

Final CBPR Report: NatuR&D Community Map

Julia Frasher, Tenaya Lynx, & Riley Sondergaard

Partners: Christine Lintott & Anne-Marie Daniel with NatuR&D

GEOG 491: Community-Based Participatory Research

Crystal Tremblay

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NATU&D



**University
of Victoria**

Introduction

This project was co-created with NatuR&D, an architecture group in Victoria, British Columbia, that specializes in biomimicry, and the Salish Sea Hub, a partnership between the University of Victoria, the Victoria Native Friendship Centre, and the Victoria Foundation. We used community mapping to conduct our research, specifically looking at the neighborhood of North Park in Victoria. Biomimicry is known as “design inspired by the way functional challenges are solved in nature” (Pawlyn, 2019). This design paradigm utilizes techniques that have been observed in nature and then adapts them to be useful in urban settings and for the betterment of human societies. Methods such as this have been used to mitigate and adapt to the effects of climate change, specifically when it comes to rising temperatures. In recent years, temperatures globally have been rising and causing adverse health effects on vulnerable populations, especially in urban centers. This phenomenon is known as the Urban Heat Island (UHI), wherein urban centers emit and absorb more heat than surrounding rural areas (Sangiorgio *et al.*, 2020). UHIs are particularly harmful for city inhabitants, especially those who are seniors, young children, those living in low-income areas, and folks suffering from pre-existing respiratory and other health conditions (Vancouver Coastal Health, 2021). This project sought to figure out how residents of North Park experienced the heatwave this past summer (July and August 2021), and learn about areas of refuge and concern in the neighborhood. The purpose of the project was to see how biomimicry can be used to address some of the problem areas in the neighborhood and make it a safer place to live during the warmer months of the year.

Background

The objectives of the project are linked to the United Nations Sustainable Development Goals (SDGs) 3, 9, 11, and 13. Goal 3 is “Good Health and Wellbeing”, which focuses on ensuring that people of all ages are leading healthy lives and their well-being is being taken care of (United Nations, 2015). One of our aims was to identify areas of struggle; for example, inaccessibility due to heat, lack of amenities for dealing with hot temperatures, uncomfortable/unsafe housing, and so on. All of these factors contribute to one's health and well-being. It is shown that in the summer months, North Park has been experiencing hotter temperatures from previous years (Victoria weather, 2021). Because of this, we intended for our research to be oriented towards figuring out where the community is facing the most difficulty with temperature and finding ways to make the area more liveable. Goal 9 is “Industry, Innovation and Infrastructure”, and Goal 11 is “Sustainable Cities and Communities” (United Nations, 2015); each goal relates to creating infrastructure that will contribute to mitigating and adapting to the effects of climate change and also create opportunities for innovation. Our research has the potential to promote the building of sustainable infrastructure in the community that can mitigate and adapt to the effects of climate change in regards to rising temperatures. Through engagement with the North Park community, NatuR&D will be better equipped to analyze where infrastructure and design changes need to be made and how they can best address the needs of the community. Goal 13 is “Climate Action” and speaks directly to dealing with the climate crisis through mitigation and adaptation (United Nations, 2015). By making the built environment of North Park more adaptable to warming temperatures, it becomes easier to

mitigate localized effects of climate change and thus make it a safer place for people to live. It may also inspire more sustainable infrastructure in the Greater Victoria region.

Methodology

CBPR is based in and oriented around community. It strives to connect community members and partners with academic researchers and resources in order to address local, social, environmental, and economic grievances. Participation is crucial to the CBPR approach because it entails the shared control of agendas through reciprocal communication and action. CBPR's overarching goal of social equity materializes in the breaking down of power dynamics by means of critical reflexivity, which helps to grow and nurture authentic relationships (Hall & Tandon, 2017, Potts & Brown, 2005). The CBPR is anti-oppressive because it involves commitment on behalf of researchers to the folks they're working with in order to mutually foster conditions for social justice (Potts & Brown, 2005, p.17).

CBPR is emphasized by the United Nations as being well suited to achieving the SDGs because it can provide place-based and empowering solutions to critical challenges (Hall & Tandon, 2017). Paulo Friere (leading theorist of the Southern/emancipatory tradition of CBPR) expressed that people hold deep knowledge about their experiences and that this knowledge is essential to progressing social change (Wallerstein & Duran, 1987). The methodological approach of CBPR thus challenges typical research standards by democratically involving community members in the entire research process and looking for insights that can enable resistance and/or change (Potts & Brown, 2005).

Our group chose to use community mapping for our CBPR project with NatuR&D because we wanted to understand what specific places and features within the North Park neighborhood made residents feel secure and insecure during the heatwave of 2021. Interviews, surveys, and focus groups were also considered as potential methods but community mapping was ultimately selected because of its capacity to legitimize a variety of authors through an inclusive and empowering process that would necessitate the reflexivity of participants (Parker, 2006). NatuR&D is working to create a diversity of GIS layers in the CRD region that speak to issues of urban heat domes, resilience to climate change, and socially just design so we thought a map would integrate nicely into the wider project.

Community maps are produced collaboratively by locals to feature their knowledge of the area and create a visual representation of why political, social, environmental, and economic action is needed. These maps, created through anti-oppressive means, can be incredibly helpful for radical social change and the equitable distribution of resources (Parker, 2006; Potts & Brown, 2005). Although maps have a deep and often problematic history, they still have the potential to produce socially equitable cartographic representations of life through the mobilization of CBPR values (i.e. power-sharing, participation, transparency, etc.) (Parker, 2006). As such, community maps challenge the normative academic practice of cartography through its inclusion of diverse knowledge forms and the centering of community members as experts on their own lives (Parker, 2006).

Due to time constraints and limited networking capacities, we ended up having five community members participate in the community mapping event instead of our goal of ten

people. Professor Crystal Tremblay was instrumental in gaining participants through her already established connections in North Park, especially with the North Park Neighborhood Association (NPNA). The executive director of NPNA, Sarah Murray, helped us to disseminate online posters (Appendix 1, Fig. 8 & 9) along with summaries about the research, which ultimately gained us four participants. Our fifth participant joined at the last minute after hearing about the event from Crystal.

Our group created the base map for the community map, co-created the prompts and outline of the event with NatuR&D, Ken Josephson, and Crystal, and co-created the research with participants during the community mapping event. During the event, we asked questions that were designed to inspire thought about specific locations, features, and services that were either helpful or harmful during the heatwave of 2021. We categorized prompts into six broad sections and had additional, more specific questions within each section: (1) areas of relief, (2) areas of concern, (3) areas for improvement, (4) transportation and travel, (5) hopes and dreams for the future, and (6) the North Park boundary. The latter section was useful for insights that weren't necessarily place-based but still warranted inclusion in the research, such as techniques for cooling that could be used anywhere at any time.

The limitations of the community mapping event included the online medium and time constraints. Due to Covid-19 and our approved ethics for the GEOG 491 course, our community mapping event was held online which came with certain challenges, namely the collaboration of mappers and concerns around access. We lost the interest of one elderly participant due to their discomfort with an online map and Zoom. Additionally, we witnessed some confusion at the beginning of the mapping event on how participants would both engage with the map and contribute to the conversation. Due to the format of the class, our research was confined to less than three months, which proved to be very quick in the context of CBPR. In the future, we would find it important to spend more time on recruitment so that a more diverse group could collaborate on the community map and thus enrich its depth and potential for change. Particularly, we would want to ensure the inclusion of different age groups, people within various socio-economic groupings, and those with varying levels of education. A study done by Adams et al. (2017), used photovoice and community mapping as a way to gain children's perspectives on safe spaces in nature, unsafe spaces, and their favourite spaces in nature. This method could be adapted to gain children's experience of the heatwave and ultimately build a more comprehensive community map for further action.

Major Findings

The main findings for our CBPR project will be explored through the six layers we identified for the North Park Heatwave Map. For areas of relief (Fig. 3), the areas identified by participants in terms of water sources, green spaces, services, housing, techniques and events. Water sources included misting stations at Royal Athletic Park, yard sprinklers, and water stations set up around the community. Most areas with green space and tree cover in North Park were identified as areas of relief on the community map. Some cooling techniques included staying on the lowest level of homes and buildings and accessing the air conditioning in Save on Foods grocery store. There were also social services in North Park that aided the community during the heatwave; including the Tiny Homes community which offered fans and other cooling options to their residents, listings for water stations, health checks for heat-related illnesses,

covered picnic tables, and tents for shade. Another social service was the Hot Queer Summer cooling event put on by Substance Drug Checking. They offered water, freezies, and emergency services. The heatwave was a hard experience for all community members, but it was identified by the community mapping participants to be especially hard for those without access to air conditioning and/or restricted access to cooler spaces, social services, and community support. These same findings were seen in a study done by Reid et al. (2009), further demonstrating the importance of a strong community network during heat waves and other weather events.

The main areas of concern (Fig. 4) revolved around restricted public access to potential areas of refuge and large, open parking lots, excess concrete and a lack of trees. Participants noticed hockey rinks, the Curling Club, and Crystal Pool were not open during the heatwave when they had the capacity to be areas of relief for the community due to their temperature regulation capabilities. Multiple large parking lots were labelled on the map, including the parking lot that the Tiny Homes community is situated on. Participants discussed parking lots as huge heat absorbers and heat sinks. One participant noticed the trees along Vancouver Street were suffering during the heatwave and suggested that planting heat resilient vegetation in urban settings might be a consideration for future development. Participants noted that their biking and walking routes (Fig. 2) would be greatly enhanced by having more street-side trees. The main areas of improvement (Fig. 5) coincided with the first two layers. Participants further identified their desire for closed parks to be opened to the public, tree boulevards, sheltered picnic tables for both sun and rain, more greenery, more seating and resting areas along streets, and better access to church spaces. The layer for hopes and dreams for the future of North Park (Fig. 7) encouraged participants to think outside the box. Their ideas included an outdoor pool, water park and art installations that could act as both a shelter and aid in place-making practices.

When in discussion with our community partner, NatuR&D, various sites of interest and possible changes in North Park were pre-identified for heatwave resilience. Some of these included the Crystal Pool, Royal Athletic Park, and churches. During the community mapping event, community members also identified many of these places as areas of relief or concern which can provide further evidence for city planners and developers. NatuR&D can use this data from the community map to expand upon designs that directly represent the North Park community's needs for future heatwave resiliency. This information can be further cataloged for the designing of climate change resilient and adaptive, urban communities within similar climatic zones.

The major findings of our CBPR project addressed the UN SDGs 3 (Good Health and Well-being), 9 (Industry, Innovation and Infrastructure), 11 (Sustainable Cities and Communities), and 13 (Climate Action). The qualitative data presented on the community map can help community planners make better decisions in design for sustainable and resilient communities. Furthermore, the community map can direct NatuR&Ds innovations and infrastructure designs to support community resilience that will aid in the overall health and well-being of the community and that support positive climate action and mitigation.

Conclusion

The Community Heatwave Map of North Park is just the beginning of further understanding and representations of community needs during heat dome events in the CRD

region. The next research steps could include gaining perspectives from different demographics in the North Park community, creating a video or story map, linking qualitative data to quantitative GIS data, looking at other neighborhoods in the Greater Victoria area, and creating recommendations for city planners and developers. The North Park community members who attended the community mapping event were already very invested in the community and different organizations such as the Tiny Home community and Substance Drug Checking. Gaining perspectives from different age ranges such as children and lower-income families would be valuable for gaining a greater understanding of the communities needs.

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Appendix I

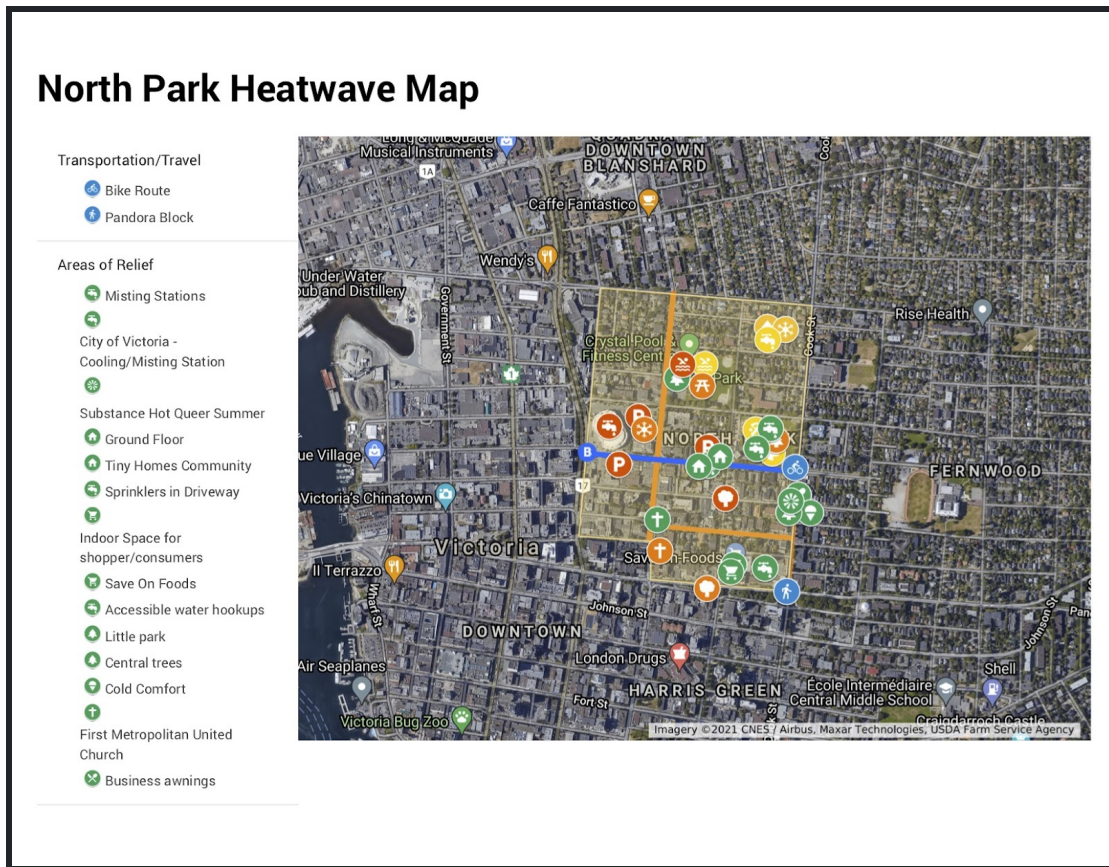


Figure 1. North Park Community Map made in Google My Maps depicting areas of concern, relief, transportation and travel, and areas for improvement.

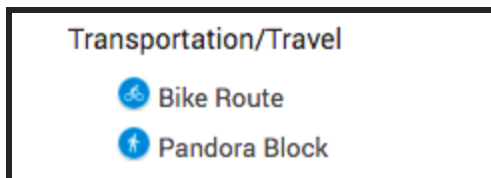


Figure 2. Layer 1 of the map shows the transportation/travel routes in the area that were areas of concern.

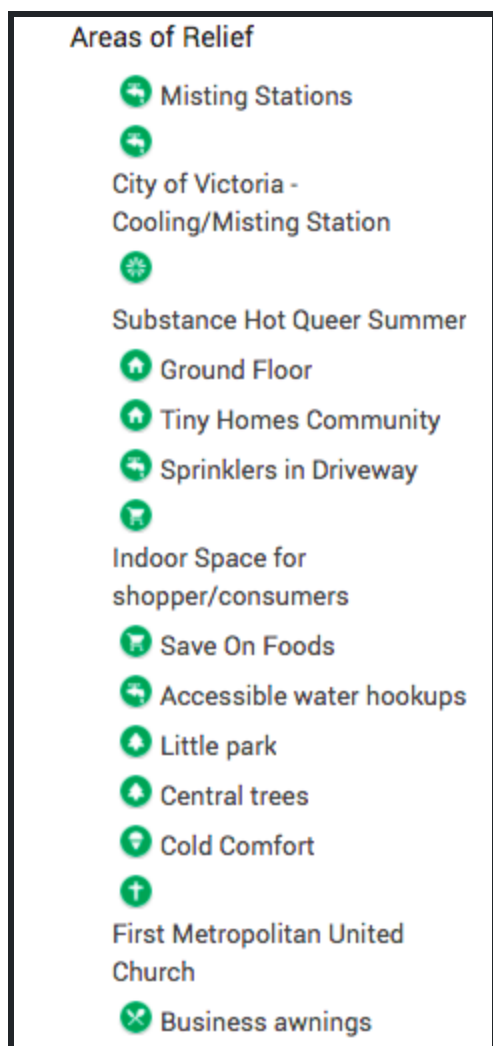


Figure 3. Layer 2 of the map shows the areas of relief in the community.

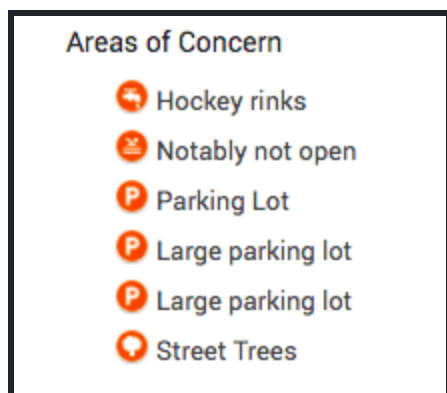


Figure 4. Layer 3 of the map shows the areas of concern in the community.

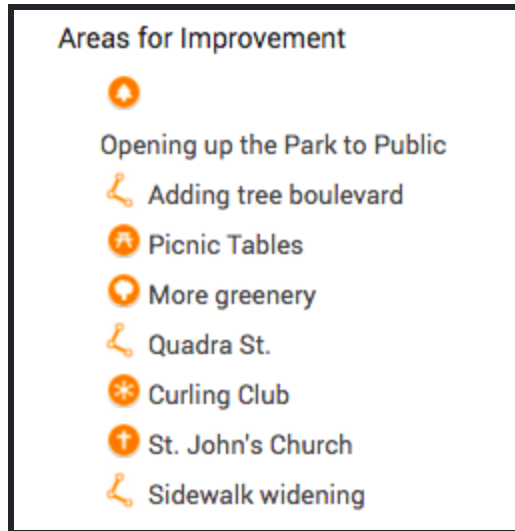


Figure 5. Layer 4 of the map shows areas for potential improvements.

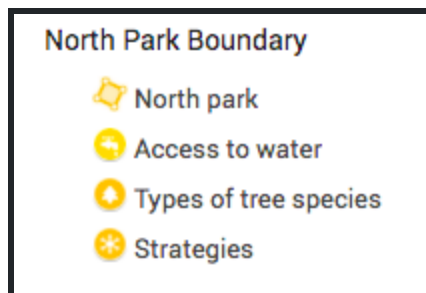


Figure 6. Layer 5 of the map shows experiences not tied to place, but vital in communicating certain community needs.

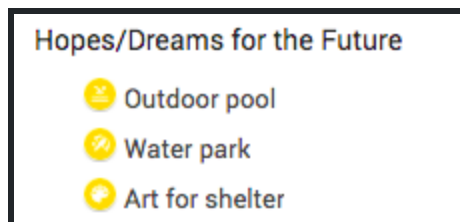


Figure 7. Layer 6 of the map shows what the community hopes for in the future.



North Park Virtual Community Mapping Event

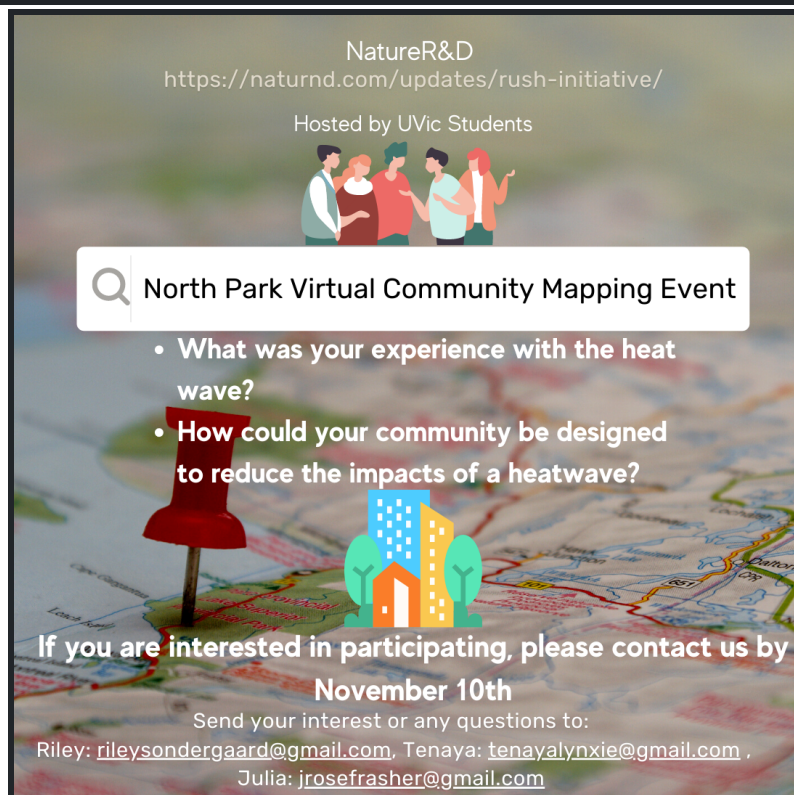
- What was your experience with the heat wave?
- How could your community be designed to reduce the impacts of a heatwave?

NatureR&D
<https://naturnd.com/updates/rush-initiative/>

Hosted by UVic Students


If you are interested in participating, please contact us by November 10th

Send your interest or questions to:
 Riley: rileysondergaard@gmail.com,
 Tenaya: tenayalynxie@gmail.com,
 Julia: jrosefrasher@gmail.com


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Figures 8 & 9. Advertisements used for event recruitment.