

Electronic Supplementary Material

Senses of injustices-in-place: Nature's voice through Melbourne's environmental stewards

Outline:

ESM 1. Interview guide

ESM 2. Extraction template: Construction of third, second and first order themes and the relationship to the self-other-environment interactions.

ESM 3. Thematic matrix highlighting the first order themes that correspond across the self-others-environment framework and ecological justice dimensions and their negative or positive sense of (in)justices-in-place.

ESM 1. Interview guide

Location: Melbourne, Australia

Participants: Local environmental group members/Local government officials/Environmental organizations

How can we design ecologically just cities by enhancing nature-based solutions' multifunctionality?

A Can you tell me about any environmental issues that affect your community or neighbourhood?

1 Who has been affected by these impacts?

2 Who has benefited from these impacts?

3 Why do you think these impacts happened in your community? Do you think they could have been prevented?

Distribution

B How are environmental impacts managed by local government or/ the community?

1 Who are the stakeholders involved in trying to resolve these issues?

2 How could these environmental issues be acknowledged better from a *people* perspective?

3 How could these environmental issues be acknowledged better from a *nature* perspective?

Recognition

C How are environmental impacts addressed by the community, local government, and other organisations?

1 How is nature represented and by whom in city planning and design?

2 How can we enable the participation/representation of nature when planning open spaces and urban regeneration?

3 When advocating for nature, what do you think has the most impact to change policy and planning?

Participation

D How does urban nature/ local ecosystems in your community adapt to change and impacts?

1 Can you tell me about the natural space (animals, trees, rivers) in your neighbourhood?

2 How could we make these ecosystems more resilient?

Capabilities

Prompt Questions

Closing Questions

E Summarise: do you have any additional thoughts or input you would like to share?

F Follow up/next steps: Do you want to see the interview transcript? Do you want us to send you any outcomes of this research? Do you want to participate in a 2-3 hour workshop/focus group session to discuss further this project?

G Thank you. Please if you have any questions call or email me or supervisors. We are open/happy to meet with you again.

ESM 2. Extraction template: Construction of third, second and first order themes and the relationship to the self-other-environment interactions

Major themes	Self-others as communities of anonymity and (dis)empowerment				Sense of community	Others-environment as apathy and collectiveness			Environment-self as reciprocal nurturing through time		
	Sense of disempowerment			Sense of Empowerment		Sense of Others as apathy	Sense of human-nonhuman disconnections	Sense of collectiveness	Sense of loss	Sense of ecological self	Sense of ownership
First order	Disempowerment (-)	Anonymity of silent stewards (-)	Unfair representation & recognition (-)	Loud & expert champions (+)	Collaboration/collectiveness for social- ecological transformation (+)	Sense of Others as disconnected from nature (-)	Diminished social-ecological capacities (-)	Injustices as catalysts for community activation (+)	Ecological loss through fragility and anthropocentric restraints (-)	People-wildlife-ecosystem (interspecies-ecosystem) relations (+)	Place ownership, empowerment, and flourishing (+)
Second order	Silenced voice from volunteers due to lack of recognised professionalism, expert knowledge.	Environmental work not valued by community or state/federal levels.	Politicians move to perceived community demands.	Leading individuals with driving power to organise and mobilise.	Strategic thinking, awareness of social-ecological capacities to transform a site, to make a site flourish.	Reciprocal actions varies across levels, with groundwork roles showing higher connection	Weak people-nature connections	Degraded spaces as opportunities to improve wildlife.	Urban ecosystems in a fragile state.	Strong bonds with local systems, specific species and/or specific animal (tree, possum, bird).	Sense of pride of a place, before and after caring and nurturing.
	No real power in the planning processes.	Environmental champions in government get lost in the invisibilising institutional structures.	Planning schemes and strategies siloed; not holistic.	Leading experts acting as mentors to grassroots initiatives through knowledge, access to resources and navigating processes.	Monitoring, planting, habitat creation activities.	Higher, political roles less connection to place; place seen as important for health and wellbeing, general.	Not relating climate change with need for vegetation	Destructive polluting events as mobilisers.	Resilience of ecological space not strong.	Stronger bonds associated with roles working 'out in nature'.	Sense of ownership from the work done throughout years.
	Lack of knowledge (planning processes).	Doing all the work for the 'rich' residents that live in the riverfront, while the residents don't engage or participate.	Federal and state block municipal and community needs and aspirations.	Help from Melbourne Water official to assist and guide them with their planting activities.	Intra and cross-sectoral collaboration, participation and engagement increases social capabilities and has a positive effect on ecological integrity.	Climate change seen as threat. Others as institutions and community inaction.	New suburbs, less attachment	Secrecy and top-down projects exposed create community outcry.	Urban encroachment, pests, human-wildlife conflicts, pollution, are some challenges that stop growth, life, decrease capabilities and resilience.	Recognition of species needs and ecological functioning and manage/care for them according to their needs.	Continuity, care and reciprocity for social-ecological flourishing.
	Lack of resources (legal fees). Power only to advice or suggest.		Biodiversity offsets a failed project.	Two experts in the group with years of experience, knowledge of plants and animals and the politics of green space management.	Diversity of activities to attract diversity of people	Ongoing impacts (pests, vandalism, climate change) require ongoing management; site specific, but many participants think higher levels of government don't understand	Socio-economic and ethnic diversity affect nature connections	Degraded spaces with historical contamination.	Sense that future of these systems is under threat.	Awareness of ecological spatial temporal dynamics and processes.	Increasing habitat gardens as microscale interventions to be connected and be stepping stones for larger natural areas

Third order						the importance of this management and the need for funding and recognition. Political disconnection.					
	State/federal mandates limit LG abilities.		Continuous changing of councillors which come with different agendas.		Educational programs to raise awareness		Grasslands not well-known ecosystems in the community Families have not been that long (to form attachment); not many environment groups	Spaces with no economic value. Vision of some to transform devalued spaces.	For parks and natural reserves that used to be landfills, quarries or other contaminated land use, ecosystems and wildlife struggle in difficult and restraining environments.	Connectivity / Diversity (Plant different species with different needs).	The creek is all we got, so that's why I want to protect it and make it more beautiful.
	Show/ advice developers in state controlled development about native ecosystems and offering communities green spaces (beyond state requirements)				Level of inclusion and participation led by planner can influence environmental outcomes			Influencers and champions mobilise to transform.		Re-establish degraded areas	Degraded spaces as opportunities to improve wildlife.
	Lack of resources, knowledge and capacities. Particularly economic resource to manage the day-to-day of green spaces (de-weeding, planting, cleaning).				Activities that are inclusive, not too scientific or demanding to not put pressure. Easy and people can join when they can.			Community efforts over decades have transformative capacity.		Create stepping zones in highly fragmented spaces	
	An environmental planner, explained that Council has '...a role but we're only a small player. We have a role but we're only one of the stakeholders. [...]' '...a role but we're only a small player. We have a role but we're only one of the stakeholders. [...]' We can do things and work with individuals but we	Volunteer expressed that '...[t] hey're looking at the view every morning... [so] wouldn't they want to volunteer? Why are we doing [it] for them? [We're] making it look really nice and we'd like you to help me out...' [Interview 1; 10.03.2020]	'The planning agenda which certainly Wyndham Council supported along with state government was to have the offset reserves in the Western Grassland Reserves and then to mainly allow development inside the open growth boundary. I remember speaking to a senior planner at	leaders within groups like Nature West have started '...habitat gardens [by] encouraging local people to recreate habitat for indigenous skinks and lizards or re-vegetate the grassland in their gardens in Wyndham' [Interview # 14;	Planting days on small remnant pockets or degraded areas; signage; information booklets with grasslands from around the world to 'speak' to the diverse multicultural groups; support development of new env groups [Interview # 4, 18.03.2020; Interview # 21, 07.05.2020]	Governments change every 4-6 years, and with that change, their policies also change. One of the participants expressed that perhaps with matters regarding the protection and restoration of the environment, it might be necessary for	'...junior volunteer group[s] that meet on a regular basis. And maybe they start off with someone like us, getting them in and having as an associate member that comes in and talks to them, that they plant things that they can actually feel [on] the[ir] own. That is the way of moving and [you start with] your cubbies and then your brownies, [...]	A participant said about the ecological disaster of Stony Creek - it '...was a disaster'. However, he pointed out that '...the flip side of that is [...] a lot of work into rehabilitating Stony Creek. And that that was from [community] outcry. The	They were active quarries then and then they were rubbish. This one (NW plain) was a rubbish dump. We managed to save the other two and get the lakes. So I was on council in the 80s when there was the fight to stop them all getting filled with rubbish. And so this one, the trees	[Interview #7; 21/03/2020]: in 22 years he has seen nature increase in the park with the environmental volunteers planting over one million plants, which the environmental volunteers referred to as 'maintaining the history of the	[Interviewee #1, 10.3.2020] said about his work and flourishing of his local environment in Maribyrnong River: '...I've been seeing lots of stuff come back. And that's made me happy [...]. It's just know[ing] that I'm doing something right.

	only have limited resources. So yes, we can work with keen people who are interested in this. We have certain levers of control, but we have limited levers of control, so we have limited ability to make change. And we also don't have the resources and necessarily even knowledge in terms of some of these things.' [Interview # 10; 7/04/2020]		Wyndham Council back in 2009 or 10 about really high-quality grasslands along Lollypop Creek at the western edge of Werribee, which could easily have been protected in the small reserve next to the creek. But because the developers in that area didn't want that [a] Wyndham Council planner said to me, we don't want to have to deal with management of	14.04.2020]		environmental policies to get "...locked in the land for wildlife." This is a reflection of the well-known misalignment of political and ecological cycles, in which the latter never has a chance to be established. [Interview 3; 17/03/2020]	then you scouts, and then you have the next rangers' (Helen and Beatrice [Interview #6, 21.03.2020]. at the beach. For us	Friends of Stoney Creek and the Friends of Cruikshank's Park, were both working together on that one. So it's good, you know, sort of brought those two groups together. A lot of local residents were also very concerned about that'. [Interview 30; 1/06/2020]	on it are quite small because there's rubbish underneath that with only a thin in layer of soil and methane and things. [Interview # 3; 17.03.2020]	park' and in being 'aware of why Braeside park is so unique, why nature is so unique. Why it's important in any life experience [...] to take time [...] to experience nature'.	And when you see, after you've like planted a tree for one year, [then] the next year you see how big it's grown, because this was supposed to be their first years... It's first when you start planting for next year... like that big it's grown? Quite huge for me.'
	Park management is complex multistakeholder jigsaw puzzle. Constantly reflecting about the impact that one action can have on either of the multiple stakeholders, e.g. environment, people, friends, of, parks Victoria. [Interview #7; 21/03/2020]	A volunteer/activist shared that when applying for community grants, one of the questions asked is the time invested by volunteers and that they were '...valued at \$20 an hour by some organizations and [...] at \$25 an hour by other organizations. So that's how little they think of us. [...] So no, there is no value in the work we do, nobody sees it, the value.' [Interview #8; 26/03/2020]	urban grassland reserves. We'd rather just have the offsets in the Western Grassland Reserves. So, they found it easier, more convenient to go along with the developers, allow mostly carte blanche development in the urban growth boundary and have the offsets outside. It's just a simple solution for them.' [Interview # 17; 21/04/2020]	An environmental volunteer referred to the river health officer of their area as being '...very involved in the group [...], he's been very encouraging, and he gives us guidance.' [Interview 19; 24/04/2020]	Inter-municipal and cross organisational (local government with Melbourne Water) collaboration, plus external funding, created a good recipe for a successful nature-based project [Interview 4, 18.03.2020].	One of the participants talked about his work with new communities and trying to get them to '...appreciate what actually is happening in a proper productive grassland native habitat' [Interview # 2, 12/3/2020]	environmentalists, that's not good because as the sand erodes away and you probably aware of this—Altona is very shallow, okay. When the tide goes out, it's sea weedy, it's smelly but there's a heap of birds out there you see. So, we as environmentalists like that. That's what we like. But the resident across the road wants a sandy beach and in their three million dollar townhouse. So, we still find as much as it was against our wishes, they still	Creek used to be a dumping ground for rubbish, burnt cars, and slowly it has been converted from industrial, neglected, littered land, to beautiful forests along the creek.	Well that's one of the things that is probably a growing potential threat for us is we've had a lot of landfills. Some recently capped, some capped a long time ago. Groundwater contamination and land contamination are big potential issues the same as they are in Newport really, but that is a looming challenge, I guess, if you like. [Interview # 4; 18.03.2020]	"...I've shown you a little bit earlier a red gum tree that's 800 years old. To get to the point where things like possums etc. can actually use hollows in the trees and bird's... a red gum has to be about 120 years old. What humans get to 120 years old? So really, it is a long time before things are going to happen, we've been revegetating in this park now for about 40 years. There was	'...we contacted the council [...] and we said, 'Can we [volunteer] here in Aspendale?' [...] I just feel pride in being part of the Aspendale beach.' [Interview #5, 19.03.2020]

ESM 3. Thematic matrix highlighting the first order themes that correspond across the self-others-environment framework and ecological justice dimensions and their negative or positive sense of (in)justices-in-place

