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# Planning in the shadow of extinction: Carnaby's Black cockatoos and urban development in Perth, Australia

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## ABSTRACT

This paper explores the shifting ecological proximities of urban-human-animal relations in Perth via a story of Carnaby's Black Cockatoos, urban planning and extinction. The story is framed around a challenge and a provocation. The challenge, calls for a deeper consideration of urban planning in the shadow of extinction. Such a consideration involves two entangled elements: a deepening ethical and practical engagement with diverse urban lifeforms and temporalities; and an exploration of the more-than-human communities that emerge, are threatened or made possible in extinction's shadows. The provocation, involves asking questions about what kinds of responses to extinction in urban contexts are desirable, or even possible? The paper experiments with the concept of planning in and with 'ethical time' as one way of thinking about how commitments to urban nature and urban justice might be re-imagined in a time of mass extinction. With the help of Carnaby's Black Cockatoos, I argue that planning multispecies cities requires re-setting coordinates for ethical decision-making, coordinates that are embedded in the rhythms, knots and relations of ecological time and in the responsibilities involved with living in more-than-human urban communities of difference.

## ARTICLE HISTORY

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## Background context

It is just before dawn on a brisk winter morning in July 2014. I am standing outside a new housing estate on Underwood Avenue in the inner suburb of Perth. I am waiting for Marie<sup>1</sup>, a passionate advocate of Western Australia's endemic black cockatoos. The first light of day illuminates the strands of mature eucalyptus trees and bushland along one side of the intersection, painting the trees, the sky, and the cleared land of the housing estate in delicate bands of pink and gold. Behind me, the last of the stars fade over Bold Park – Perth's largest remaining tuart-banksia woodland and limestone heath complex. Marie arrives. She has invited me out on this beautiful morning to see flocks of Carnaby's Black Cockatoos (*Calyptorhynchus latirostris*) leave their night time roosting site in the cluster of trees along the side of the road and in the adjacent Underwood Avenue bushland site, a remnant pocket of banksia-tuart woodland. The tall roosting trees are situated along verges and median strips. As the day becomes brighter, cars

and trucks start to fill up the road and the black cockatoos take to the sky in wheeling, joyful arcs to head out across the city. Marie and I walk south for a bit along Underwood Avenue, following their flight. Marie estimates that there are about 80 birds, but she tells me that sometimes 200 Carnaby's Black Cockatoos can roost here. As the last of the birds disappear over the suburban rooftops, I turn back towards the empty suburban development still awaiting construction.

The early morning encounter at this urban intersection of roads, homes and habitats offers a small glimpse into suburban Perth's multispecies landscapes. Perth city is situated on Whadjuk Boodja: the unceded lands, skies, undergrounds and waters of the First Nations Nyoongar people.<sup>2</sup> The metropolitan area lies more or less at the centre of one of 34 internationally recognised biodiversity hotspots. In recent years three species of black cockatoos – the endangered Carnaby's Black Cockatoos and Baudin's Black Cockatoos (*Calyptrorhynchus baudinii*) and the threatened Forest Red-Tail Black Cockatoos (*Calyptrorhynchus banksii*) have become entangled with the material and storied repercussions of land-use change and environmental degradation in Western Australia. Black cockatoos have drawn public attention to local, state and federal environmental planning policy, as well as cultural practices of witnessing extinction and enacting multispecies communities in cities. In the Perth metropolitan region, Carnaby's Black Cockatoos are significant interlocutors in struggles over urban planning and development. Many older residents of Perth recall a time when Carnaby's Black Cockatoos (Carnaby's cockatoos) would travel in cloud-like flocks numbering in the thousands between January and July, as they followed the seasonal rains to the coast after breeding inland. Woodland clearances as a result of urban, forestry and agricultural development across the Carnaby's cockatoos' historic range has led to an overall sharp decline in population numbers (Burnham, Barrett, Blythman, & Scott, 2010). The Great Cocky Count, an annual citizen science survey (one of the largest of its kind in Australia and which is in its ninth consecutive year) reported that between 2010 and 2018, Carnaby's cockatoos experienced a decline of 42% (Peck, Barrett, & Williams, 2018).

## A challenge and a provocation

This paper explores the shifting ecological proximities of urban-human-animal relations via a story of Carnaby's cockatoos, extinction and urban development in Perth. I frame this story of black cockatoos around a challenge and provocation. The challenge calls for a broader consideration of urban planning in the shadow of extinction. Such a consideration of the relationship between urban planning and extinction involves an exploration of two entangled elements: a deepening ethical and practical engagement with diverse urban lifeforms and temporalities; and an exploration of the more-than-human communities that emerge, are threatened, or made possible in extinction's shadows (van Dooren, 2014; van Dooren & Rose, 2012). The provocation involves asking questions about what kinds of responses to extinction in urban contexts are desirable or even possible? In what ways might the growing interdisciplinary interest urban plants, animals, fungi, insects, amphibians, fish, trees, waters, predators, microbes, pollinators that collectively labour to produce 'more-than-human' city intersect with other productions of urban space, including neoliberalism, uneven development and the injustices of racialized capitalism and settler-colonialism? (Gandy, 2018; Narayanan & Bindumadhav, 2018; Porter,

2018). To this end, this paper experiments with the concept of ‘planning in/with ethical time’ – as one possible way of rethinking how commitments to urban nature and urban justice might be reimagined in an age of mass extinction. With regards to urban planning, and with the help of Carnaby’s cockatoos, I argue that planning multispecies cities requires resetting the coordinates for ethical decision-making, coordinates that are embedded in the rhythms, knots and relations of ecological time and the responsibilities involved with living in more-than-human urban communities of difference (Bastian, 2012; Lobo, 2019; Rose, 2011).

## Urban planning in the shadow of extinction

The relationship between urban planning and extinction is complex and not well understood (Davison, 2010; Gandy, 2018; Parris et al., 2018). The persistence of nature-culture boundaries in Western urban planning imaginations has reinforced ideas that ‘biodiverse nature’ exists largely outside of urban areas (Hinchliffe, Kearnes, Degen, & Whatmore, 2005; Houston, Hillier, MacCallum, Steele, & Byrne, 2018). Gandy (2015) argues that this has produced ‘ambiguous trajectories’ for understanding actually existing urban ecologies and how planners might productively think with them. Along one trajectory: urban development transforms ecosystems through processes such as land clearing, habitat fragmentation, the introduction of species; and chemical, noise and light pollution. These processes negatively impact sensitive species and cause local extinctions (Ives et al., 2015; Owens & Wolch, 2015). The hybrid and altered states of urban nature further compound ideas of degraded value where urban habitats are viewed as ‘lost causes’ for biodiversity conservation (Ives et al., 2015, p. 2). Urban geographers such as Hinchliffe et al. (2005) have discussed the liminal and precarious character of ‘urban wilds’ in contemporary urban-environmental politics. Urban wilds, as Hinchliffe and his co-authors contend, often have little or no political constituency in urban policy and planning due to their perceived lack of authenticity. Yet, along another trajectory, there is an emergent recognition of the vital role that cities play as refuges for some threatened species (Francis, Lorimer, & Raco, 2012; Gandy, 2018; Ives et al., 2015; Maller, 2018; Parris et al., 2018). For example, in the context of Australian cities, Ives et al. (2015) have recently proposed that over 30% of threatened species have distributions that intersect with urbanised areas. The disturbed vistas of novel urban-ecological assemblages include a patchwork of private and public jurisdictions: backyard gardens, parks, riparian and rail corridors, verges, median strips, plantations, industrial buffer zones, community and rooftop gardens and disused lots (Lorimer, 2008).

These ‘left over’ bits of nature comprise crucial, and sometimes surprising, sites of refuge for multitudes of urban lifeforms. In Sydney (Australia), critically endangered Green and Golden Bell Frogs (*Litoria aurea*) inhabit the toxic waters of the Sydney Olympic Park brick pits and other infrequently disturbed urban landscapes. Back in Perth, Carnaby’s cockatoos are increasingly dependent upon introduced pine plantations in the city’s north for critical feeding and roosting habitat (Ives et al., 2015). The frogs and the black cockatoos highlight the significance of *cultural* narratives and practices involved with attempts to ‘fix biodiversity loss’ (Dempsey, 2015). Here, distinctions between native and invasive, natural and ‘unnatural’ nature, value and non-value implicit in environmental planning and conservation management are fundamentally challenged (Davison, 2010;

Lorimer, 2015). Said a bit differently: the Green and Golden Bell frogs and Carnaby's cockatoos represent stories of life and death in the Anthropocene where new more-than-human assemblages are forming in landscapes with no precedent and which are in a precarious state of change (Robbins, 2014, p. 106). Robbins (2014) argues that such landscapes call for careful scientific appraisal of ecosystem function in rapidly changing global-environmental conditions. But the perhaps even more difficult challenge, he asserts, is ethical: 'Do we work to expatriate novelty or nurture it?' (Robbins, 2014, p. 106).

The shifting ecological proximities of human-animal assemblages and their asymmetrical relations in cities emphasise the need to address Robbins' ethical challenge and to address the related task of thinking critically about biodiversity, endangerment and survival beyond the natural sciences (Gandy, 2018; Lorimer, 2015; Mitchell, 2018). Particular inspiration for this can be drawn from the environmental humanities and its subfield of extinction studies (Mitchell, 2018; Rose, van Dooren, & Chrulew, 2017; Todd, 2018). Extinction studies poses the questions: what does extinction mean? Why does it matter, and for whom? (Rose et al., 2017, p. 3).<sup>3</sup> These questions require imaginative, ethical and just responses. They require *attentiveness to* and *involvement in* the unravelling and loss of biodiverse worlds; loss that has reverberations and repercussions across time, inheritances and species (Rose, 2011; Rose et al., 2017; Yusoff, 2012). Extinction research, then, is not just about genes, population numbers, distributions, and the survival of species (De Vos, 2017; Mitchell, 2016b). It is also about understanding extinction's biological, cultural, historical and political entanglements (van Dooren, 2014). Extinction, as De Vos (2017, p. 10) writes, 'is the trace that is presented as bodies are erased. We do not realise it at the time. We are in the midst of experiencing it, putting it into effect, carrying it out, performing it'.

The idea that extinction is an unfolding/unravelling of time, place, species that involves specific more-than-human communities has implications for thinking about political and cultural struggles over space and justice in the multispecies city (van Dooren & Rose, 2012). There are several intersecting threads to work on. The first thread involves thinking more critically and carefully about what extinction means for diverse urban inhabitants. This builds upon a growing interdisciplinary field of research exploring multispecies entanglements and relationships in urban contexts (Barua & Sinha, 2017; Houston et al., 2018; Narayanan & Bindumadhav, 2018; van Dooren & Rose, 2012; Wolch, 2002). More-than-human urban research in this vein has challenged asymmetrical nature-culture binaries as well as subtle and unsubtle forms of anthropocentrism in urban imaginaries and practices (Houston et al., 2018; Maller, 2018). Urban geographers and planning theorists have also explored what forms of more-than-human urban politics and ethics might be possible (Hinchliffe & Whatmore, 2006; Metzger, 2016). This work has extended to studying the life-worlds of urban animals and the places they make meaningful.

For example, Barua's and Sinha's work on urban macaques in India explores how 'animal cultures' practice and shape meaningful intra-actions with spaces in the city. This resonates with van Dooren and Rose's (2012, p. 5) reworking of 'storied places' as multispecies achievements in cities. 'The more-than-human city', they write, 'as a zone of entangled lives and deaths is an understanding yet to be fully realised' (19). van Dooren and Rose go on to add: 'In addition to responsibilities towards specific creatures and their desire, indeed need, to return to, or continue to inhabit, their storied places, there is a wider responsibility to decentre the often taken-for-granted human-centric experience of the city' (2012, p. 19). Animals might not 'story' their places in the same way as

people but that does not mean that their comings and goings, their fidelity to particular roosts and niches, their collective labours, or their utilisation of urban spaces and structures are not forms of meaningful inhabitation. Indeed, it is via such a consideration that humans are invited into sentient, co-emergent worlds, where they may become attentive and responsible to living in more-than-human communities (Country, Wright, et al., 2016b).

This latter insight that urban biodiversity involves more-than-human communities draws attention to persistent and entrenched tensions within urban-animal studies, especially in settler-colonial cities, where socio-natural relations are bound up in Eurocentric, anthropocentric and capitalist racial and economic logics (Lobo, 2019; Porter, 2018; Simpson & Bagelman, 2018). Narayanan's (2017) work on street dogs at the intersections of coloniality and anthropocentrism in Indian cities emphasises the marginalisation of humans and nonhumans through colonial biopolitics and informality. For Narayanan, these structures operate through practices of 'non-recognition' that work to create spaces of exception where the lives of nonhumans can readily be disposed of or dismissed. Re-imagining urban-animal relations and the politics of extinction in cities must attend to the embodied violence of environmental racism and colonising histories and practices that structure the reproduction of white privilege and human exceptionalism in urban spaces. As Lobo (2019) contends, this is essential for moving beyond narratives that position the Anthropocene (and extinction) as a depoliticised, ahistorical and unraced crisis and for nurturing 'affective ecologies' of temporal and cultural difference in cities. Lobo uses the term 'affective ecologies' to weave together multispecies and multiracial worlds in Darwin (Australia) that disrupt and decentre the 'settled' worlds of white mastery and which bring into proximity the knotted time-spaces of Indigenous, ethnic, migrant and nonhuman agencies.

Urban-animal relations on the precipice of the sixth mass extinction, then, ought not just focus on Western scientific framings of urban biodiversity and ecology, nascent and fraught as these may be. Nor should calls to better understand 'the entangled zones of life and death in more-than-human cities' (van Dooren & Rose, 2012) erase the sedimented histories of racialised injustices or elide 'ecocidal logics' (Davis & Todd, 2017) that subvert bio-cultural diversity and, which whether intended or not, ultimately seek to manage life and death by way of elimination, separation and containment. The wrongness of the latter is powerfully articulated by Rose's scholarship on love and mourning in a time of extinction. 'Death makes claims of all of us', she writes in *Wild Dog Dreaming: Love and Extinction*, 'claims that invoke our ethics, our love, our sorrow, and our future' (2012, pp. 19–20). Rose's work was informed by her long-standing relationships with Aboriginal peoples of the Victoria River region of northern Australia, and especially in *Wild Dog Dreaming* with Old Tim Yilngayarri, a Yarralin man, who was kin with dingoes and dogs. Her book is a vivid account of life and death narratives at the heart of extinction. Rose juxtaposes the 'death worlds' of alienated colonial-settler relations where death is turned away from life and creates spirals that unravel the regenerative capacities of life with 'the ecological narrative of country [that] embeds death in processes through which it is turned back to life' (2012, p. 91).

It seems that there is a profound disconnect in thinking about extinction in this way from the vantage point of living in and theorising the political ecologies of cities. But the urban 'death worlds' that have been made and that are in the making matter profoundly. Relaying Rose (2012, p. 94):

the world that is bequeathed to us is, in our hands and in our time, is being unmade. And there is more: in unmaking this gifted world, death work unmakes time, and totalizes its annihilating grasp on life's future and diversity. And more: the future complex richness of life - our potential gift to the future is being eradicated.

I want to circle back to thinking about what this might mean for urban planning in the shadow of extinction. While there is a recognition that urban spaces are multispecies homes and habitats for diverse urban dwellers; extinction stories in cities have yet to explore more complex meanings, ethics, politics and implications (Mitchell, 2016a). When extinction stories do emerge in urban planning contexts, they tend to focus on creating and implementing biodiversity plans and biodiversity offset policies; or with endangered species legislation, and urban design interventions, for example – building wildlife overpasses or other types of urban greening work. This largely confines extinction to scientific-technical or calculative/valuative approaches readily recognised within Western systems of environmental policy and conservation management (i.e. biodiversity offsetting, ecosystems services valuation or threatened species assessments and recovery plans). The effect is that these narratives of extinction elide what is hidden or suppressed by biodiversity loss (Yusoff, 2012); and instead, universalise extinction as an ahistorical crisis caused by undifferentiated human drivers (Mitchell, 2018). This is deeply problematic.

Potawatomi scholar and activist Kyle Whyte (2017, p. 159) writes:

As Indigenous peoples, we do not tell our futures beginning from the position of concern with the Anthropocene as a hitherto unanticipated vision of human intervention, which involves mass extinctions and the disappearance of certain ecosystems. For the colonial period already rendered comparable outcomes that cost Indigenous peoples their reciprocal relationships with thousands of plants, animals and ecosystems - most of which are not coming back.

The devastating upheavals and impacts of colonial violence did not (and does not) sever Indigenous relationships to lands, waters, skies, mineral, plant and animal kin. Whyte, along with other First Nations scholars, such as Zoe Todd (Métis) refuse the settler-colonial spatial and temporal logics underpinning extinction and climate crises on these grounds. Instead, they expose the ongoing structures of colonial violence that operate to eliminate the worlds of Indigenous more-than-human kin and the laws and protocols that enable these worlds to continue and flourish (Davis & Todd, 2017; Mitchell, 2018; Todd, 2018). Indigenous peoples continue to enact ancestral laws, protocols and responsibilities to multispecies communities and places (Country, Wright, et al., 2016b; Darug et al., 2019). This fundamentally disrupts both white eco-apocalyptic Anthropocene futures (Whyte, 2017; Gergan et al. 2018) and the presumed passivity of the sixth mass extinction as a moment that 'we humans' have suddenly arrived at (Mitchell, 2018).

Urban planning in the shadow of extinction requires a different set of socio-ecological and temporal patterns: where cities are understood as places of multispecies encounter and where it is acknowledged that all beings are entangled in connections, inheritances, response-abilities, stories and shared futures (Taylor & Instone, 2015). In Australian cities where settler-colonial spatial relations still dominate urban planning practice: thinking about extinction, what it means and what it demands, requires disrupting and transforming narratives of progress, modernity, property, time, governance and economic development that are creating worlds that have undesirable outcomes for Indigenous sovereignty,



and for social and multispecies justice (Darug et al., 2019; Porter, 2018; Rose & van Dooren, 2017). Thinking about collective inheritances, responsibilities and shared futures with diverse humans and nonhumans does not imply sameness or single ontology politics. As Porter (2018, p. 239) reminds us:

All places in Australia, whether urban or otherwise, are Indigenous places. Every inch of glass, steel, concrete and tarmac is dug into and bolted onto *Country*. Every place that is the subject of analysis and urban intervention is knitted into the fabric of Indigenous law and sociality.

The entangled zones of life and death in cities are shot through with structural / historical violence and political ecologies of power; every urban inhabitant inherits these relations and is situated differently within them (Lobo, 2019). But cities are also zones of multispecies possibilities: 'where we all might craft new ways of helping life to flourish' (Despret & Meuret, 2016, p. 27). With the help of Carnaby's cockatoos, I pursue one small thread of what this might look like for urban planning by thinking through the concept of what it might mean to plan in/with 'ethical time' (Bastian, 2012; Rose, 2011).

### Planning in/with ethical time

The flight ways of Carnaby's cockatoos between Perth and the inland Wheatbelt of Western Australia are interwoven with stories, places, plants, plans, people and temporalities which entangle them in assemblages of care, violence, belonging and neglect (van Dooren, 2014). Their feathery bodies bear witness to environmental change and the politics of extinction across Nyoongar and settler-colonial agricultural and urban landscapes. During the inland breeding season Carnaby's cockatoos nest in the naturally formed hollows of mature eucalyptus trees such as Wandoo and Salmon Gum. It takes over one hundred years for a cockatoo-sized hollow to form. The biggest threat to black cockatoo flourishing across their range is habitat destruction. In the agricultural Wheatbelt: mining, forestry and agricultural development, a drying climate, illegal shooting and competition for hollows from other native and non-native species such as Corellas and European honeybees put Carnaby's at risk. In Perth: the destruction of urban bushland, cutting down tall trees, predation from cats, dogs and ravens and car strikes place them in harm's way. These 'threatening processes' constellate and accumulate across rural and urban landscapes, intersect with private property and work across disparate sets of public politics and planning interests.

Carnaby's cockatoos are large and gentle birds with a beautiful *wa-EEE-lah wa-EEE-lah* call, their grey-black plumage with white tips to the feathers gives them a speckled appearance, and they have cream-coloured patches over the ear coverts and a distinctive white paneled tail.<sup>4</sup> They are long-lived with a life span of up to 80 years; which means that Carnaby's cockatoos are carrying an extinction debt. The flocks of adult birds currently traversing the city with their joyful calls may be the lasts of their kind to do so. The extinction debt means that Carnaby's cockatoos do not have the capacity to flourish in the future due to current habitat loss affecting their breeding, foraging and roosting places (WA EPA, 2019). Breeding pairs return to the same place every year in the Wheatbelt and there is evidence that individual birds and their young also have historic and cultural preferences for roosting and foraging at specific sites within the city. As Marie observes of the roosting site above Underwood Avenue described at the beginning of the paper:



It's a very busy intersection and people ask how come they're roosting at such a busy intersection with cars going by, but it's just a historical site that culturally has been passed on from generation to generation of Carnaby's cockatoos.

There is specificity to the site fidelity, rhythms, interdependencies and patterns of Carnaby's cockatoos that span across multiple temporal and spatial relations. These include: breeding-times, season-times, flowering-times, seed-times, rain-times, foraging-times, roosting-times and fire-times. For example, banksias (a diverse group of flowering plants from the proteaceae family) provide food for Carnaby's cockatoos throughout the year: nectar is taken from the flowers, seeds are cracked open from the cones of dried flowers and grubs are taken from dead wood and from the base of shrubs and trees. They transit urban and rural landscapes following seasonal patterns of food and water (Johnston, Stock, & Mawson, 2016). But these agential life-worlds of Carnaby's cockatoos are out of sync with much contemporary Western urban planning and conservation practice. Reflecting on responsive and non-synchronous forms of time embedded in attending to and caring for Country, the Bawaka Research Collective writes that: 'time is not abstract, it is not empty, it does not exist separately from relationships, from human and more-than-human worlds' (2016a, p. 110). Planning in and with ethical time thus begins with thinking critically about how modern planning systems 'tell time' and why it matters (Bastian, 2012). Urban planning systems tend to work in linear, incremental time following progressive cycles of drafting, consultation, review, implementation, monitoring and evaluation. A key element of telling time in modern planning regimes is through narratives that compartmentalise temporal and spatial patterns into increments rather than as being embedded in interrelations.

The intersections between Carnaby's cockatoos and urban/conservation planning processes illuminate this problem. Federal and state government planning efforts to avert Australia's extinction crisis have taken the form of Recovery Plans for endangered species. The *Carnaby's Black Cockatoo Recovery Plan* (2012–2022) brings together current knowledge about the ecology of Carnaby's cockatoos and the key processes that have put them on a trajectory toward extinction. The aim of the recovery plan is to prevent further decline by 'enhancing habitat critical for survival throughout their breeding and non-breeding range' for a period of 10 years (DPaW, 2013). The plan largely hinges on protecting what is left of their nesting, feeding and roosting habitat – which includes remnant forested areas of the Southwest and the threatened ecological communities of Perth's banksia woodlands, of which, approximately 80% has already been cleared for urban development. Recovery plans have been called 'fantasy documents' in the Australian media (Cox, 2018). The specific issues identified by scientists and environmental advocates include the significant time lags involved – many plans are currently languishing in draft form, are chronically underfunded, or not implemented. As Lyndon Schneiders, the national director of the Wilderness Society states:

We have this almost zombie-like system where the laws say you have to look after critically endangered, endangered and vulnerable species – and we know the community support protecting our threatened species – but when it comes to implementation, it's like a giant machine that generates no action (cited in Cox, 2018).

Similar sentiments have been expressed by people working with Carnaby's cockatoos. The recovery plan for Carnaby's cockatoos is still in draft form despite being initiated in 2013.<sup>5</sup> As lawyer and black cockatoo advocate Shelley commented:

There's all this policy but there's an unremitting destruction going on, so I don't know why they all bother – why you know there's all this money and time put in to developing these policies but they don't count for anything ... (Interview, 2014)

Jenny, a member of an urban bushland regeneration group in Perth, adds:

I get this sense when you talk to everyone around, is there's an amazing policy in this state, if you go to the EPA, if you go to the DEC, you've got all these fact sheets and guidelines, and man if you followed those all, again, you'd have a perfect world. But there's no legislation to back any of it up. There's all these exemptions and loopholes, it's just unbelievable. (Interview 2014)

Planning practices mired in linear and compartmentalized time do not correspond well with the response-abilities, temporalities and inheritances involved with becoming attuned to zones of life and death in cities or for becoming accountable to them. The time lags in current planning processes are contributing to the Carnaby's cockatoo's extinction debt. The loss of habitat caused by loopholes, extensions and legislative delays intersect with other planning practices such as an over reliance by planning authorities on biodiversity offsetting – which allows for the clearance of established bushland in one area by offsetting it with the promise to regrow bushland in another. These planning decisions struggle with the temporal agencies of banksia woodlands where time lags between planting and maturation can be in the decades (WA EPA, 2019). And, where in the meantime, Carnaby's cockatoos may wink out of existence.

Perth is perhaps amongst the most biodiverse cities in the world (Chambers, Lambers, & Jennings, 2017). The remnant banksia woodlands and wetlands in the city are part of some of the oldest ecosystems on earth where 'interdependencies between species are the norm, not the exception' (Chambers et al., 2017, p. 51). Rose (2011, p. 3) argues that we can learn a lot from interdependencies and mutualisms in developing ethics in relation to extinction. For Rose, such an ethic involves opening up 'new conversations and new synergies' with 'people whose histories are completely different, but with whose world views work with uncertainty and connectivity'. It requires learning to plan in ontologically plural and animated worlds in ways that are respectful of Indigenous sovereign knowledges. Nyoongar elder Dr Noel Nannup and his daughter Alice tell the story *Moondang-nark-Karradjinanginy*:

... about a time when a great Creation Spirit gave a Spirit to everything that would become real. As all these Spirits moved out of the darkness into the light, they realised that they would need a carer of everything. Nyiting, the Nyoongar name for the time when this story begins, means freezing cold. During Nyiting the land and the water was all frozen. As some of the frozen water moved across the land it created great trails. All the spirits followed these trails performing heroic deeds as they went. When everything became real, the people became the Carer of everything. There would be places they called sacred, and places they would call significant. And so the people fulfilled their special role, as the Carers of everything in this part of the world for thousands of years. Every conceivable aspect of how to live spiritually in the South West of Western Australia is deeply embedded in this story. (WA Greens Perth's Urban Forest Plan, 2019)<sup>6</sup>

This story prefaces Perth's Urban Forest Plan which was drafted by the WA Greens in collaboration with Nyoongar elders. What Nannup and Nannup are describing are patterns and relations of time common in many Aboriginal cosmoecologies – every part of Whadjuk Boodja has been cared for by Nyoongar for tens of thousands of years; and in turn Whadjuk Boodja has cared for the Nyoongar people (Robertson, Stasuik, Nannup, & Hopper, 2016). Whadjuk Boodja is always present and cared for through specific obligations and responsibilities embedded *moort* (family), *kartitjin* (knowledge) and *wangkiny* (language) (Collard & Harben, 2010; Hopper & Lambers, 2014). Rose writes that these reciprocal relationships are expressed in forms of temporal diversity: what she calls 'ethical time'. 'Ethical time', she asserts, 'is sustained through multispecies knots, where each interface is a site of flow, a place of mutuality and gifts' (2012, p. 137). The relationship between Carnaby's cockatoos and banksia woodlands is another such interface. Ecologists have noted the especially unique relationships between plants and pollinators. The South West Floristic Bioregion is unique because most of the plants are pollinated by birds and mammals such as honey possums, honey eaters and black cockatoos (Hopper, 2014). While they are seasonal visitors to woodlands, wetlands, parks and gardens in Whadjuk Boodja; the seeds, nectar and grubs that Carnaby's cockatoos depend on in the city are critical to their survival and for flourishing multispecies urban futures. But these gifts of mutual interdependence are set aside in the interests of economic growth in the settler-colonial city. As Nannup and Nannup go on to say:

The Ancient rhythm of the land has been broken, as we continue to expand with new roads, houses, and factories. Bulldozers and other machinery move our Ancient landscapes beyond any resemblance they once held. But despite all of these changes the Ancient spiritual trails are still there, under all the tar and cement, even through all the infrastructure. (WA Green's Perth's Urban Forest Plan, 2019)

Shelley, a non-Indigenous resident, also emphasizes extinction as an unraveling of connectivity:

the environment will be less healthy and hotter and you know – climate effects, climate change will be more severe because you won't have all the bushland ... [people] don't understand the necessity of the ecosystem and they don't understand the connectedness of things. That by destroying – if the cockatoos are destroyed it's not- you're not actually just destroying the cockatoos. Or if they become extinct it means a whole lot of other things have gone extinct too. It means there are not enough trees, there wasn't enough bushland, which means everything is going – you know a lot of other things are going to go extinct.

## Conclusion

By way of conclusion, I want to return to Marie and the Carnaby's cockatoo roosts along Underwood Avenue – which are adjacent to a hotly contested piece of private property owned by the University of Western Australia called the Underwood Avenue Bushland – a site that has been ground zero for the struggle between community black cockatoo conservation and urban development since 1998. The Underwood Avenue Bushland area is part of a 1904 land endowment to UWA, rich with banksia, tuart, jarrah and marri and provides a link between Bold Park to the west and Kings Park near the Perth CBD to the east. After a protracted struggle, the University received permission to develop 17.5 hectares of

the bushland site for housing in July 2010. For Marie, the approval of the development represents a devastating loss, compounded by the loss of several other small local bushland sites in the Western suburbs in recent years – despite the combined efforts of local community groups and alliances to fight with everything that they have: legal challenges, environmental direct actions, petitions and endless written submissions to government authorities. As Shelley says:

That's prime cockatoo habitat and also what the scientists are saying now, that it's essential if they are to remain in the area. If that bushland gets destroyed they may – they say they go but they haven't really got anywhere to go, which is a euphemism I think for they'll just die, decrease in numbers. (Interview 2014)

The zones of life and death in cities – those thin, contested layers of cultural and multi-species intra and inter-actions offer new opportunities to plan in/with ethical time. Like many stories about extinction in the Anthropocene, stories of Carnaby's cockatoos are sounding out across times and spaces that are not synchronised. Planning in/with ethical time is a provocation to bring these times and spaces into ethical relation, to rethink how urban planning can become a project that is respectfully response-able to Country and to the sovereignty of its traditional owners (Porter, 2018). It is a provocation to develop plans that work in modes of ethical accountability with temporal diversity: seasons, soils, trees, co-evolution and care in multispecies landscapes (Darug et al., 2019; Rose, 2011). Echoing Rose, planning in/with ethical time resets coordinates toward the responsibilities and obligations that emerge when planners (and planning systems) become participants in, rather than adjudicators of, more-than-human worlds. In the shadow of extinction, planning is currently and deeply imbricated in the making of death worlds in settler-colonial cities where linear, incremental time forces social, ecological and spatial logics that are untenable. Becoming better attuned to what forms of sociality and life are enabled to flourish within contemporary urban planning systems is a critical task. Carnaby's cockatoos and the multispecies worlds they sustain on wing and wind can show us the way.

## Notes

1. The names of the participants in the research supporting this essay have been changed.
2. Nyoongar Boodja encompasses the entire south west corner of Western Australia. The Nyoongar people comprise fourteen Nations with their own Nyoongar dialect. More detailed descriptions are found in Robertson, Nannup, Stasiuk, and Hopper (2017) and in Collard and Harben (2010).
3. It is worth pausing briefly here to distinguish between extinction which is a necessary function of the flourishing of earthly life (called the background rate of extinction) and the sixth mass extinction - where rapid and cascading death outstrips the capacity of life to regenerate itself (Rose, 2011).
4. For a more detailed description see BirdLife Australia (2019).
5. As of the time of writing this article, the Recovery Plan is not yet approved under the new WA endangered species legislation the Biodiversity Conservation Act 2016 (BC Act).
6. The WA Green's Perth's Urban Forest Plan (2019). The plan situates Nyoongar sovereignty and custodianship as key to urban greening and prioritises the restoration of Nyoongar cultural trails. It is an opportunity, in Scott Ludlam's words, 'to sit and listen' with Nyoongar elders. The Nyetting (The Cold, Dark Time) by Noel Nannup is also recorded in Robertson et al. (2017).

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No potential conflict of interest was reported by the author.

## Notes on contributor

**Donna Houston** is a cultural and urban geographer. Her research explores the intersections of urban political ecology and environmental justice in the Anthropocene; cultural dimensions of climate change; toxic landscapes and bodies; spaces of extinction, and planning in the ‘more-than-human’ city. She is particularly interested in how cultural methodologies such as storytelling, visual methods and memory-work can be used to address current social and environmental challenges.

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