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Multispecies cohabitation and socio-ecological caring skills: the grey-headed flying-foxes in Melbourne, Australia

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ABSTRACT

Anthropocentric societies are faced with the challenge of improving relationships with more-than-human others amid ecological impoverishment. Care has emerged as an important factor for enhancing multispecies cohabitation. Recent scholarship has interrogated the gualities and transformative potential of more-thanhuman care, including the extent of human control. This study provides a cultural analysis of more-than-human care, focusing the argument on care for the grey-headed flying-foxesin Melbourne, Australia. Settler-colonialism impacts relationships with the flying-foxes, who are listed as threatened with extinction. This study considers differences between Western and Indigenous orientations to the living world, along with caring skills informed by feminist and Indigenous care ethics. In the analysis, two forms of bat care are compared - wildlife rescue and planting activities- to interrogate the conditions for care and the caring skills they foster. The research builds on interviews with scientists, volunteer bat carers, and an Elder of the Wurundjeri community, and participant observation with bat carers. The findings suggest that planting activities are one context in which socio-ecological caring skills, specifically human responsiveness to more-than-human others. can be practised to enhance multispecies cohabitation. These findings can support education efforts to improve multispecies cohabitation with flying-foxesin Australia, and more-than-humans elsewhere.

Cohabitation multi-espèces et compétences socioécologiques de soins : les roussettes à tête grise à Melbourne, Australie

RÉSUMÉ

sociétés anthropocentriques confrontées Les sont au défi d'améliorer les relations chez autrui dit more-than-human (non humain) dans le cadre d'appauvrissement écologique. Dans ce contexte, les soins s'avèrent un facteur important pour améliorer la

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cohabitation de plusieurs espèces. Des études récentes ont interrogé les caractéristiques des soins et leur potentiel d'évoluer, y compris les différents degrés de contrôle humain possible dans les relations de soins qui vont au-delà du cadre humain. Cette étude contribue au domaine en fournissant une analyse culturelle des soins au-delà des êtres humains ayant pour intérêt les soins apportés aux roussettes à tête grise (pteropus poliocephalus) à Melbourne, en Australie. Le colonialisme a un impact sur les relations avec les roussettes qui figurent maintenant sur la liste des espèces menacées d'extinction. Cette étude examine les différences entre les conceptions occidentales et indigènes du monde vivant, ainsi que les compétences en matière de soins inspirées par les éthiques de soins féministes et indigènes. L'analyse compare deux formes de soins aux chauves-souris – secourir d'animaux sauvages et entreprendre des activités de plantation – afin de mettre en cause les conditions de soins et les compétences qu'elles favorisent. La recherche s'appuie sur des entretiens semi-structurés avec des scientifiques, des soigneurs bénévoles de chauves-souris et un Ancien de la communauté Wurundieri, ainsi que sur des observations participantes avec des soigneurs de chauves-souris. Les conclusions suggèrent que les activités de plantation constituent un contexte pour pratiquer les compétences de soins socioécologiques, en particulier la réceptivité humaine chez autrui, pour améliorer la cohabitation de plusieurs espèces. Celles-ci peuvent faciliter les efforts de sensibilisation et d'éducation visant à améliorer la cohabitation d'espèces avec les roussettes en Australie et avec les êtres more-than-human dans d'autres pays.

Cohabitación multi especie y habilidades de cuidado socio ecológico: los zorros voladores de cabeza gris en Melbourne, Australia

RESUMEN

Las sociedades antropocéntricas se enfrentan al desafío de mejorar las relaciones con otros seres más que humanos en medio del empobrecimiento ecológico. En este contexto, el cuidado ha surgido como un factor importante para mejorar la cohabitación multi especie. Estudios recientes han cuestionado el potencial transformador del cuidado y sus cualidades, incluidos los diferentes grados de control humano que podrían existir en las relaciones de cuidado más que humanas. Este estudio contribuye a este estudio al proporcionar un análisis cultural del cuidado más que humano, centrando en el cuidado de los zorros voladores de cabeza gris (Pteropus poliocephalus) en Melbourne, Australia. El colonialismo afecta las relaciones con los zorros voladores, que han sido catalogados como amenazados de extinción. Este estudio considera las diferencias entre las orientaciones occidentales e indígenas hacia el mundo viviente, junto con las habilidades de cuidado informadas por la ética del cuidado feminista e indígena. En el análisis, se comparan dos formas de cuidado de los murciélagos (el rescate de la fauna silvestre y las actividades de plantación) para analizar las condiciones de cuidado y las habilidades de cuidado que fomentan. La investigación se basa en entrevistas semiestructuradas con científicos, cuidadores voluntarios de murciélagos y un líder de la

comunidad Wurundjeri, así como en la observación de los participantes con cuidadores de murciélagos. Los hallazgos sugieren que las actividades de plantación son un contexto en el que las habilidades de cuidado socio ecológico, específicamente la capacidad de respuesta humana a otros seres más que humanos, se pueden practicar para mejorar la cohabitación multi especie. Estos hallazgos pueden respaldar los esfuerzos de promoción y educación para mejorar la cohabitación multi especie con zorros voladores en Australia y seres más que humanos en otros lugares.

Introduction

Cohabitation with free-roaming animals is a pressing concern amid ecological impoverishment. Learning to live with other animals requires changes to everyday habits and the anthropocentric use of space and resources. This study explores human interactions with the grey-headed flying-fox in Melbourne, Australia. Grey-headed flying-foxes (pteropus poliocephalus, flying-foxes hereafter) are a species of bat, also known as fruit bats, native to south-eastern Australia. Understanding human cohabitation with this species is critical, as it draws attention to dominant cultural expressions of more-than-human relationships in an anthropocentric society, such as settler colonial Australia. Flying-foxes have been listed as threatened with extinction since the start of the millennium, due to concerns over a decline in their population in the order of 30% in about a decade (Eby & Lunney, 2002). Their habitat has been progressively destroyed since British colonization. Settlers have maligned them as pests, persecuted them for sports and dispersed them from their roosts. After the flying-foxes were listed as threatened with extinction, the government awarded them slightly more protection. Currently, a discourse of balance can be recognized in Australian policies in which the status of flying-foxes as a threatened species is balanced with their status as a nuisance species in urban areas (P. Smith & McManus, 2024). Dispersals, roost destruction and harm to individual flying-foxes still occur. Everyday encounters with flying-foxes can cause stress for residents, as people struggle to live near their day roosts where they can congregate in the thousands. Residents can also experience nuisance from the flying-foxes' nightly visits in their neighbourhood as they forage for food, which can lead to complaints about sound levels and mess from droppings. It is essential to explore the compromises or changes in human practices needed for cohabitation with the flying-foxes and recognize the significance of particular forms of care in bat conservation that can facilitate these changes.

Relationships with bats are subject to cultural influences. Bats have historically been sources of ambivalence in all time periods of the western world. They have symbolized 'creatures from hell' as well as nurturing mothers and have experienced a more recent appreciation of their ecological importance in western cultures (Laugrand et al., 2023). Through their observations in the Philippines, Laugrand et al. (2023) note that several Indigenous communities have regular relationships with bats. These relationships are diverse in nature. One community recognizes the bats' distinct temperaments, emotions and communication skills. Bats can also be viewed as valuable allies, who help humans and other species, or whose behaviour can help predict the weather. They can also be associated with evil spirits, in which case they are still respected and gestures of

appeasement must be offered. Considering these cases of successful cohabitation, Laugrand et al. (2023) contend that this 'should make us look for the problem in the types of relationship we have with bats, rather than in bats themselves, and identify the conditions for cohabiting with them' (p. 330).

One of the conditions of cohabitation that has emerged in the literature is the role of care in guiding human-bat relationships. Caiza-Villegas, Ginn, et al. (2023) emphasize the importance of creating a general disposition of accommodation with bats. This disposition can be expressed through small acts and caring interventions, as displayed by residents in the Netherlands, who live with bats in or near their houses and adapt their spaces and routines. However, it is important to interrogate care and connection with the more-than-human on the basis of its qualities, including the extent to which human control is ceded (Pitt, 2018). Attention to the cultural differences between Western and Indigenous orientations to the living world, including the role of care, can shed further light on the different qualities of care as a condition for cohabitation.

I build on these debates by exploring the different forms of care for flying-foxes in Melbourne. I draw on theories of feminist and Indigenous care ethics to interrogate these expressions of care. Feminist care ethics describe pragmatic skills such as attentiveness to needs and responsiveness whether caring needs have been met (Tronto, 1993). These skills are useful in a more-than-human world and resonate with skills described in Indigenous scholarship. In Australia, Indigenous people's orientation to the living world involves mutual caring relationships with Country, which encompasses the material and immaterial land, waters, sky, rocks, plants, and other animals (Suchet-Pearson et al., 2013). Care for Country requires an ability to pay close attention to more-than-human worlds, and for humans to develop responsiveness as part of Country (Country et al., 2019). Though Indigenous cultures around the world are diverse and it is important not to generalize, Indigenous scholarship has noted the orientation to the living world as a point of difference with western cultures. For example, Indigenous scholars in contexts beyond Australia have described an intimate connection to the land as grounded normativity (Burkhart, 2019; Coulthard, 2014).

Indigenous relationships with Country in Australia can be differentiated from western orientations to the living world, understood here as sovereignty. The western notion of sovereignty is closely related to mastery and dominion (Singh, 2018), and is not to be confused with Indigenous articulations of sovereignty in their struggle for self-determination. The western notion of sovereignty is an anthropocentric and controlling orientation to the living world, in which people are alienated from the land (Burkhart, 2019; Graham, 1999). Sovereignty has also been described as the mode of dominion over other animals (Wadiwel, 2015). Caring interventions can be expressions of this western notion of sovereignty if they serve human purposes. There are deeper levels of care possible when control is ceded (Pitt, 2018). This study will interrogate the western notion of sovereignty and how it influences interactions with the more-than-human world.

Socio-ecological caring skills, as understood in feminist and Indigenous care ethics, can inform alternative relationships with flying-foxes. Therefore, it is important to explore how these skills are currently cultivated in relationships with flying-foxes, and what practices might improve these skills. To this end, I explore the work that bat advocates perform in Melbourne as they try to effect change for the flying-foxes. Melbourne is the study site due to the establishment of permanent flying-fox roost sites in the region, which led to an extensive dispersal campaign from the Royal Botanic Gardens (the Gardens hereafter) in 2003. The bats had started roosting in an area of planted rainforest, which caused concern about the trees and loss of amenity. The dispersal lasted several months and cost \$3 million AUD (Roberts et al., 2020). The bats have since been roosting in Yarra Bend park, a few kilometres away from the Gardens, in a Eucalypt forest on the banks of the river Yarra.

The paper draws on qualitative research, consisting of semi-structured interviews with bat carers, scientists and an Indigenous Elder, and participant observation with bat carers. I analyse two forms of care: wildlife rescue care and planting activities in the Yarra Bend Park roost of the bats. I suggest that a large portion of the caring work includes interventions that are controlled situations in which flying-foxes have become accessible to humans and the agency of flying-foxes is limited. I contend that socio-ecological caring skills are best developed in planting activities for flying-foxes, in which the bats are not directly accessible to touch and see and thus control. Planting activities can still foster an intimate familiarity with them and instil the caring skills that are required to learn to live with flying-foxes, in particular responsiveness. In what follows, I will first provide a historical context for the situation of the flying-foxes in settler colonial Australia. In the second section, I outline the theoretical work on feminist and Indigenous ethics of care as anti-colonial ethics. In the third section, I will outline my methods, before I describe my findings in the fourth section by comparing two forms of care and the skills they instil. In conclusion, I reiterate key findings of this research and make suggestions for Australian policies on cohabitation with the flying-foxes. I summarize the contributions to the scholarship on multispecies care, in particular, the consideration of the conditions for care and the influence of a settler-colonial context in care for more-than-humans. These contributions further encourage the exploration of contexts and practices of care that allow people to practise socio-ecological caring skills to facilitate co-habitation with morethan-human others.

Flying-foxes in settler colonial Australia

Grey-headed flying-foxes are one of the four species of flying-foxes on mainland Australia, and they have an ancient presence on this landmass. They are night-time pollinators for trees that produce fresh pollen and the greatest amount of nectar at night (Richards et al., 2012), indicating these trees' reliance on night-time pollinators. The listing of the flying-foxes as threatened with extinction is a bad omen, as Australia has a significant extinction rate for Australian land mammals. Since British invasion, 28 terrestrial mammals have become extinct (Woinarski et al., 2015), and 21% of land mammal species are threatened with extinction. Scholars warn that the current rate of one or two extinctions per decade since 1788 continues (Woinarski et al., 2015). The history of colonization in Australia is illustrative of the processes that drive extinction and shows the different approaches to flying-foxes between Indigenous people and settlers.

Flying-foxes became culturally significant for Indigenous people, as the evolutionary trajectory of flying-foxes started to interweave with humans. Expressions of this significance can be found in rock paintings of flying-foxes, but also in relationships of care and kinship in Indigenous communities that exist to this day. For example, some people in the Indigenous communities of Yarralin and Lingara in the Northern Territory form

multispecies kinship groups of flying-fox persons whose fates are bound up with each other (Rose, 2022). People's different relationships with totemic species like flying-foxes are part of a network that distributes caring responsibilities. Rose (2022) observes: 'The effect of these great concentrations of diversities and responsibilities is to spread care across many species in a structured manner from which, in the best of times, everyone benefits' (p. 81). These relationships also make the land a place of familiarity. Melbourne is located on the Kulin lands of Wurundjeri, Boonwurrung, Wathaurong, Taungurung and Dja Dja Wurrung peoples. Wurundjeri Elders shared with me that flying-foxes are known as Balayang or Pallian the bat, the creator of women and the brother of Bunjil the eagle. As ancestral spirits, they 'moved across their lands performing heroic deeds and molding a primeval and plastic land, breathing life into it by making species and humans, and forging the land into a landscape of familiarity and meaning' (Broome, 2011, p. 90).

Indigenous relationships of care and kinship have endured the violence of colonization. After James Cook's first visit to the land in 1770, British settlers arrived on the First Fleet led by Arthur Phillip in 1788 to establish a penal colony in present-day New South Wales. Sailors on Cook's HMS Endeavour described black flying-foxes, one of the other mainland species of flying-foxes, as little black kegs (Richards et al., 2012). During early colonization, people slaughtered flying-foxes at their camps with a 'wild enthusiasm which was felt by nearly all the party' (Newman, 1870, p. 2138). British biologist Francis Ratcliffe (1931) writes: 'There must be very few flying-fox camps in southern Queensland or New South Wales against which a "battue" has not been carried out at one time or another' (p. 70). As settlers destroyed habitats, the flying-foxes started feeding in newly established fruit orchards to the dismay of fruit growers. In response, Ratcliffe (1931) explored the suitability of several methods of mass destruction for flying-foxes, including commercialization, poisons, flame guns, explosives, and introduced diseases.

The violence of these actions reverberates in contemporary methods to disperse flyingfoxes from their roosts, such as the dispersal campaign from the Gardens in 2003. The Gardens had been complaining about the bats' presence in an area of planted rainforest. The grey-headed flying-foxes were listed as threatened with extinction in December 2001 by the Federal Government, which had put an end to a controversial culling program at the Gardens. The next course of action was to chase the bats away, a campaign that lasted several months in which staff and volunteers used explosive noises played at dawn. Eventually, the bats settled in Yarra Bend Park. Across Australia, other methods to displace flying-foxes have included continuous noise (speakers, drums, banging pots, sirens, lawn mowers), floodlight towers pointed at roost trees, pressure cleaners, extensive vegetation removal and a helicopter to create a downdraught over the roost (Roberts et al., 2020). In October 2022, videos circulated on social media of the dispersal of little-red flying-foxes, one of the four mainland flying-fox species, in Charters Towers in Queensland, where people set off fireworks in the roost (Bat Conservation & Rescue Queensland, 2022).

It is possible to observe a trend in which the social licence to harm flying-foxes is withdrawn (P. Smith & McManus, 2024). Australian policies have pivoted towards alternative management options for flying-foxes, emphasizing community education, the creation of physical separation such as buffer zones, or property modifications. However, 'the means and political desire to enact harm remain' (P. Smith & McManus, 2024, p. 96). Everyday relationships with flying-foxes are characterized by residents' complaints about their presence or their outright violence towards

flying-foxes. The not-for-profit organization Wildlife Victoria manages a hotline for people to seek help with injured native animals or who require advice, and it regularly receives calls about flying-foxes. People have asked whether Wildlife Victoria supplies chemicals to get rid of the bats (a call made from the suburb Fawkner, on 10/2/14). Callers ask if staff can come and cut down the tree on their neighbour's property where the bats frequent (Camberwell, 21/7/14). Or why the staff can't contain them all or move them like they did in the Botanical Gardens (Greensborough, 5/12/19). Callers also threaten to shoot flying-foxes (Brunswick, 9/ 12/13) or become abusive towards the operator if they do not meet their demands (Camberwell, 21/7/14). There are frequent media reports of people's harm to flying-foxes in several states of Australia, such as bats being shot and strung up on barbed wire (Payne, 2017), bashed to death (Tuffield & Maunder, 2020) and people setting fire to a roost (Owen, 2016).

The history of colonization shows the stark difference in the treatment of flying-foxes between Indigenous and settler communities. Invasion displaced relationships of kinship and care. There are fewer opportunities for Indigenous people to connect with totems. But colonization did not erase these relationships. Uncle Dave, an Elder of the Wurundjeri community, has observed how Indigenous children and adults are freely adopting totems. He explained how Wurundjeri children are encouraged from a young age to explore their embodied connection with other animals. He gave the example of children who like to dig, swim or climb trees: 'They are observed in what they like to do and are encouraged to learn what animal they are imitating'. He continued: 'My totem, not very unlike the flyingfox, is the ringtail possum. As a young boy they couldn't stop me from climbing trees' (interview 10/11/2022). This process builds ecological knowledge. Children learn more about the animals who use their bodies in the same ways they like to do, such as their food and sleep preferences and their predators. Uncle Dave continued: 'And you build this knowledge because you're interested. That makes you responsible for that small ecological envelope that is specific for that particular animal, reptile, bird, fish, whoever it might be'. This is significant, as Uncle Dave observes a societal lack in ecological knowledge and an inability to take cues from the environment.

The history of colonization also makes clear that the analysis of contemporary relationships with flying-foxes needs to address two aspects. First, it is necessary to analyse the tenets of a western orientation to the living world and its expression in settler-colonial Australia. This is part of what geographers Collard et al. (2015) call the need to reckon with the past, 'to understand the discursive material infrastructure we have inherited' (Collard et al., 2015, p. 327). Second, it is important for non-Indigenous residents to develop a sensitivity to Indigenous ethics to explore alternative relationships with flying-foxes. Indigenous ethics, as well as feminist philosophies, can inspire anticolonial ethics that can restore injustices (Whyte & Cuomo, 2016), foster alternative relationships of healing and regeneration, and remake broken protocols (A. S. Smith et al., 2020; Theriault et al., 2020). This is relevant in the context of extinction, as scholars have described extinction as large-scale world breaking (Theriault et al., 2020) and the unravelling of entangled lifeways (Van Dooren, 2014). The next section will discuss how these theories can critique dominant relationships with flying-foxes and outline how care can inform renewed relationships.

Feminist and indigenous ethics of care in relationships with flying-foxes

The cultural analysis of relationships with flying-foxes considers differences in orientation to the living world in Indigenous and Western cultures. Internationally, Indigenous scholars have observed a condition of alienation or separation from the land in western societies. Cherokee philosopher Brian Burkhart (2019) describes it as 'floating free from the land' (p. 49). The sovereign derives normativity, knowledge and political power from 'being cut free from the land so as to exist across all landscapes or at least multiple landscapes at once' (p. 54). The attempt at normativity, knowledge and political power 'that floats free from the land arises from the desire for something unchangeable or absolute by which some sense of security and control can be felt' (p. 55). In Australia, Wakka Wakka and Kombumerri philosopher Mary Graham (1999) describes how this characterizes a people who behaves as if they are alone in the world. Alienated from the land they become individuated selves, discrete entities, 'whirling in space, completely free' (p. 110). However, she describes this is ultimately a fearful freedom:

The result is then that whatever form the environment or landscape takes, it becomes and remains a hostile place. The discrete individual then has to arm itself not just literally against other discrete individuals, but against its environment – which is why land is always something to be conquered and owned. (Graham, 1999, p. 110)

This relationship to the land is different from what Yellowknives Dene scholar Glen Coulthard (2014) describes as grounded normativity. He describes grounded normativity as 'the modalities of Indigenous land-connected practices and longstanding experiential knowledge that inform and structure our ethical engagements with the world and our relationships with human and nonhuman others over time' (p. 13). These forms of relating are non-dominating, non-exploitative and constitute a system of reciprocal relations and obligations. This normativity arises from an intimate connection to the land.

Different orientations to the living world can have ramifications for the forms of care enacted. One example of this difference is the degree of ecological separation in the subjects of care (Fijn & Baynes-Rock, 2018). Fijn and Baynes-Rock observe a difference in the relationships with bees, hives and their surroundings between wider Australian practices of backyard beekeeping and the Yolngu people's care practices in the Northern Territory. Backyard beekeepers consider the hive in their backyard as the subject of care, separated from the wider ecology. Fijn and Baynes-Rock note (2018):

There is no scope within such a knowledge framework for a self-regulating system, instead the system includes threats to hives, which beekeepers strive to separate from the ecological system. The hive is that which receives ethical consideration while the system is abstracted (Fijn & Baynes-Rock, 2018, p. 214).

In contrast to beekeeping practices, Yolngu people seeking nourishment from the nests of stingless bees, also known as sugarbag, take care of the health of sugarbag as part of a coherent system, not necessarily of individual bees or nests. Custodians take care of the ecosystem: 'The sugarbag is not continually disturbed throughout the year, but is only harvested in the correct season, according to cues and signals from the surrounding environment' (Fijn & Baynes-Rock, 2018, p. 215).

These differences in orientations and care can help to understand the transformative potential of care, as well as the limitations of care. Fisher and Tronto (1990) define care as an activity

that includes everything that we do to maintain, continue, and repair our 'world' so that we can live in it as well as possible. That world includes our bodies, ourselves and our environment, all of which we seek to interweave in a complex, life-sustaining web (Fisher & Tronto, 1990, p. 40).

The potential for transformation in care work seems to involve increased knowledge, such as an ecological sense of interdependence, and the development of particular skills, such as attentiveness. For example, Buser et al. (2020) observe that caring for water not only means becoming bodily attuned to nonhuman others but also that it is 'through an individual's self-exploration with the surrounding world where the reciprocity of care becomes evident' (p. 1052). In relationships with bats, Caiza-Villegas, Van Hoven, et al. (2023) have explored how bat advocates learn about bat ecology, become familiar with their everyday life and attune to them in specific places. This process is facilitated by technologies, for example bat detectors, and specialized knowledge to distinguish between species.

The caring element of attentiveness emerges as an important transformation in a process of attunement. Attentiveness can note the existence of (unmet) needs, in what Tronto considers the first phase of care, 'caring about' (Tronto, 1993). This caring skill also facilitates interspecies communication. Ecofeminists Donovan and Adams (2007) and Lori Gruen (2015) have stressed the importance of attention, both emotionally and intellectually, such as 'listening to animals, paying emotional attention, taking seriously – caring about – what they are telling us' (Donovan, 2006, p. 305). Attentiveness is only the first skill in a cascading series of actions that follow the observation of needs and the messages from more-than-human others. According to Tronto (1993), other skills include assuming responsibility, specific competencies associated with the physical labour of care-giving and the responsiveness to more-than-human others and their needs.

Attentiveness to more-than-human can be transformational, but other factors such as the context and aims of care influence the quality of care. To illustrate, attentiveness can lead to the realization of clashing needs, as Krzywoszynska (2019) observed in the care for soil in farming businesses. Farmers noted the clashing needs of soil and the farming business, but they also came up against their limited opportunities *to respond* to the soil needs. The context of care is part of the power relations, or 'the broader landscapes that structure what kinds of care are desirable and, indeed, possible' (Krzywoszynska, 2019, p. 671). The context of care is influenced by the western notion of sovereignty, that precedes most interactions with non-human animals (or other more-than-humans). Political scholar Dinesh Wadiwel (2015) describes this as ethics *after* sovereignty, a form of ethics that does not challenge a structure of domination. Unchecked sovereignty can dictate the terms of the encounter with more-than-human others, and result in a context of care in which responsiveness is limited.

Geographer Hannah Pitt (2018) contends that caring relationships with more-thanhumans in general benefit from humans ceding control. The challenge exists in a settler colonial society to relate to other animals in a context in which they cede control, that

allows for more responsiveness to more-than-humans. With these insights I interrogate the caring work undertaken by bat advocates in Melbourne. In the next section, I outline my approach to data collection.

Project methods

I conduct this project as a white, immigrant woman trying to reckon with living on colonized Wurundjeri Country. Semi-structured interviews and participant observation allowed me to explore how and why participants conducted their work with flying-foxes, and to gain first-hand experience in caring for flying-foxes. I relied on a purposive sampling strategy, in which I approached participants based on their experience of working with or caring for flying-foxes, such as bat carers in Melbourne and scientists in advocacy organizations. I approached the Wurundieri council for a consultation process as they are the traditional custodians of the land on which the Yarra Bend Park roost is located. This led to an initial project establishment meeting, during which I presented my project plan to three Elders who shared their reflections on my project and considered its value. They expressed their interest in formally taking part in the project and agreed to a follow-up group interview. This resulted in an interview with one Elder, as unforeseen circumstances prevented the others from attending. Overall, I conducted interviews with seven scientists, four licenced wildlife carers, two other bat volunteers and one Elder of the Wurundjeri community, conducted between August 2021 and May 2023. There is thus an imbalance between Indigenous and non-Indigenous participants. The interview with the Wurundjeri Elder helps to understand and contextualize Indigenous care for Country, and aids the reflection on current bat care practices. In addition to the interviews, I conducted participant observation with a bat care group in Yarra Bend Park, where they organize planting activities and a soft-release process for orphaned flying-foxes, between November 2021 and April 2022.

I analysed my fieldnotes and the interview transcriptions thematically, in which I used a deductive approach in coding the materials based on the theoretical concepts in care ethics, such as themes of interspecies communication, attentiveness and responsiveness. In the next section, I describe the caring relationships in wildlife rescues and planting activities.

Caring relationships with flying-foxes

Bat advocates try to address several needs in the human-flying-fox relationships. I focus on two forms of care-giving in which volunteers perform physical labour and develop several competencies (Tronto, 1993). These two forms are wildlife rescues and planting activities in the roost in Yarra Bend Park. In the next sections, I outline each of these activities in detail, drawing on interviews and participant observation.

Wildlife rescues

The care labour of wildlife rescues covers a range of issues, such as rescuing injured flying-foxes and a soft-release programme for orphaned pups. Flying-foxes can come into care because they become entangled in a range of materials, such as fruit tree

netting, fishing lines and barbed wire. They can be electrocuted on powerlines or found on the ground due to collisions with vehicles or buildings. Orphaned pups may have been dropped from their mother in flight, or found on a deceased or injured mother. In any of these instances, licenced wildlife rescuers are called out to attend to the situation and, if possible, bring the flying-fox into care. I will first describe the general treating and releasing care work and then the soft-release programme, with a specific focus on the interactions between humans and flyingfoxes, and the skills of attentiveness and responsiveness that are developed in these activities.

Treating and releasing injured flying-foxes

Netting entanglements often lead to shredded wing membranes and broken bones. Barbed wire entanglements can also cause shattered mouth palates, as bats try to chew themselves free. Electrocution on powerlines can cause burns, and death is not always instant. Rescues can be complicated, as for example netting entanglements require skilful management of tools to not cut the wing membrane of flying-foxes, and sometimes dangerous physical work. Carers reported retrieving flying-foxes from discarded fishing lines over rivers. Licenced wildlife rescuers and carers hold specialized knowledge to treat injured flying-foxes. As three wildlife rescuers shared, the short-term care involves triaging and stabilizing the flying-fox, letting them settle and then giving fruit (favourites are pear, grapes and watermelon). The carers administer subcutaneous fluid injections and pain relief, monitor for dehydration, check heart and respiration rates and dress wounds. They assess whether wounds are life-threatening and whether a vet visit is necessary. Vets can provide emergency euthanasia or operate on the bats. Unfortunately, flying-foxes are euthanized in many cases due to the extent of the injuries. One study reported a euthanasia rate of 44.7% (Scheelings et al., 2015).

Carers develop forms of attentiveness to the flying-foxes' body language. Flying-foxes can resist or cooperate during the initial rescue, depending on their personalities or the situation. Ericka, for example, shared a story of a flying-fox entangled in a barbed wire fence:

The barbed wire was attached to a defence force building. The staff were really adamant that the wire could not be cut. I sat there and untangled her membrane from these barbs. She just looked at what I was doing and gave me a few licks. When it hurt a little bit, she just pulled her head away. She never once tried to bite me. Eventually I got her down and I took her to the zoo. She had extensive damage to the membrane beyond the limits of repair, she was put to sleep (Interview, 22/10/2021).

But bats can also scream, 'Bloodcurdling screams. You can see the fear and agitation', as Lisa shared (interview, 21/9/2021). However, once they are in care they can quickly adjust to the situation and behave calmly and unthreatened. This depends on the carers' actions. Lisa said:

You never cover their head, you always make sure they can see everything you're doing, even when I'm changing dressings. They love their food, so when I'm assessing them or changing dressings and I'm feeding them, it's pretty easy actually (Interview, 21/9/2021).

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Ericka's experience corroborates this and shows the ability of carers to respond to stressed bats through their own comportment:

You see adults coming in really, really scared and you can see them looking around, taking it in, watching what you're doing, responding to the way you're acting to them in your tone of voice. So, if you're calm, they start picking up on that and calming down (Interview, 22/10/2021).

When adults are back to health, they will be released into the colony. Hand-raised orphaned pups will be slowly released (discussed in the next section).

Carers exhibit attentiveness for the flying-foxes' body language and their needs. In this context, flying-foxes are engaged as dependents and injured and vulnerable individuals, but carers try to make caring interventions insightful to flying-foxes, for example by not covering their eyes. People involved in wildlife care, including vets, decide on the fate of flying-foxes, for example, when it comes to euthanasia. In Pitt's (2018) typology, a dependent relationship exhibits care but may still be ethically complex (for example, due to paternalism, or the prioritization of human needs). The next sections draw out other dimensions of the ethical complexity that is embedded in this caring context.

Orphaned pups

Orphaned pups spend considerable time in care, during which carers and pups develop intimate relationships. Flying-fox pups benefit from tactile interactions, and often snuggle into the humans who mimick the mothers' attention to the pups. After several months in care, the hand-raised young bats start a soft-release programme in an enclosure in Yarra Bend Park (see Figure 1), where they can socialize with other young flying-foxes and get used to the roost dynamics. One of the aims of the soft release is for them to shed the familiarity with humans. The separation is easy, as carers report that young flying-foxes in the enclosure do not want much to do with humans after a few days. A group of volunteers feeds them several kilos of fruit each day. After about 10 days in the enclosure, a hatch is opened, so they can venture out into the colony.

There is a limit to how much interest in humans the bats should display in this phase, as illustrated by the flying-fox named Dot. Dot had come into care with a maggot infestation in her eye, which was surgically removed. She tended to come close to humans, so volunteers had to spray her with water every time she came near us, which happened a few times in the 2 weeks she was in the enclosure. She usually responded by spreading her wings, shaking her head, baring her teeth, and then turning around. It would be a bad sign if Dot kept coming down to humans. She would be considered unfit for release, as her relationship to humans was too familiar. This would mean she would have to be euthanized, according to the Victorian code of practice for wildlife carers, for fear of humanization. The state department advises euthanasia when animals need extended periods in care, though exceptions may apply to threatened species (Department of Energy, Environment and Climate Action, 2025). Not all bat carers agree with this approach. Megan sees a role for bats who are happy and healthy who can act as 'guardian parents', with a calming influence on new flying-foxes in care (participant observation, 2/3/2022). Carer 'Leslie' has had experience with bats who, when given more time in care,



Figure 1. Young grey-headed flying-foxes in the soft release process. (Photo by D. Coronel).

have recovered from wounds often considered to be beyond the limits of repair, and upon release went back to the colony without issue (interview, 26/4/2022).

This example is illustrative of the context of wildlife rescue and care with the type of authority humans hold. The end of the care phase is often considered the release of individual flying-foxes back into the colony or 'the wild' (Paxton, 2017). Human influence over flying-foxes is authorized with the purpose to help them regain a lost wild state that designates 'an original and independent path, separate from humans, that the animal was following prior to the incident that interrupted it' (Paxton, 2017, p. 101). Relationships of trust that circulated among flying-foxes and humans need to be undone (Paxton, 2017). Spraying water to instil fear of humans is a way to undo that trust and it is part of the misanthropic practices to make animals unencounterable (Collard, 2020).

The wildlife rescue and care exhibits important skills of attentiveness, carers note flying-foxes behaviour and respond to it to ease the caring process. They hold specialized knowledge about treating flying-foxes that continues to be developed. However, there are conditions to this care that need to be considered. Attentiveness alone might be an unstable basis for developing harmonious relationships (Bear, 2021). For a fuller, more complex account of care, scholars must consider contexts, histories and exclusions of care (Giraud & Hollin, 2016), and as this case illustrates, also the conditions for care. The type of

familiarity instilled through these activities is conditional upon the flying-foxes' accessibility and compliance in care interventions. Limiting care to these instances is a form of alienation and informs a reductive notion of the human, exhibited in the idea that trust and familiarity between humans and flying-foxes are a liability.

Wildlife rescue and care is important and continues to be necessary if there are harmful infrastructures in place and harmful people around. However, it is crucial to explore different caring genres of being human, especially in contexts where humans do not exercise authority but cede control (Pitt, 2018), and in which relationships of trust can still be developed. In the next section, I present the planting activities as socio-ecological care in which familiar relationships can be developed between humans and flying-foxes that display similar skills of attentiveness, and significantly, allow for more responsiveness.

Planting activities

A bat volunteer group regularly organizes planting activities in the roost of the flyingfoxes in Yarra Bend Park. These activities aim to improve existing flying-fox habitat and contribute to more habitat, by revegetating previously disturbed environments. Volunteers address several needs of the flying-foxes, for example, in the choice of plants used. The flying-fox roost in Yarra Bend park can be seriously affected during days of extreme heat, when thousands of bats can die of heat stroke. On these days, flying-foxes will seek shelter from the sun lower in the vegetation or on the ground. To assist them during this process, volunteer plant mid-storey shrubs and groundcovers to create a cooler microclimate (for example, hop goodenia and saltbush) that also provide shelter and soft landing spaces in case they fall down from trees.

During the planting activities, we developed a familiarity with place and the flyingfoxes that was not conditional on their accessibility and controllability to us. Instead, we took cues from their collective behaviour and interacted with them as partners with whom we could navigate sharing spaces with in a more distant relationship. This form of care involved the larger worlds that they are part of. This allowed for the development of socio-ecological caring skills required to navigate the liveliness that their worlds bring. This became apparent when we arrived in the roost at the start of a planting activity on 17 November 2021. Flying-foxes had started roosting in trees that had previously been uninhabited. Flying-foxes constantly travel through a network of roosts in southeast Australia, depending on weather and food availability. The newly arrived flying-foxes had probably come from interstate, in line with the increase in numbers over summer in Victoria. Many of them were startled by our presence when we arrived for the planting activity. They screeched loudly and flew away. Several bat advocates have observed that the flying-foxes can get familiar with the common conduct in a place. They can become tolerant of humans walking on a path under them and to the sounds of volunteers working in the nearby soft-release enclosure. Considering the change in roost occupation, carer Megan suggested we first sit on a bench in the area to get the bats used to our presence and to discuss where we could work to not disturb the bats. Megan pointed to an area near the bench and said 'Maybe we just work on this small area today if the bats let us' (participant observation, 17/11/2021).

The context of care in the planting activity allows for the exercise of open-ended responsiveness to flying-foxes. We stopped in our tracks, reconsidered, and decided not

to go certain places in response to the flying-foxes' alarm. Human responsiveness involves flying-foxes having the ability 'to resist what is expected of them, to make the questioners rethink their questions, and to take reality into surprising and creative directions' (Paxton, 2017, p. 183). Uncle Dave identified a key issue in dominant relationships to the land as the lack in the ability to take cues from the environment. His comments resonate with the call for the restoration of a kin-centric ecology that requires 'experience relating to the land and other-than-humans as partners' (Topa & Narvaez, 2022, p. 218). This relationship can also be understood with the notion of response-ability (Country et al., 2019) to signify the human 'ability to pay close and careful attention, as part of more-than-human worlds' (p. 684) and 'an imperative to respond as, rather than to be responsible to or responsible for, what is seen/learnt/understood/communicated in more-than-human, situated, ethical ways' (p. 684). This study is mindful of the limitations in the ability to grasp Indigenous knowledge and ways of being as a western settler-academic (Ahenakew, 2016). This study does not claim planting activity described as such can be considered Indigenous care for Country, but it highlights the significance of this activity as an avenue for alienated people to instil important socio-ecological skills, such as taking cues from the environment.

My interviews with bat advocates and scientists have illustrated several ways in which people already attune to flying-foxes as they are in their roost. Ecologist John can smell the difference between black flying-foxes and grey-headed flying-foxes, as the stronger muskiness of black flying-foxes has alerted him to their presence in the past. Scientist and carer Tim, who has studied flying-fox vocalizations, shared that he can hear the difference between different species of flying-foxes, and can also attend to the general mood of a roost:

There's a certain timbre to a sound of a camp, that you just go 'Oh yeah this is a totally normal camp'. And other times you go: 'Something is not right here'. Usually that is combined with when we're seeing mass pup abandonment or other events, which are usually all food shortage related (Interview, 17/9/2021).

In some instances, the attentiveness to the roost is part of intricate care interventions. Bat volunteer Julian has learned to recognize the characteristic high-pitched trill of pups as they call for their mothers in the roost, and can establish if they are orphaned pups in need of care. Bat volunteers have also learned to navigate the boundaries of flying-foxes during heat stress events in the past. Volunteers used to spray the flying-foxes and their surroundings with water to cool them down. Interviewees expressed the need to strike a balance between keeping their distance, to not add to the stress of the flying-foxes, while cooling them down by misting. Volunteer Monique recalled a heat stress event on a windy day of oppressive heat, when she used a backpack sprayer: 'I remember when I first went, I thought, "I'm not quite sure what to do or how close to get, or what's a good amount of spraying"'. I asked how the bats responded to her spraying and she says: 'One of the nice things is when you do spray and sort of try to keep your distance, they start to lick themselves and take up the water to rehydrate. I guess that's helpful, they like that' (interview 29/10/2021). This volunteer work has been phased out and replaced with a sprinkler system in the park.

There is thus a range of contexts in which people can learn and employ caring skills to attend to flying-foxes as they are in their roost. But for caring skills to assist in communities' abilities to live with flying-foxes, it is important to practise these skills in situations

beyond specialized caring interventions that require compliance on the part of flyingfoxes and limited responsiveness on the part of humans. Planting activities provide one context in which flying-foxes can be engaged as partners, and socio-ecological caring skills can be practised.

Conclusion

This study has explored the transformative potential of care in facilitating multispecies cohabitation, focusing on the grey-headed flying-foxes in Melbourne, Australia. The cultural analysis has foregrounded the settler-colonial context of Australia and how differences in Western and Indigenous orientations to the living world inform relation-ships with more-than-humans. Alienation from the land that also manifests as domination over animals in several contexts, is one of the tenets of western relationships to the more-than-human world that must be addressed in caring interventions. To this end, the analysis considered two forms of bat care in Melbourne, wildlife rescue and planting activities, and compared the caring skills these activities instil and the conditions that make these expressions of care possible. This study found that in interventions of wildlife rescue, carers develop important forms of attentiveness, but the flying-foxes are engaged as dependents, and they are required to be compliant and accessible. During planting activities in their roost, the flying-foxes were not required to be accessible and compliant, but instead could be engaged as partners who could influence the course of action. This activity instilled carers' responsiveness as well as attentiveness to the flying-foxes.

These findings have implications for Australian policies on the grey-headed flying-foxes. The National Recovery Plan for the Grey-headed Flying-foxes by the Australian government outlines the two objectives to increase public awareness about the flying-foxes and to increase communities' capacity to coexist with them (Department of Agriculture, Water and the Environment, 2021). How flying-foxes are engaged in relevant care and education efforts matters. The findings of this research suggest that awareness of flying-foxes needs to go hand in hand with increased responsiveness to them, and that this needs to be practiced in contexts where the flying-foxes are engaged as partners. In the 'multi-faceted puzzle and overall attempt at caring about and for bats' (Caiza-Villegas, Ginn, et al., 2023, p. 392), advocacy and education efforts can explore actions of care that allow for more human responsiveness to flying-foxes. Careful engagements with flying-fox collectives, such as in their roosts, instil skills that are not dependent on an individual flying-fox being accessible to humans, which often translates to being controllable. Planting activities in flying-fox roosts are one context in which people can practice socio-ecological caring skills. These actions need to be considered in concerted education efforts to address the tenets of a western orientation to the living world, such as alienation and domination.

This study has implications for the scholarship on more-than-human care ethics. It contributes to a more complex account of care (Giraud & Hollin, 2016) by considering the conditions of compliancy and accessibility of animals for care, and the context of more-than-human care in a western culture and a settler-colonial context. Care often associated with direct-care giving, such as wildlife rescue, is an exceptional form of care that relies on human control and compliance on the part of the animals. These animals are separated from their ecologies, or the communities and worlds that sustain them, and in which they can live on their own terms. Caring skills such as attentiveness can still be present, and people can still

respond to animals to some extent, as authors have similarly observed in projects with more-than-humans, such as beagles in experimental laboratories (Giraud & Hollin, 2016) and edible insect farming (Bear, 2021). The range of possible responses, however, is limited by the parameters of the human projects of control. To explore deeper levels of care when human control is ceded (Pitt, 2018), it is important to study socio-ecological caring skills in contexts where conditions of accessibility and compliancy on the part of animals are not required, contexts in which 'encounters are not pre-arranged, but happen through straying off beaten paths where unexpected meetings happen' (Bozalek & Zembylas, 2023, p. 73). This can lead to more expansive notions of human responsiveness or response-ability.

Understanding alienation in western societies is important for the scholarship on care ethics and multispecies co-habitation, specifically, how it dictates the responses to more-than-human others. Alienation can lead to people putting up defences against what are considered non-human impediments or threats, characterizing a tenuous relationship with more-than-humans in which plants and animals are both susceptible to elimination (McDuie-Ra & Senior, 2024). However, in multispecies worlds, animals can be unpredictable, they can resist human interventions, and they can cause impediments for dominant lifestyles in western societies. It takes practice to navigate these aspects of the more-than-human relationships for alienated people. Cultural theorist Berlant describes relationships with others, including non-humans, as a state of inconvenience, or 'the affective sense of the familiar friction of being in relation' (Berlant, 2022, p. 2). Living with other animals requires learning to negotiate this highly embodied friction, including learning to accept being inconvenienced by other animals and navigating unpredictable and uncontrollable situations. Practicing the socio-ecological caring skill of responsiveness can instil relation-ships of trust and familiarity and facilitate multispecies cohabitation.

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