalls the attractants used to try and lure the bats.

'We made these plastic dummy bats to hang in the tree. We put free fruit down there in platters, and hung watermelons in the trees. We laid down smelly leaf litter from the gardens so it would smell like them.' Although a few bats came to check it out, these attempts largely failed.

Other tactics were used to induce stress in the hope the bats would move. 'We had lots of people on foot with flags on the end of poles and spotlights and just loud percussive banging noise.' He says this drove the bats out of the Botanic Gardens quite quickly, and kicked off a period when individual bats became refugees, distributed across a wide range of gardens and parks.

The colony never relocated to the specially selected site at Ivanhoe. 'Eventually, they ended up at Yarra Bend six months later,' van der Ree says. 'It wasn't quite where we wanted, but we figured this was as good a spot as any. And the decision was made to leave them there, where they've been ever since.'

The application to recognise the grey-headed flying fox as vulnerable was approved in December 2001, and the species remains vulnerable on the international, national, and state levels. There is no doubt the years since colonisation have seen a dramatic decline.

In the 1930s Ratcliff suggested there were many millions of flying foxes, but didn't provide specific estimates, nor distinguish between the four mainland species.<sup>(2)</sup> By 1998, surveys suggested the population had declined to somewhere between 320,000 and 435,000 individuals. These estimates informed the vulnerable listing, but they're unlikely to have been robust. Grey-headed flying fox populations are hard to count.

The species exists as a single, fluid, interbreeding population that moves between camps up and down the east coast. Some individuals have been shown to make round-trip journeys of at least 2,000 kilometres in just nine months, with over 20 stops at different camps on the way. These journeys can be migratory, or undertaken for personal reasons, and the boundaries between camps are remarkably porous.

There is significant movement between big travels too. Bats normally make nightly foraging trips of roughly 20 kilometres from the roost where they're staying, but the nightly forage can take them as far as 50 kilometres from home. This nomadic nature underpins their role as a keystone species; one which plays a crucial and disproportionately pivotal role in holding ecosystems together.

Some studies say flying foxes can deposit up to 60,000 seeds in one night, and it's believed they co-evolved with vegetal species that form the backbone of Australia's forests, like eucalypts, paperbarks, banksias, native figs and lily pillies. They eat voraciously, and their comparatively large bodies and thick fur help pollen stick. The collapse of these 'ecosystem services' would be catastrophic, and it is likely to be of increasing importance as climate change drives further fragmentation of intact islands of vegetation, since flying foxes distribute genetic material across habitat boundaries.

At the same time, land clearing has driven the species into increasingly close contact with humans. There are major camps of grey-headed flying foxes in Brisbane, Sydney and Melbourne, as well as many smaller regional centres and towns. The species has expanded its range to establish a foothold in Adelaide, too. Rodney van der Ree studied the range expansion to Melbourne, and conducted community surveys of the population at Yarra Bend for around 20 years. He provides some hypotheses on why the bats came to Naarm.

First, land clearing means there's less food than before. In this climate of scarcity, urban environments provide some stability. Before colonisation there were 13 species of foraging plants available to grey-headed flying foxes in Melbourne, and none of them flowered in winter; now there are at least 87 species.

2 Grey-headed flying fox (*Pteropus poliocephalus*), black flying fox (*P. alecto*), little red flying fox (*P. scapulatus*), and spectacled flying fox (*P. conspicillatus*), which is also threatened.

These are watered more often, which is crucial during droughts, and often flower in winter, providing food for all seasons. Rising temperatures and the 'urban heat dome effect' may be significant too, since the species prefers warmer climates.

This propensity to roost among human populations explains much of the conflict of recent times, but dispersals don't necessarily contribute to ongoing decline of the population at large. In the decade to 2022, the National Flying Fox Monitoring Program made more than 10,000 visits to over 900 roosts, and produced an average count of more than 578,000 bats. The project found the population was stable, and perhaps increasing.

## When the sky burns...

Unfortunately, new threats have emerged. The most dramatic of these is deaths from heat stress. When temperatures exceed 40°C, flying foxes begin to suffer. If this heat persists, or temperatures rise too much further, organ failure and death occur. The effects of temperatures over 43°C have been vividly described by one scientist as causing flying foxes to melt from the inside out.

In 2014, scientists documented the death of 45,000 black-headed flying foxes on a single day. Studies and media reports show their grey-headed cousins are affected by these mass death events too. Rodney van der Ree has seen one of these first hand. 'My job,' he says, 'was to collect and count the dead.'

This particular tragedy occurred on Black Saturday, in February 2009, when bushfires burned across Victoria, and Melbourne reached a record temperature of 46.8°C. At least 4,790 individuals died from heat stress near the camp at Yarra Bend. Van der Ree was attending a wedding that day, but he'd been warned of what to expect.

'I was getting messages saying, "Okay, Rod, it's a hot day today". You better be prepared for tomorrow. And then an hour later, "Rod, make sure you've got a team for people to help you tomorrow." And then, "Rod, the shit's hitting the fan, it's really bad. Be prepared tomorrow."'

Next day he found the bat's bodies piled up in the golf course that adjoins Yarra Bend. They'd relocated from their roost to nearby cypress pine trees to seek deeper shade. He describes how the bats clumped in the pines. Those that arrived first were crowded by others, who stacked up on and around them, raising the temperature further.

'By the time he arrived the next day, the bodies were 50 centimetres thick on the ground.'

It was not really my job to look for survivors,' he says. 'Other people were doing that. My job was just to collect and count the dead ones. If we found any that were alive, we'd let the carers know, but the carer's job is mostly on the day of the heat event itself. Very few bats that had fallen from the trees survived into the second day. Basically, any of the bats that are still alive will still be hanging in the trees. So I'm just looking pretty much on the ground, where 99 per cent of them are dead.'

He worked with a team of several people over the course of three days. Most of the bats had died on the golf course, but some died in their roost. Others died in nearby backyards, sometimes in their hundreds. Conscious of the need to manage public perceptions and safety, the bats were quickly whisked away from the place where they'd died.

'We would pick them up and put them into garbage bags,' van der Ree says. 'Then we'd load them into a trailer or the back of a ute and drive them to the place where we'd process them, somewhere in the shade and out of the public view. We'd go through, bat by bat, and measure the forearm length, check the sex and age. Then we'd put them into big wheelie bins before taking them off to a carcass incineration place run by the government.'

Within a day the bodies began to decompose. The stench was intense. 'At that point, we stopped counting every bat,' van der Ree says. 'We were just counting every third bat, every fifth bat, to get a sample.' There were too many bodies to be reverential. Those that survived were watching on in distress. It was another hot day, and they were salivating, panting, and fanning their wings, trying to cool down. Rodney van der Ree recalls realising the magnitude of the work to be done.

'I remember for the first 10 minutes, or maybe half an hour, I don't quite remember, picking them up, feeling almost respectful of the dead. And then looking at what I'd done and thinking, there's no way we're going to get through this. So, then it was just sort of picking up handfuls of bats at a time and dumping them in bags quite unceremoniously. We just had to get the job done.'

This is not the only time heat has caused mass death at Yarra Bend. A similar event occurred in December 2019, during Black Summer. Around 4,500 bats died this time. Photos show them clinging to the same cypress pines.

These major bushfire events wiped out significant areas of foraging habitat, but largely spared flying fox roosts. Still, they bring to mind another Kulin story about Baliyang, as told by Mudrooroo.

'Balayang the bat was a brother to the great Bunjil the eaglehawk, but lived apart from him. Once, Bunjil asked him to come to where he was living, for it was a much better country, but Balayang replied that it was too dry and that Bunjil should come to where he was living. This upset Bunjil, so he sent his two helpers, Djurt-djurt the nankeen kestrel and Thara the quail hawk, to Balayang. They set fire to his country and Balayang and his children were scorched and turned black. Because of his black colour, Balayang was associated with Crow and thus belonged to the moiety in opposition to eaglehawk.'<sup>(3)</sup>

The combination of climate change, habitat loss, and the colonial prevention of cultural burns is increasing the risks posed by extreme heat, fire and drought. On top of the deaths at Yarra Bend, the summer of 2019 also saw more cataclysmic mass death in eastern Victoria. Around 2,000 grey-headed flying foxes fell dead near Bairnsdale. This was one third of the roost at that time, and highlights how significant the loss can be on a local scale, as well as the potential for a broader decline.

'As we have seen, flying  
foxes are keystone  
species, and when they  
are dragged into the  
vortex of death,  
rainforests and other  
ecosystems are dragged  
along with them.'

Baliyang discovered women in water and fecund mud of Taungurung Country.<sup>(4)</sup> Flying foxes have a habit of 'belly dipping' in rivers on hot days, and one imagines this may have inspired Baliyang's pleasure in thrumming the water for his amusement. Kulin knowledge shows us how this produced a whirling spring of cyclical life that has continued for time immemorial; one which may be considered in countervailance to the colonial obsession with what has been described as a vortex of death.

It is not so easy to disentangle the health of humans, habitats, and keystone species in the anthropocene, and fantasies of bounded containment, management or eradication can trigger cascading waves of interspecies death. The dispersal at Yarra Bend apparently cost an initial \$3 million, and while it was largely successful, most such attempts fail, because bats simply shift to another residential area very nearby, meaning management efforts merely relocate the 'problem'. A study of dispersals between 1992 and 2020 found only 23 per cent succeeded in resolving human-bat conflict.

In earlier research, Martin and Mellwee deployed the metaphor of a vacuum or black hole to describe the deathwork that results when humans take the 'pest' perspective. Orchids, or any other place that offers food, function as a vortex, drawing flying foxes in to fill the vacant ecological niche. Culling by electric grids or shooting or similar means produces a new vacant niche. More bats come to fill it, more bats are killed, and the cycle spins on.

The anthropologist Deborah Bird Rose extended this thinking. She writes, 'The metaphor of gravitational draw is powerful in itself, and can be taken further: the pteropucidal black hole does not have a boundary that stops with flying foxes. As we have seen, flying foxes are keystone species, and when they are dragged into the vortex of death, rainforests and other ecosystems are dragged along with them.' Critically endangered species depend on the so-called 'ecosystem services' flying foxes provide.

Nor does it stop there. Forests, woodlands, savannas and mangroves are the 'lungs' of the planet, and when their health declines, this has serious implications for the carbon cycles that sustain the Earth's life support system. Beyond this, there is also the closely correlated question of zoonotic disease.

This means disease that 'spills over' from animal populations to humans. It is most likely Covid-19 was one example, with the weight of evidence suggesting it jumped from micro bats into people, perhaps via an intermediate host.

3 This story is broadly corroborated by the diaries of AW Howitt, but researchers with the Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation say there's no direct evidence to support the notion of 'opposing' moieties. Also, there is no 'quail hawk' in Australia. Researchers say Thara may be a black-shouldered kite.

4 In his diaries, William Thomas says Kulin people told him this story was set 'far, far away', perhaps in western Asia. Although problematic in his proselytising, the 'assistant protector' of Aboriginal people remains a key primary source.

Flying foxes are generally safe, and broadly speaking, there is no risk to human health unless a person is bitten. It is true, however, that bats hold greater potential to harbour disease. There are several reasons for this. First, they are mammals, like us, making it easier for a virus to jump between hosts. Second, they roost communally, which facilitates the spread of a virus. Third and perhaps most importantly, they have 'super immunity'.

Whereas the human immune system only switches on when it detects a virus, the immune system of bats is constantly active. This means they can carry viruses without getting sick. However, as bats become increasingly stressed by habitat loss, heat, and conflictual events, their immune systems are compromised. In combination with their increasing presence in urban areas, this enhances the chance of a breakout zoonotic disease.

Prominent global examples of zoonotic viruses springing from bats include Middle Eastern Respiratory Syndrome and Ebola. In Australian flying foxes, there are three key examples: bat lyssavirus and Hendra virus, which have killed seven people between them, and Menangle virus. As the recent experience of Covid shows, when such viruses begin to mutate within humans, they produce a particularly palpable and terrifying testament to the porosity of supposedly fixed boundaries between us and them.

Exploring this paradoxical mixture of the strange and familiar, Deborah Bird Rose describes how flying foxes are 'participants in most of the major catastrophic events' that characterise contemporary life on Earth, including warfare, anthropically produced mass death, famine, urbanisation, climate change, emerging diseases and the provision of aid.

She also describes the convergence between speciocide and genocide. 'It seems that eradicating a species, or group of species, is not unlike eradicating a clan or a tribe, or undertaking ethnic cleansing. Speciocide, like genocide, may in many cases be primarily about destroying the possibility of the enemy's ongoing existence in the area you've defined as yours (whether that be a continent, a state, a region, or an orchard). Such efforts are integral to modernity's eradication of the 'useless' in the pursuit of perfection.'

The lethal measures deployed are designed to remove certain unwanted others. 'To accomplish this,' Bird Rose writes, 'extermination involves terror as well as death;

it involves a boundary of exclusion which will cordon off an area, keeping it "free" of the unloved and undesired.' This systemised terror creates a relentless climate of anguish, in Sloterdijk's words. For Bird Rose this evokes 'the lives and deaths of flying foxes as they are electrocuted, harassed from maternity camps, orphaned, starved, impaled on barbed wire, and otherwise subjected to direct and indirect technologies of extermination.'

In this instance, like others, the underpinning logic of terror conceives every attack as part of a campaign to counter the hostilities initiated by the enemy. 'Thus,' Bird Rose says, 'orchardists report themselves as under attack by plagues or infestations, and their extermination efforts are usually represented simply as self defence.' In the history of colonial genocide, it's a familiar refrain.

Bird Rose contrasts this against her account of First Nations' relations to the flying fox, specifically among the communities of Yarralin and Lingara, in the Northern Territory, which are mostly made up of Ngarinyman, Mudburra and Bilinara people. Here the flying fox plays a key role in sustaining the complex web or interrelations that knit together the fabric of ongoing life.

The flying fox shapes Country through Dreamings, creating cultural landscapes; it shares intercorporeal substantiation with flying fox people as totemic kin; and offers ecological knowledge and new life, moving from high ground to the low river Country, where it calls up the Rainbow Serpent to sing up seasonal rain.

## 'Thick care' in practice

Although bats have accommodated themselves well to urban environments, they frequently suffer from violent entanglements with features of the human world, including fruit netting, barbed and electrified wires, pets, glass and steel. Those that are lucky, survive and are rescued, will be enfolded within an extensive network of care provided by a large community of volunteers across Victoria.

'In the bat world, you will have people who just look after pups, or adults that need confinement and inside care,' explains Dr Jess McCutchan, Senior Veterinarian at the Travelling Vet Service run by Wildlife Victoria, the organisation which oversees and coordinates this network of care. Others have larger aviaries outside, for older bats that need more space to fly, or those who are nearing the time of their release back to the wild.

Depending on the patient's needs, and a volunteer's capacity, resources and skill, the provision of care might involve feeding, grooming, toileting, cleaning, medication, monitoring, wound dressing, and more. There is a remarkable intimacy involved in the ways in which bats are welcomed into the world of human beings while they're in care. This requires forms of attention, respect and reciprocity that are the antithesis of the vortex of death described in relation to fantasies of containment, control, segregation and eradication.

Such lifegiving vortices depend on the co-creation of shared worlds founded on mutualisms that require a real regard for animals as conscious beings inhabiting complex, communicative and valuable worlds. In this respect the provision of care can often gesture towards a genuine effort at making kin. Bird Rose borrows María Puig de la Bellacasa's concept of 'thick care' to detail these dynamic worlds shared between species.

Here, de la Bellacasa reframes care as a fundamental ethical obligation that also extends to non-human others. She espouses the situated nature of care, and ways in which it is shaped by context, history, power and interdependencies that can't be ignored. This idea of 'thick care' takes Donna Haraway's observation that 'nothing comes without its world' as its starting point.

'This being so,' Bird Rose observes, 'we are called to consider others not as passive bodies but rather as thinking subjects inhabiting their own worlds of action and meaning. A world, in this thick account, includes the body, the self, the relevant environment, and the interweaving matrix that holds these elements in the dynamism of ongoing life. In the interfaces between species, thick care must be attentive to many particulars.'

'With flying-foxes there will always be much that we humans do not understand, but we are called to recognise that flying-foxes do inhabit their own worlds, and that our care must engage with enough elements of flying-fox life to ensure that both the body and the integrity of the individual's world are sustained.'

These flying fox worlds are shaped and remade by modes of understanding, paying attention, learning, remembering, and adapting behaviours. They feature specific sensitivities inherent to the species at large, but also unique to individual bats, whom carers come to know intimately over weeks or months.

Louise and Gracia run a wildlife shelter at their small home within five minutes drive of Yarra Bend. 'Every bat has a personality,' says Louise, 'and these traits start to show from the moment you meet them. When some come into care, they're terrified and overwhelmed. Some take to care easily, with an extraordinary amount of trust.' She has known bats to be bold, bossy, meek, flighty, affectionate, humorous and always intelligent.

These individual attributes contribute to a world characterised by the species' collective, communicative, and empathetic nature, which is why bats are almost always cared for alongside others of their kind. Such forms of social organisation and bonding are most apparent in flying fox practices of caring for young.

Mothers gestate for six months, and give birth to a single pup, whom they carry in flight for its first three or four weeks of life. Once pups become too heavy and cumbersome to carry, they are left in a crèche throughout the day. At around three months of age, they start to fly and venture out in search of food, learning from each other under the guidance of older males. Pups are fully weaned and become independent at roughly six months, but maintain significant site fidelity to their maternal roost throughout life.

'Their relationship with their mum is such a tight bond,' Louise says, 'so young pups come in grieving, under really traumatic circumstances. You also have to help them through that grief.' She and Gracia chatter to their charges and give them names. They recognise the meaning of several calls, including a pup's unique cheep around dawn.

This is one of more than at least 30 discrete vocalisations with specific meanings; in this case, it helps mothers find their pups as they circle the camp after returning from a long night of foraging. Louise and Gracia come to recognise the specific sounds of each pup in their care.

The process of raising pups is very hands on. The youngest begin their time in care inside an incubator. They're taught how to toilet correctly, fed five times a day, and love to be cleaned and groomed. 'We use this tiny little eyebrow brush,' Louise says. 'Eventually the pups graduate to a larger enclosure festooned with fabric so they can explore and learn to climb, stretch their wings, and prepare for the transition to an outside aviary where they take their first tentative flight.'



These relationships are unique and specific; bats also differentiate between human beings. 'From what I've observed, not every bat in care is just going to accept any human,' Dr McCutchan says. So you could have a new volunteer come into the shelter and the bats aren't impressed, and they will actively move to the other end of the aviary, away from that person who's doing the cleaning. Whereas if it's someone that they're familiar with, they barely bat an eyelid.' Sometimes carers get to know dozens of bats in one season.

There are periods when the need for rescue and care is acute. In 2023–24, Gracia and Louise took in 54 pups. Dr McCutchan explains the factors that drove thousands of bats into care. 'A lot of mums were seen to be starving, or the pups were just really weak,' she says. 'We suspected the mums weren't able to produce enough milk, if they were still alive. Others were orphaned by mum being deceased. So, a lot of the pups were coming in dehydrated and very skinny.'

While humans almost certainly fuelled this wave of emaciation through habitat clearing and other pressures, some people also responded with care. An organisation called Friends of Bats and Bushcare is planting trees at Yarra Bend, and the state has also moved to provide some relief. A new sprinkler system has been installed near the camp to mitigate the impacts of extreme heat, and detailed management plans now exist to guide response and rescue efforts during mass death events. Clearly, this marks a departure from the uncaring approach Ratcliff described.

## Encountering the flying fox

In the twentieth-century philosophy of Emmanuel Levinas 'the face is the most basic mode of responsibility,' and it's a conception that came to mind for Deborah Bird Rose as she examined the life and death of the flying fox in the anthropocene. How can we account for and begin to reverse the cascading collapse of Earth's biosphere, which holds together the web of ongoing life?

For Levinas, it is the face-to-face encounter that calls us into responsibility. The face does not codify modes of ethical action, but rather prefigures them, producing the very field of relations that makes possible our existence as ethical beings. With a profound expression of vulnerability, the face confronts us, demanding attention, demanding we respond to others' needs.

It invites us to violence, but also forbids it, requiring care and concern. The face is dynamic, living, and open, yet impossible to contain, and always resistant to being fully grasped. It is a radically different ethical Other which is irreducibly subjective, and can never be completely subsumed by the Self. This means it can never be ignored, erased or escaped.

Most Western philosophers would deny the flying fox a Levinasian face, allowing that animals can elicit an ethical response, but situating non-human others outside the transcendent encounter of being face-to-face. In this conception, animals exercise an always lesser call on the human self. The advent of the anthropocene has prompted such certainties to be re-examined, and invited fresh questions around what it means to enact violence on animals, or to abandon them to their fate.

In the twenty first century the question of when, how and why animals can make serious ethical claims has become existential, as described in relation to the 'vortex of death' that threatens to engulf humans too. This is not to say that we are likely to be saved from cascading interspecies collapse by a mode of responsibility which springs from self-interest, but rather to reaffirm the imperative of the post-humanist project which is concerned with exploring new ways of co-shaping shared worlds.

The face of a flying fox often strikes people as being like that of a dog – a species with which humans often make kin, and one that has co-evolved the capacity to read and respond to the human face. Yet rather than respond with the requisite care, humans have often responded with violence, conflict, containment, dispersal and death – particularly during the twentieth century.

The new millennia has ushered in novel and more diffuse forms of violence, like climate change, yet it has also engendered some restitution of care, and there are many people who seek to respond to a deeply felt ethical call to become attentive to animal worlds and ways of being. Nagle contended bats were among the most alien creatures, and certainly, there is much we don't and may never know, but there are striking similarities too.

As Nagle observed, it's unlikely we will ever know what it's like to be a bat, but some people do have the pleasure of getting to know one, and while not everyone can become a flying fox carer, we can all become more attentive to their creaturely worlds.

Tee Mitchell is a journalist, writer and editor.  
They work on the lands of the Wurundjeri Woi-  
wurrung and Boonwurrung people of the Kulin  
Nation, whose sovereignty was never ceded.

With thanks to:

Dr Rodney van der Ree

Dr Jessica McCutchan, Senior Veterinarian,  
Wildlife Victoria Travelling Vet Service

Andrew Tanner, Senior Researcher, Wurundjeri  
Woi-wurrung Cultural Heritage Aboriginal  
Corporation

Gracia Haby, Tiny but Wild Wildlife Shelter  
Louise Jennison, Tiny but Wild Wildlife Shelter

Davita Coronel, Friends of Bats and Bushcare

Ava Graham, Mappa Outdoor  
Michael McAtomney, Mappa Outdoor

&

Lukiah Bodley, Editing  
Lucas Stewart, Illustration  
Lucie Loy, Design  
Nick Ashwood, Sound Design

We acknowledge the Wurundjeri Woi-wurrung people of the  
Kulin Nation as the Traditional Custodians of the land and  
waterways on which we gather. We honour their enduring  
connection to this Country, a place of deep knowledge,  
creativity, and cultural exchange for tens of thousands of  
years. We recognise the Wurundjeri Woi-wurrung as the first  
artists, educators, and storytellers here, and we pay our  
respects to Elders who continue to shape this living culture.

