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# Caring Enough to Counter Extinction: The Work of Volunteer Bat Carers and Educators in Tropical Queensland, Australia

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## Abstract

In the state of Queensland, volunteers perform much of the work needed to prevent the extinction of threatened species who are native and unique to this continent. Acting from an understanding of interspecies justice, caring people rescue and rehabilitate hundreds of thousands of wild animals every year. Many of these same people conduct informal environmental education to bring to community attention the problematics of extinction by seeking the material expression of an ethics of conviviality. Using a document case study approach, this paper narrates aspects of the kinship work of a network of carers and educators of flying foxes who undertake informal environmental education as part of their care practices. Volunteering to care and educate for Australian flying mammals is a form of activism in a nation with a mammalian extinction crisis that still fails to meet its obligations under the United Nations Sustainable Development Goal 15. This paper describes how volunteer run informal environmental education in far north Queensland is driven by a strong sense of multispecies care.

**Keywords:** Informal education; kinship; multispecies; volunteers; wildlife

## Introduction

This article narrates the work of an identified network of volunteer carers and educators who work in and adjacent to the Wet Tropics World Heritage Area in far north-eastern Queensland. Explored are the practices of multispecies justice, and informal, environmental and ecological education conducted by people who dedicate their personal time and resources to anti-extinction work. In the Bats and Trees Society of Cairns network, not all carers are educators and not all educators are carers. These are not sedimented roles as volunteers tend to learn from one another and may volunteer for different roles or initiate a new role for themselves. In the spirit of exploring educational sense-making from the “embodied and embedded politics of location” (Riley & White, 2020, p. 268), I describe the practices of informal education undertaken by the volunteers and their supporters. As volunteers innovate varying types of informal education, their focussed purpose is educating for multispecies attentiveness (van Dooren et al., 2016).

## Ecological justice and the threat of extinction

Ecological justice (ecojustice) is the construct that peoples of the world can live within known biophysical and biochemical limits in relation to all Earth’s creatures (Martusewicz et al., 2015).

Martusewicz (2018, p. 17) calls ecojustice education “the way of love” and argues for this as a framework for thinking about our ethical responsibilities as educators and community members. She also sees ecojustice as a socio-ecological and political movement. The central tenet of ecojustice is that humans have an ethical, material and moral responsibility to cease destroying the living fabric of the world. Celermajer et al. (2020) in their piece on multispecies justice arrived at a similar point arguing that our shared state of vulnerability relating to how the risks of living on this Earth are distributed unequally within and across our multispecies communities. They argue that as humans are but one among many creatures who inhabit this planet, “we share with nonhuman others certain risks and vulnerabilities that underpin our embodied existence” (p.3).

This is a position yet to be fully comprehended in the ecological and education policies of many nations. The nation of Australia has the distressing reputation of having the highest rate of mammal extinctions in the world. As Ritchie (2022, n.p.) stresses, contemporary political and economic settings within the nation continent of Australia have inflicted the “horrific demise of arguably the world’s most remarkable mammal assemblage, around 87% of which is found nowhere else.” Noting that thirty-eight native mammal species have been driven to extinction since European colonisation, Ritchie bluntly remarks that “being an Australian native mammal is perilous.” Just to reiterate how perilous, there are a further twenty-one species of native mammals listed as at severe risk of extinction in 2024, and more are listed as vulnerable to extinction. Unfortunately, over 30 percent of the world’s endangered and critically endangered flying mammals (i.e. on the IUCN Red List) are in Australasia (ABS, 2024).

Volunteering to care and educate for Australian flying mammals is a form of activism in a nation that fails to meet its obligations under the United Nations Sustainable Development Goal 15 and associated targets. I mention these UNSDG targets to point out that, with respect to Australia’s threatened mammalian fauna, the target 15.5 has yet to be properly actioned. This target states that by 2020 (i.e. four years ago) nations must take “urgent and significant action to reduce degradation of natural habitat, halt the loss of biodiversity, and . . . prevent the extinction of threatened species.” Similarly, target 15.9 states that, by 2020, nations must “integrate ecosystems and biodiversity values into national and local planning, development processes and poverty reduction strategies, and accounts” (UNDESA, 2024, n.p.). The UNSDGs can be rightly critiqued for their anthropocentric orientations and views that animals are “natural resources” (Bergmann, 2019). “True” multispecies sustainability only becomes possible when the present and future needs of all species are met equally and with justice (Rupprecht et al., 2020). What the international goals and targets politically intend is to leverage anti-extinction action within nation states. So far, in a frustratingly go-slow response to this international obligation, the Australian federal and state and territory governments agreed to develop a “roadmap” by mid-2024 in their policy commitment towards zero extinctions. This policy plan, titled *2022–2032 Threatened Species Action Plan: Towards Zero Extinctions*, was launched in 2023 (Fitzsimons et al., 2023). However, fine policy words and good intentions do not in themselves save native mammals. Anti-extinction work requires effective, science-led, materially beneficial and rapid, on-ground actions (Griffin, Callen, Klop-Toker, Scanlon & Hayward 2020).

Among the mammals at severe risk of extinction in far north Queensland is the Spectacled Flying Fox (*Pteropus conspicillatus*) who is the major pollinator at landscape scale of forests and mangroves within and around the designated Wet Tropics World Heritage Area (Roberts, Eby & Westcott 2020). Indeed, as the late Deborah Bird Rose (2022) always reminded, there would be no eastern forests without flying foxes, as flowering forests and flying mammals evolved together over millions of years. Before the middle of the 19<sup>th</sup> century, numbers of Spectacled Flying Foxes may have been as high as one to two million. During their sunset flyout, they would have darkened the sky. By 2017, there were at least 78,000 remaining with 95% certainty (Roberts et al., 2020) representing a 75% fall in numbers from 2004 (Westcott et al., 2018). In November 2018, a heatwave caused the immediate deaths of an estimated 23,000 animals (Preece, 2023). In 2024, less than 5% of the original population remains. The Spectacled Flying Fox is now identified as a

priority species under the national 2022–2032 *Threatened Species Action Plan* (DCCEEW, 2024) but how effective this administrative performance of care will be in materially recovering the Spectacled Flying Fox population is still to be determined.

This now remnant population of lovely animals can be viewed in purely ecological terms as heading towards functional extinction when the animal is no longer able to provide forest pollination at landscape scale. This situation is extremely sad, and some carers don't wish to have the terminology "at risk of functional extinction" mentioned in relation to the Spectacled Flying Fox. They feel too much use of the term "extinction" may encourage further community apathy towards the plight of these animals. This is a valid concern. Unfortunately, the three layers of Australian government (local, state and federal) did little of substance to halt the recent population plunge, until now. A new Spectacled Flying Fox Species Recovery Plan is in development in 2024, but this may not be signed off at State and Federal Ministerial level until early 2025. Funds are not yet secured to action the Recovery Plan, and it is uncertain which actions in the Plan will be prioritised and funded. A previous 2010 Recovery Plan for the Spectacled Flying Fox (when numbers were likely over 100,000 animals) was developed but never actioned and never funded. By contrast the Cairns Regional Council has spent three million dollars since 2020 removing Spectacled Flying Foxes from their own, nationally identified, roosting and birthing trees in the Cairns CBD (Preece, 2023). This most expensive harassment policy was immoral but technically legal, and only served to increase human threats to an already highly vulnerable, remnant population.

### The Bats and Trees Society of Cairns volunteer network

This paper focusses on the innovative practices of one network of volunteers offering informal environmental education concerning the endemic flying fox, *Pteropus conspicillatus*. The network is people associated with the small, not-for profit (NFP), conservation organisation called The Bats and Trees Society of Cairns, colloquially known as BatSoc. The stated aim of the Society is to enable people to live peacefully with bats. The Society describes itself on the website (batsoc.org.au) as working with bat carers, conservation groups and all levels of government to champion all bats, but particularly the Spectacled Flying Fox, listed as endangered on the IUCN Red List and under the Australian EPBC Act.

The Society accepts responsibilities for a range of functions, including applying for and managing grants and donations to support bat care; raising money for bat care; working with community wildlife organisations to coordinate the education and training of volunteer bat carers, who must be registered and immunised under state and national wildlife care protocols; collecting data from a variety of sources including rescues because, at the edge of extinction, data on every animal matters; and undertaking a range of informal education activities at community level. All bat education is informed by current ecological knowledge and some Society members work as ecologists. In the face of a thoughtless but persistent community dislike and even hate of Australian flying foxes, scientific knowledge does serve as an effective bulwark and counter narrative. The Bats and Trees Society of Cairns works closely with the Australasian Bat Society (ausbats.org.au), a larger, non-profit organisation, whose primary aim is to promote the conservation of all bats through the advancement of scientific knowledge and through education. Both these not-for profit organisations recognise that education is necessary to shift community attitudes towards a greater appreciation of flying mammals (ABS, 2024).

Flying foxes, for all their invaluable and exuberant lives (Rose, 2022), and their key ecological contributions to tropical forests (Preece, 2023; Westcott et al., 2001), are exposed to multiple, existential threats. In the state of Queensland, Spectacled Flying Foxes could be legally shot for "stealing" fruit from commercial orchards until 2016, when permits were no longer granted as the animals were listed as endangered at state level. Shooting flying foxes of any species will no longer

be legal in 2026. The animals suffer illness and starvation from loss of habitat (places to rest, roost and feed) from extensive woodland clearing. They particularly suffer when there is loss of foraging habitat over winter. They are terribly affected by cyclones. They get caught on old-style, barbed wire fences and die painful deaths unless found and rescued. They are continually harassed by some people who “hate” bats and who kill them (bashing, stoning, etc) when they roost on private property (Thiriet, 2011). And they are rudely “dispersed” from their roosts in urban areas by local governments (Preece, 2023). Neither the Australasian Bat Society or the Bats and Trees Society of Cairns support local government dispersal attempts as these do not resolve human-flying fox conflict, they have a low return on investment, and there is increased qualitative evidence the impacts on animals can be severe. Flying foxes can suffer from a devastating form of tick paralysis, infestations of horrible bat flies, and other illnesses that are exacerbated when animals are stressed or forced to roost in unsuitable places. The most difficult existential threat to address is global heating. All Australian flying foxes are susceptible and, in humid conditions, can start dying *en masse* at temperatures over 38°C (Preece, 2023; Ratnayake et al., 2019; Welbergen et al., 2008).

### Towards a methodology

This account can be characterised as an insider, single case, narrative study. Single case study research design is useful for practical issues as this can provide for a more in-depth analysis of one example of educational practice within recognisable boundaries (Yin, 2014) such as the informal education work of an established voluntary organisation and associated network. I am an insider researcher as I presently hold the voluntary position as vice-president of the Bats and Trees Society of Cairns, and I share similar perspectives, outlooks and care feelings with the people in the network I am researching (Floyd & Arthur, 2012). The value of this positionality is that I can describe and analyse the phenomenon of an informal education practice focussed on multispecies care and address the need for greater exposition of informal education practices in environmental education research. I tell this researched story through a narrative constructed from document data gathered from published research papers and policy documents, webpages, Facebook social media and Messenger bat chat groups directly related to organising education activities.

I came to Spectacled Flying Fox advocacy one morning in November 2018 during the heatwave when one third of the remaining population died over two horrible days (Preece, 2023). I live one block away from where a mass dying took place in the Cairns CBD. It was horrible to hear the distressed animals screaming and crying that morning. The sounds were so different from the usual chatter and squabbling. I made a flurry of hope-less phone calls to the Cairns Regional Council and the Queensland Department of Environment and Science where I told several people that the bats were screaming, and was asked by one, how did I know? I then emailed a distinguished conservation academic who right away responded and he told me to record this heat stress event. It was a ghastly 43°C in the shade at noon. Hardly able to breathe and sweating profusely, I made my way to the roost and pressed video on my phone to record terrible scenes. The animals knew they were dying. Mothers were trying to protect their babies and they all edged closer to the ground and flapped their wings madly seeking relief. A few frantic wildlife carers were grabbing the live animals who dropped from the trees placing them in cages for transport. One desperate bat climbed up my leg, but as I wasn't immunised, I couldn't comfort him. The bodies of the dead were thrown into garbage bins. About 600 animals came into care in those two days in November. Tens of thousands of decomposing bodies were picked up by Cairns Regional Council workers from roosts south of the city as well as in the CBD. I gave my colleague the footage, he edited it and sent it to the world through his networks.

The carnage of the heat stress event was so traumatising, that the following year the Cairns and Far North Environment Centre staged a vigil in memorial for all the dead flying foxes. Volunteers made thousands of crosses, each labelled with a different name. This was a small but important act

indicative of a strategy that Blaise and Hamm (2019) have called the grammar of advocacy. The animals may have likely been rendered as “it” in their lives, however they were individually named in their death and their representative handmade crosses were planted in the lawn outside the city library. Carers spoke beautifully and solemnly about loss in a moving ceremony. The images and soundscape made for excellent social media, but, of course, the vigil was the subject of ridicule amongst some in the community. I volunteered to help as much as I could that 2018/2019 summer and later obtained the necessary vaccinations so that I can rescue flying foxes and hold them and comfort them. I joined The Bats and Trees Society’s management committee, and have permission to write, research and give presentations at conferences and seminars on behalf of this network of carers and caring educators.

### Caring and kinship

Caring is a deep form of attention, what Nel Noddings (2003) calls an “engrossment.” Caring is the foundation of any pedagogy of conservation work (Heise, 2016). Several pedagogical practices in environmental education begin with teaching and learning to first observe and then become more attentive to the more-than human world, not only to observe who is missing, but also who is still there. Inattentiveness is the common failing we all try to address. Environmental educators know that to live in the infinitely beautiful world and yet not know of whom the world is composed is a chastening critique of contemporary human life. Concerning matters of kinship, Rose posed the existential questions of, how can we engage in relationships and in worldmaking across species to enhance the lives of the others (as the othered) and do this at a critical time “knowing, as we must, that we are living amidst the ruination of others?” (Bird Rose (2011) quoted by van Dooren & Chrulew (2022, p. 1).

Attentiveness is an invitation to kinship, and then to kindship (Whitehouse, 2022). I conceptualise kindship as a form of caring for other-than-human kin. Kinship can be established with those who share familial and ancestral connections according to the Marriam-Webster dictionary. If we go far enough back in time, all mammals are direct human kin through evolution, as well as being our kin today in material, spiritual and ecological ways. Kindness is a construct that embraces moral goodness in life. Kindness includes feelings of compassion, tender-heartedness, understanding and empathy. Though, in conservation work, we are advised by Griffin et al. (2020) to be careful that empathy and compassion don’t override the scientific and ecological bases for formal policy and decision-making. In terms of wildlife volunteering, such concerns seem to be less material. For wildlife carers it is from the empathetic recognition of the ruination of others that the bonds of kinship are born. A wild animal finding it so difficult to survive can be offered the kindnesses of love and care and rescue by a human who is paying true attention to their plight.

For Noddings (2003), care is relational, transactional, receptive and reciprocal. Caring is equivalent to acting morally, and learning to care can be a lengthy and progressive process. For there to be care, there must be a carer, as someone who cares, and, in this transactional relationship, a recipient of that care. In wildlife care, the recipient can be an individual animal or a collection of animals within one place or many places across a region. Care lies within the relationship, and relationships are multiple in a multispecies world. Material expressions of care, such as the provision of sustenance and physical touch, are constituted within that caring relationship. Every carer is attentive, open to experiencing deep emotion in the act of caring, and able to demonstrate responsiveness to the needs of those cared for (ibid.). No person or group can take on the totality of the world’s biodiversity crisis. However, a caring person and a caring group can make a material difference to the lives of those who are cared for, and in the Society’s network, this means native microbats and flying foxes (also known as megabats). Coulter (2016, p. 213) remarks that both interspecies and multispecies solidarity can be considered and promoted not

only because animals are very like us and we are very like animals, but because “this is the ethical thing to do. Others should not have to be like us for us to care about their wellbeing.”

Kindship is desperately needed when the persecuted native mammals of Australia are unable to rely on government protections for their survival. Contemporary policies and legislations prove (in our mothers’ words) “worse than useless” unless all the proposed Recovery Plans are fully implemented and properly funded. Indigenous Protected Areas and the many non-government organisations managing large scale conservation initiatives have been relatively successful in staving off extinction for many birds and small ground mammals (Fitzsimons et al., 2023; Guerrero et al., 2015). In the private and domestic sphere, there are over 20,000 wildlife volunteers who perform much of the “on-ground” anti-extinction work in Australia (Englefield, Candy, Starling & McGreevy 2019). Acting from an implicit/explicit, understanding of interspecies justice, volunteers take it upon themselves to rescue and rehabilitate tens of thousands of mammals caught in human-made troubles every year. The words of one bat carer on a Messenger thread probably says it for all carers; “[It]breaks my heart to see animals suffer, the cruelty and unjustness, the total unfairness of it all.”

Adams (2020, p. 695) describes care as “necessary labour required to sustain those who are dependent, but also the action needed to sustain the lives of vulnerable others more distant in time, space, and identity.” Volunteer work is defined as “unpaid activity orientated to help others and improve society” (Schugurensky, 2013, p. 3). Care for native mammals is characterised by great asymmetries of power in relation to human domination of the continent. For flying foxes, the rescued individuals, and the wild populations in need of care, are rendered politically and economically voiceless. They are vulnerable to unjust treatment because they do not matter enough. Carers expend enormous amounts of unpaid time and personal resources — financial, psychological, emotional and physical — to keep their dearly loved animals alive and able to be released (Englefield et al., 2019). A motivation to care is seen as emerging from what Gruen (2014) calls an entanglement of empathy. This can be a difficult positionality for carers to take up when the animal in need of their help has the misfortune of being socially and politically reviled (Thiriet, 2011).

### Informal environmental education

Informal learning takes place outside the curricula of formal, non-formal or community educational institutions and programmes. The processes of informal learning can be wholly contextual, novel and emergent. Informal learning usually relies on the actions of motivated agents of learning, such as volunteers, who care about a matter, such as the rescue and conservation of bats. According to Schugurensky’s (2000) typology, informal learning can be additive or transformative. Additive informal learning refers to “the addition of knowledge, the improvement of skills and the further development of values that expand and strengthen existing knowledge, skills and values” (p.5). Transformative learning challenges previously held assumptions and values and can serve to change people’s outlooks, such as expanding thinking about ecological relationships and reframing personal understandings of complex interactions.

Informal and incidental learning is a well-recognised educational strategy among Australian environmental volunteer groups (Ollis, 2020). One aim of informal, bat education is to develop what van Dooren & Rose (2012, p. 2) identify as “an ethics of conviviality” that is, an understanding of multispecies recognition that is “emplaced, embodied and enlivened through multiple stories enacted and expressed by multiple species.” Environmental education can promote a relational ethics of care and the knowledge of shared worlds as this Special Issue of the Australian Journal of Environmental Education well proves. However, notions of conviviality can be tempered when faced with the brutal facts of extinction (see Bradshaw et al., 2021).

Extinction is a difficult and most uncomfortable topic to approach in education especially in community settings. The topics of extinction tend to be poorly handled in formal education

where, typically, “knowledge of biodiversity losses and knowledge to co-exist ... are not adequately addressed” (Poole, 2023, n.p.). When educators in formal education settings can avoid teaching the biodiversity crisis adequately, this becomes a conundrum for volunteer educators working with endangered animals - are they supposed to do the educational work of formal education in informal settings? The short answer tends to be yes, it’s needed. Extinction is the animals’ story, and they cannot speak for themselves.

From the volunteer educators’ point of view, the objective of their efforts is for all bats to be able live within and outside urban areas, in their own established Country, with a sense that they are wanted and loved, or at least tolerated if not fully accepted. And, at the very least, not harassed and not murdered. As van Dooren & Rose (2012, p.16) point out the welcoming presence of animals in Australian cities and towns, “has almost always been entirely on human terms.” Cryptic bats such as microbats who hide under eaves have it slightly easier than flying foxes who gather in large, smelly and noisy roosts during the day and are considered by smelly and noisy humans as “disturbing the peace” of the urban environment. Their unwelcomed presence has initiated violence in some urban areas. The Society keeps detailed records of flying foxes being bashed, stoned, burnt and killed. If any carers are threatened while collecting these data, they call the police. The animals have no such recourse under human law.

### Multispecies justice informal education

Multispecies justice informal education promotes learning with and between individuals and groups in the general community using informal methods strongly located within place. In anti-extinction education, the purpose is to educate *for* the continued populations of othered species who are ecologically vital both in and of themselves, and to human communities. Endangered populations of plants and animals become so because they are derided, harassed, injured and killed in the pursuit of wholly human invented social, economic and political goals (Bradshaw et al., 2021; Siegel et al., 2024). Indeed, Ehrlich et al. (2012) have called out humans for running an ecological Ponzi scheme. The counter to the hegemonic values inherent in the relentless pursuit of wealth generation are the values expressed by caring Australians who do what they can to preserve the fabric of life in different regions of the nation.

In tropical Cairns, and on the Atherton Tablelands, the volunteers associated with the Bats and Trees Society network organise regular community education events celebrating “batty” lives and all things bats. One of these events is the annual Bat Festival which is a satellite of the annual EcoFiesta — at which the Society also has a stall. The Bat Festival is organised by the Society and sponsored by the Cairns Regional Council. This is not necessarily greenwashing on the part of the Council. It is my experience that there is genuine conflict within the organisation over flying foxes, and, as a volunteer run NFP, the Society accepts all assistance from local governments in good faith. Given the millions spent on flying fox “relocation,” the Cairns Regional Council calls their approach to flying foxes “multifaceted” (CRC, 2024).

The Cairns Bat Festival is billed as a “twilight gala function” and the programme includes inspirational speakers, community information stalls, local live music, a walk to detect echolocating microbats, a raffle to raise funds for bat care, and several activities for children (Cairns Events, 2023). The messaging is carefully positive, celebrating how wonderful bats are and how wonderful people who love bats are. Talks usually focus on positive outcomes of recent bat research. Health messaging is also reiterated given the small but real threat of Australian bat lyssa virus (or ABLV) (see Liang et al., 2023). The possibilities for extinction tend to be framed in terms of low populations numbers, e.g. “the local flying foxes no longer darken the sky during evening flyout,” and low birth rate, e.g. “that flying foxes only have one baby a year and they look after that baby for a very long time.”

The Bat Festival/Night model of informal education is being replicated in Australia and New Zealand in 2024, sponsored by the Australasian Bat Society. The aim of every bat event is to “debunk the myths and fears associated with bats and demonstrate how better conservation measures can not only help protect our native bats but also assist people to live alongside our nocturnal neighbours!” (ABS, 2024). Whether through school talks, bat festivals and bat nights, effective conservation learning aims to lessen the psychological distance between children and adults and whom they are being asked to care for or care about. Psychological distance is defined as the sense that people feel distanced or separated from another person, event, environmental issue or local, wild animal. When this perceived distance is large, people tend to think about the animal in a more abstract fashion and therefore can be more apathetic towards acting in the interests of the animal (Kusmanoff et al., 2020). Strategically, bat education volunteers always tell positive stories to counter the historically sedimented and pervasive narratives that have maligned such important animals as flying foxes.

Bats and Trees Society volunteers (as self-identified bat lovers) encourage people to love bats for their own sake. When “love” is a step too far, volunteers settle for “like” and provide practical information on how we can justly live under one sky for the benefit of both bats and people. Volunteers conduct school talks and sometimes a registered bat in permanent care is taken into schools, or otherwise a volunteer dresses up as a bat for entertainment during a school talk. It’s not easy to convince people that flying foxes can be loved. As Thiriet (2011) remarks, when referring to any species of flying fox, Australian politicians and media commentators have consistently used inflammatory language such as “killer bats,” “horrible stinking vermin,” and stereotyped them as “disease-ridden pests.” Residents living adjacent to bat colonies have been characterised as “living in bat hell,” “terrorised,” and “under siege.” Suburbanites have even been hyperbolically characterised as living “in a state of war.” Yet flying foxes have pretty faces, complex social lives and are wonderfully adapted creatures. They can be positively entrancing as the many videos on the Tolga Bat Hospital You Tube channel reveal (see <https://www.youtube.com/user/tolgabathospital>).

Recently, the Bats and Trees Society tried another approach and commissioned unique education products to assist with communicating the wonderousness of flying foxes. The *Big Book of Bat-tivities* was written and illustrated by Queensland author and artist Matilda Bishop. In speaking about her book, Ms Bishop is quoted by journalist Richard Dinnen (2022) as saying that unfortunately, flying foxes “do get a bad rap.” Before she started writing this work, she was under the impression flying foxes were dangerous to touch or be near. After completing her book, she stated that “I’m hoping my artwork can be subtle in saying, “Hey, we should protect these creatures.” Look how beautiful these animals are. We need to look after them.” Ms Bishop’s lovely work can be viewed on Facebook at <https://www.facebook.com/artworkbymatilda/photos>.

The Society also asked Queensland teacher and illustrator Britta Jackle to create a board game for the Spectacled Flying Fox. Ms Jackle’s games focus on animals in the Wet Tropics, such as the cassowary, the platypus, the tree kangaroo, sea turtles and now, The Society’s loved flying fox. These games can be viewed at <https://www.gamesconnect.com.au/games>. On her website Ms Jackle asks, “What would animals say if they had a voice? Let’s be their voices and together we can make a difference” (Jackle, 2024). The flying fox game is carefully designed to turn fear into facts and asks players to learn to value flying foxes as they are on the endangered list “and really need your help.” In playing this game, children learn that flying foxes have taken care of their habitats for millions of years by spreading seeds and pollinating forests. The gameplay invites children to “help mum home safely to feed her baby” carefully establishing the notion of flying fox maternal care and the concept of flying fox daily life within the boardgame.

The Society runs a citizen science project called Save Our Spectacled Flying-Fox Project (SOSFF) which was funded between 2019 and 2023 by a grant from the Queensland Department of Environment and Science Threatened Species Grant Program. A portion of those grant monies was spent directly on tree planting projects on the outskirts of suburban areas in the hope of a having a greater number of food trees available for urban bats. Another portion of the SOSFF



grant was spent a community project which asked members of the public (or MOPs in carer terminology) to observe, identify and report the location of Spectacled Flying Foxes. After crunching some of these data, volunteers worked out the project had doubled knowledge of the geographical location of roosts and camps (i.e., less permanent roosts) across the region. This is positive outcome from the project which is continuing to be managed by volunteers. Knowing more about the geographies of a highly mobile animal is useful ecological knowledge. The major obstacle is that, as project coordination continues to be voluntary, at some point, volunteerism becomes a decidedly limiting factor.

### Concluding remarks

When volunteers can preserve their energies and motivations, self-generated, peer-supported practices of caring and kindness can lead to innovative, informal education as practical, anti-extinction education. The volunteers in this network are trying their best to address what Martusewicz & Johnson (2016, p. 59) describe as “the inherent problem of . . . ecological violence” and the constituted division between human and animal communities. In the region of the Australian Wet Tropics, we know that human well-being and flying fox well-being are utterly interdependent. Without our flying foxes, we will eventually lose many of the regional forest ecotypes and their multiple diversities of brilliant life in this World Heritage area. The Spectacled Flying Fox is recognised as a keystone species for a reason. When the dominant narratives of formal education can fail to promote relational care ethics for flying foxes and their home ecosystems, volunteer educators promote a relational ethics of care in their local communities. When governments fail to support falling flying fox populations, volunteers advocate for their care. The problem of voluntary work is that there are matters of burnout and long-term sustainability to consider. The whole enterprise I have described relies on the willingness of volunteer carers to keep going in the face of local political, economic, social and material difficulties.

Environmental education research is increasingly investigating ways to enact different ways of knowing/being/thinking/doing/feeling. The work of this network of volunteers is one exemplar of a different way. While being ecologically positive, the work of kindness, bat care and informal bat education remains politically marginalised. The marginalisation of wild animal care is a local, national and global phenomenon under our present systems of exploitation. We know that caring humans rescue, rehabilitate, advocate and educate for their chosen animals in every way possible and that a kind and loving care for wild animals circles the globe. To return to Martusewicz’s comment (2018, p. 17) that ecojustice education is “the way of love,” it can be argued that we already have a global practice of multispecies, informal ecojustice education. However, this globalised advocacy, inclusive of education, tends to be poorly recognised, rarely legitimised, under resourced and less researched. More attention can always be paid to identifying and researching informal education practices in environmental education (Flowers et al., 2009).

The late Deborah Bird Rose (2017, p. G60-G61) wrote on kinship that:

. . . to celebrate the lives of flying foxes is to say yes to eucalypts and thus say yes to dry sclerophyll woodlands and to rainforests. It is to say yes to photosynthesis and to say yes to oxygen. Why would one not? We breathe in and we breathe out. In this world of connectivity, we live to celebrate another day and to experience life’s shimmer as it comes forth in our lives with all manner of tears, happiness, grief, commitment, love, exuberance, and celebration.

I finish with one anecdote that reveals that the concept of caring for and about flying foxes is gaining traction in the Cairns community. I was told by a shining, ten-year old child who was painting a rock at the Bat Festival in 2023 that she would love and care for flying foxes forever, “even after you are dead” — she meant me. Sometimes the shimmer is so present you almost stop breathing.

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**Ethical standard.** Nothing to note.

## References

- (Australian) Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2023). *2022-2032 threatened species action plan. Towards zero extinctions*. Commonwealth of Australia. <https://www.dcceew.gov.au/sites/default/files/documents/threatened-species-action-plan-2022-2032.pdf>.
- Adams, R. (2020). The art of interspecies care. *New Literary History*, 51(4), 695–716. [https://www.sas.upenn.edu/~cavitch/pdf-library/Adams\\_Art\\_of\\_Interspecies\\_Care.pdf](https://www.sas.upenn.edu/~cavitch/pdf-library/Adams_Art_of_Interspecies_Care.pdf).
- Australasian Bat Society (ABS) (2024). <https://www.ausbats.org.au/>.
- Bergmann, I. (2019). Interspecies sustainability to ensure animal protection. Lessons from the thoroughbred racing industry. *Sustainability*, 11(19), 5539. DOI: [10.3390/su11195539](https://doi.org/10.3390/su11195539).
- Blaise, M., & Hamm, C. (2019). Shimmering. Animating multispecies relations with Wurundjeri Country. In B.D. Hodgins (Eds.), *Feminist research for 21st century childhoods. Common worlds methods* (pp. 93–100). Bloomsbury.
- Bradshaw, C.J.A., Ehrlich, P.R., Beattie, A., Ceballos, G., Crist, E., Diamond J., Dirzo, R., Ehrlich, A.H., Harte, J., Harte, M.E., Pyke, G., Raven, P.H., Ripple, W.J., Saltré, F., Turnbull, C., Wackernagel, M., & Blumstein, D.T. (2021). Underestimating the challenges of avoiding a ghastly future. *Frontiers in Conservation Science 1*. DOI: [10.3389/fcsc.2020.615419](https://doi.org/10.3389/fcsc.2020.615419).
- Cairns Events (2023). Cairns bat festival. <https://www.cairnsevents.com/cairns-bat-festival.2274/>.
- Cairns Regional Council (CRC) (2024). Flying-foxes. <https://www.cairns.qld.gov.au/community-environment/animals/flying-foxes>.
- Celemajer, D., Chatterjee, S., Cochrane, A., Fishel, S., Neimanis, A., O'Brien, A., Reid, S., Srinivasan, K., Schlosberg, D., Waldow, A. (2020). Justice through a multispecies lens. *Contemporary Political Theory*, 19(3), 475–512. DOI: [10.1057/s41296-020-00386-5](https://doi.org/10.1057/s41296-020-00386-5).
- Coulter, K. (2016). Beyond human to humane: A multispecies analysis of care work, its repression, and its potential. *Studies in Social Justice*, 10(2), 199–219.
- Dinnen, R. (2022). The Cairns artist drawing attention to our local wildlife. *Tropic Now*. <https://www.tropicnow.com.au/2022/november/29/the-cairns-artist-drawing-attention-to-our-native-wildlife>
- Ehrlich, P.R., Kareiva, P.M., & Daily, G.C. (2012). Securing natural capital and expanding equity to rescale civilization. *Nature*, 486(7401), 68–73. DOI: [10.1038/nature11157](https://doi.org/10.1038/nature11157).
- Englefield, B., Candy, S., Starling, M., & McGreevy, P. (2019). The demography and practice of Australians caring for native wildlife and the psychological, physical, and financial effects of rescue, rehabilitation, and release of wildlife on the welfare of carers. *Animal*, 9(12), 1127. DOI: [10.3390/ani9121127](https://doi.org/10.3390/ani9121127).
- Fitzsimons, J., Picone, A., Partridge, T., & Cornish, M. (2023). Protecting Australia's Nature: Pathways to protecting 30 per cent of land by 2030. The Nature Conservancy, WWF-Australia, the Australian Land Conservation Alliance and the Pew Charitable Trusts.
- Flowers, R., Guevara, R., & Whelan, J. (2009). Popular and informal environmental education - the need for more research in an “emerging” field of practice. In *REPORT Zeitschrift für Weiterbildungsforschung 02/2009* (pp. 35–50). W. Bertelsmann Verlag. <https://www.wbv.de/shop/Popular-and-Informal-Environmental-Education-REP0902W036>
- Floyd, A., & Arthur, L. (2012). Researching from within: External and internal ethical engagement. *International Journal of Research & Method in Education*, 35(2), 171–180. DOI: [10.1080/1743727X.2012.670481](https://doi.org/10.1080/1743727X.2012.670481).
- Griffin, A.S., Callen, A., Klop-Toker, K., Scanlon, R.J., & Hayward, M.W. (2020). Compassionate conservation clashes with conservation biology: Should empathy, compassion, and deontological moral principles drive conservation practice? *Frontiers in Psychology*, 11, 1139. DOI: [10.3389/fpsyg.2020.01139](https://doi.org/10.3389/fpsyg.2020.01139).
- Gruen, L. (2014). *Entangled empathy: An alternative ethic for our relationships with animals*. Lantern Books.
- Guerrero, A.M., McAllister, R.R.J., & Wilson, K.A. (2015). Achieving cross-scale collaboration for large scale conservation initiatives. *Conservation Letters*, 8(2), 110–117. DOI: [10.1111/conl.12112](https://doi.org/10.1111/conl.12112).
- Heise, U.K. (2016). *Imagining extinction. The cultural meanings of endangered species*. The University of Chicago Press.
- Jackle, B. (2024). Games Connect: Nature based board games that educate and inspire youth through play. <https://www.gamesconnect.com.au/>.
- Kusmanoff, A.M., Fidler, F., Gordon, A., Garrard, G.E., & Bekessy, S.A. (2020). Five lessons to guide more effective biodiversity conservation message framing. *Conservation Biology*, 34(5), 1131–1141. DOI: [10.1111/cobi.13482](https://doi.org/10.1111/cobi.13482).

- Liang, B.P., Wingett, K., Bosward, K.L., & Taylor, M.R. (2023). Communicating the risks of handling bats: Analysing approaches used by Australian stakeholders in the context of Australian bat lyssavirus. *Australian Veterinary Journal*, 101(11), 430–439. DOI: [10.1111/avj.12377](https://doi.org/10.1111/avj.12377).
- Martusewicz, R.A. (2018). EcoJustice for teacher education policy and practice: The way of love. *Issues in Teacher Education*, 27(2), 17–35.
- Martusewicz, R.A., Edmundson, J., & Lupinacci, J. (2015). *EcoJustice education: Toward diverse, democratic, and sustainable communities*. 2nd edition, Routledge.
- Martusewicz, R.A., & Johnson, L. (2016). Ecojustice education. In I. van der Tuin (Ed.), *Gender: Nature* (pp. 57–74). Macmillan Interdisciplinary Handbooks, Gale, Cengage Learning.
- Noddings, N. (2003). *Caring. A feminine approach to ethics and moral education*. 2nd edition, University of California Press.
- Ollis, T.A. (2020). Adult learning and circumstantial activism in the coal seam gas protests: Informal and incidental learning in an environmental justice movement. *Studies in the Education of Adults*, 1–17. DOI: [10.1080/02660830.2020.1750828](https://doi.org/10.1080/02660830.2020.1750828).
- Poole, A.K. (2023). Education as a driver of extinction of experience or conservation of biocultural heritage. In R. Rozzi, et al. (Eds.), *Field environmental philosophy. ecology and ethics*. vol. 5. Springer. DOI: [10.1007/978-3-031-23368-5\\_15](https://doi.org/10.1007/978-3-031-23368-5_15).
- Preece, N. (2023). Spectacled Flying-fox conflicts – tucker, totem, taunt, and threat. *Integrative Conservation*, 2023(3), 1–7. DOI: [10.1002/inc3.26](https://doi.org/10.1002/inc3.26).
- Ratnayake, H.U., Kearney, M.R., Govekar, P., Karoly, D., & Welbergen, J.A. (2019). Forecasting wildlife die-offs from extreme heat events. *Animal Conservation*, 22(4), 386–395.
- Riley, K., & White, P. (2020). Attuning with, affect and assemblages of relations in transdisciplinary environmental education. *Australian Journal of Environmental Education*, 35(3), 262–272. DOI: [10.1017/ae.2019.30](https://doi.org/10.1017/ae.2019.30).
- Ritchie, E. (2022). Gut-wrenching and infuriating: Why Australia is the world leader in mammal extinctions and what to do about it. *The Conversation*. <https://theconversation.com/gut-wrenching-and-infuriating-why-australia-is-the-world-leader-in-mammal-extinctions-and-what-to-do-about-it-192173>
- Roberts, B., Eby, P., & Westcott, D. (2020). Pteropus conspicillatus. In *The IUCN red list of threatened species 2020* (pp. e.T18721A22080456). <https://www.iucnredlist.org/species/18721/22080456>.
- Rose, D.B. (2017). Shimmer: When all you love is being trashed. In A.L. Tsing, H.A. Swanson, E. Gan & N. Bubandt (Eds.), *Arts of living on damaged planet: Ghosts and monsters of the Anthropocene* (pp. G51–G63). University of Minnesota Press.
- Rose, D.B. (2022). *Shimmer: Flying fox exuberance in worlds of peril*. Edinburg University Press.
- Rupprecht, C. D. D., Vervoort, J., Berthelsen, C., Mangnus, A., Osborne, N., Thompson, K., . . . Kawai, A. (2020). Multispecies sustainability. *Global Sustainability*, 3, e34. DOI: [10.1017/sus.2020.28](https://doi.org/10.1017/sus.2020.28).
- Schugurensky, D. (2000). *The forms of informal learning: Towards a conceptualization of the field*. University of Toronto. <https://tspace.library.utoronto.ca/bitstream/1807/2733/2/19formsinformal.pdf>.
- Schugurensky, D. (2013). Introduction. In F. Duguid, C. Mündel & D. Schugurensky (Eds.), *Volunteer work, informal learning and social action* (pp. 1–19). Springer Science & Business Media.
- Siegel, T., Magrath, A., Laurance, W. F., & Luther, D. (2024). A global meta-analysis of the impacts of forest fragmentation on biotic mutualisms and antagonisms. *Conservation Biology*, e14206. DOI: [10.1111/cobi.14206](https://doi.org/10.1111/cobi.14206).
- Thiriet, D. (2011). Conservation shouldn't be a popularity contest. *The Conversation*, 2011, 1–4.
- United Nations Department of Economic and Social Affairs (UNDESA) (2024). Goal 15. [https://sdgs.un.org/goals/goal15#targets\\_and\\_indicators](https://sdgs.un.org/goals/goal15#targets_and_indicators)
- van Dooren, T., & Chrulew, M. (2022). Worlds of kin - an introduction. In T. van Dooren, M. Chrulew (Eds.), *Kin: Thinking with Deborah Bird Rose* (pp. 1–14). Duke University Press. DOI: [10.1215/9781478022664](https://doi.org/10.1215/9781478022664).
- van Dooren, T., Kirksey, E., & Munster, U. (2016). Multispecies studies: Cultivating arts of attentiveness. *Environmental Humanities*, 8(1), 1–23.
- van Dooren, T., & Rose, D.B. (2012). Storied-places in a multispecies city. *Humanimalia*, 3(2), 1–27. DOI: [10.52537/humanimalia.10046](https://doi.org/10.52537/humanimalia.10046).
- Welbergen, J.A., Klose, S.M., Markus, N., & Eby, P. (2008). Climate change and the effects of temperature extremes on Australian flying-foxes. *Proceedings of the Royal Society B*, 275(1633), 419–425. DOI: [10.1098/rspb2007.1358](https://doi.org/10.1098/rspb2007.1358).
- Westcott, D.A., Caley, P., Heersink, D.K., & McKeown, A. (2018). A state-space modelling approach to wildlife monitoring with application to flying-fox abundance. *Scientific Reports*, 8(1), 4038.
- Westcott, D.A., Dennis, A.J., McKeown, A., Bradford, M., & Margules, C. (2001). *The spectacled flying fox, Pteropus conspicillatus, in the context of the World Heritage values of the Wet Tropics World Heritage Area*. Environment Australia.
- Whitehouse, H. (2022). The extinction crisis. In K. Sims & et al. (Eds.), *The Routledge handbook of global development* (pp. 221–232). Routledge. DOI: [10.4324/9781003017653](https://doi.org/10.4324/9781003017653).
- Yin, R.K. (2014). *Case study research design and methods*. 5th edition. Sage.

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