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Editorial: The COVID-19 pandemic's transformation of human relationships with nature at multiple scales

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Editorial on the Research Topic
The COVID-19 pandemic's transformation of human relationships with nature at multiple scales

Introduction

The World Health Organization denotes March 11, 2020, as the official start of the COVID-19 pandemic. Though millions of people worldwide had already been living under severe restrictions by that point, this date marked the start of a global lockdown period that was often described as "unprecedented." This period was marked by pain—the loss of life and suffering of millions, but also fear—of unabated transmission, stressed healthcare systems, and strained and scarce resources. Further, the pandemic intersected with pre-existing vulnerabilities and axes of inequality, including by race, class, geography, and (dis)ability status; the impacts of this tragedy are highly uneven (Fortuna et al., 2020).

Alongside, people's relationship to the natural world was changing in distinct ways. In major cities, reduced air traffic resulted in silence punctuated only by bird calls (Lenzi et al., 2021). While workers deemed "essential" never ceased going to the physical workplace, residents experiencing shelter-in-place, curfews, and restricted mobility reported a reconnection to their homes, neighborhood environments, and hyper-local nature. People rediscovered parks, forests, and other outdoor spaces as safe sanctuaries even as public facilities at these sites closed their doors (Beery et al., 2021). For some, this added attention toward and exposure to local outdoor environments led to greater engagement in stewardship and care including litter removal, engaging in planting/mulching/weeding, and creating outdoor programs. Indeed, the public realm of parks, streets, and sidewalks took on a wide range of functions, including outdoor offices, restaurants, day care, and exercise facilities—as these remained some of the only places

to safely gather (Campbell et al., 2020). Across the world, temporarily curbed emissions from factory shutdowns and fewer vehicles on the road revealed blue skies and clean air, a revelatory experience that some had not had for decades (Crilley et al., 2021).

The idea for this Research Topic arose in April 2020 in the context of these changing and uneven relationships with nature. On the one hand, the levels of waste generated have risen as a consequence of the pandemic – an increase in single-use plastics for personal protective equipment and healthcare, hoarding of perishable food and other consumer goods, and a reduction in the use of reusable items such as mugs and bags due to fears of contamination. Ridership on public transportation systems has also failed to recover after experiencing sharp declines during the pandemic, both as teleworking increased but also due to perceived safety in personal vehicles (Reuters Staff, 2021). However, we also see record visitation to outdoor spaces—though this increase varied by race and class— (Labib et al., 2022), a renewed fervor to combat climate change to sustain a world that seems all the more fragile (Mohommad and Pugacheva, 2022), and an increased recognition that our wellbeing as humans is inextricably tied to the natural world. Now, 2 years later, we recognize that the pandemic is far from over, but this collection of articles captures insights and reflections drawn primarily from the first year of the pandemic.

Going forward, as societies open back up and cities learn to adapt to living with COVID-19, it is a chance to forge a new path founded on recognizing multifaceted human-nature relationships. While the pandemic is global in scale, articles in this issue are drawn primarily from North America and Europe. These 20 articles, contributed by 96 authors in this Research Topic, "The COVID-19 Pandemic's Transformation of Human Relationships with Nature at Multiple Scales," examine the meaning, use, and governance of nature in a disturbance context and explore changing relationships to nature across scales—from the individual, to the household, to the organizational, to the societal.

People's changing relationship to the natural world

The studies reported here provide a robust contribution to the growing literature on the link between mental, physical, and emotional wellbeing and access to and use of nature, whether in public or private space or in high vs. low-population density areas (Maurer et al.). Articles in this issue also begin to untangle and reveal pandemic-related changes in mindsets and behaviors that are critical to fostering transitions to more sustainable lifestyles.

From these studies we see how people accessed nature and the activities they sought while they were in it appear to have been affected by the pandemic. For one thing, where once people may have traveled hundreds, if not thousands of miles, to immerse themselves in nature, they found similar pleasure in exploring and rediscovering their local environment. As Heilmayr et al. report, the majority of their participants' nature time took place in their yard or neighborhood or at a local park or forest. Korpilo et al. used mobility data to further support these findings showing that people sought nature out near their residences. Safety appears to have been a primary concern throughout as people avoided places and events where they might be likely to encounter crowds.

Social media analyses (Johnson and Sachdeva) further corroborated these results. In spring and summer 2020, during the height of nationwide lockdowns in the United States, the positive impacts of nature on wellbeing came from seeing the wonder in nature, bird-watching, or engaging in gardening but certainly not participating in outdoor events as safety concerns were still top-of-mind. Lockdowns were not beneficial for wellbeing (Johnson and Sachdeva), but they did have some unintended benefits. As Mateer et al. describe, as lockdown measures in cities, particularly, shut down parks, playgrounds, and other outdoor recreation spaces, residents turned to city and neighborhood streets for activities like running, walking, or socializing with neighbors. Further, somewhat counterintuitively, lockdowns improved people's perceived connection to nature (Dobson et al.) by providing a sense of peace and tranquility in parks that may have been overcrowded pre-pandemic.

Several studies reported in this Research Topic also suggested that people's relationship to the natural world also shifted in their mindsets and everyday behaviors. As Mascatelli et al. note, reducing food waste was the most salient pro-environmental behavior for respondents in the early stages of the pandemic compared to pre-pandemic respondents. At the same time, respondents also decreased engaging in other pro-environmental behaviors such as recycling, using alternative transportation to get to work, and checking the air in their tires, compared to pre-pandemic respondents. Some of this may be attributable to an increase in remote working, but Sachdeva et al. also pose the possibility that a shift in mindsets during the pandemic, specifically moving toward a more scarcity-focused mindset, may lead to an increased emphasis on behaviors that sustain primal needs for food, water, and shelter-oriented safety, dovetailing nicely with Mascatelli et al.'s results. Other psycho-social impacts of the pandemic were suggested by Syropolous and Markowitz. They found that the pandemic has potentially made more salient the psychological norms underlying fairness and reciprocity, feelings of gratitude, and consideration of personal legacies. And, as previous empirical work has shown, all of these norms can help promote a consideration of the impacts of our behavior on future generations—a key component of sustainability-oriented decision making. Sardeshpande et al. suggest that urban natural areas could be designed to be more conducive to foraging practices. Foraging can offer people

additional control over and options for their food, health, income, and expenditure. Doing so also requires people to govern their resources more locally and sustainably.

Unequal access to outdoor spaces remains a challenge that intersects with underlying social vulnerability

Although the articles covered in this issue present a compelling case for the positive effects of green space access on wellbeing, they also decisively demonstrate an enduring problem of access and unequal distribution. Flint et al. note that for women, people of color, and for low-income people, access to green spaces decreased over the course of the pandemic and widened previous inequities in the accessibility of green spaces and options for outdoor recreation. Similarly, Larson et al. reported that urban park use declined during the COVID-19 pandemic and that the demographic characteristics of park visitors became more homogenous in the same period. Unsurprisingly, people who used to visit these parks pre-pandemic increased their visitation. More infrequent visitors, such as those from socially vulnerable communities, showed a further decline in visits.

These results are troubling, and results from Pearson et al. further amplify these concerns. In a study with low-income, predominantly African American participants in a major metropolitan area in the United States, they found that while participants expressed an increased desire to engage with nature during the pandemic (relative to before), they had fewer opportunities to do so. Moreover, Pearson et al. found that participants with more access to green space showed higher stress and anxiety. As the authors note, this is an important caveat for all the other literature essentially equating green space with happiness. In fact, the quality of green space available to people matters, and access to low-quality greenspace can be detrimental to health and wellbeing.

Impact of and adaptations to the COVID-19 pandemic among land managers and stewards

The pandemic's impact on individual livelihoods has been well-documented, but the studies reported in this Research Topic shed light on the lesser-known impact of and adaptations to the pandemic among organizations that manage and steward green space. In a case study of natural area land managers in 12 US cities, Plitt et al. found that as organizations were overwhelmed with increased use and visitation to natural areas during the pandemic, close to three-fourths of them reported a concurrent decline in their ability to care for natural areas. Without adequate numbers of volunteers, civic scientists, or public programming, only 17% of these environmental stewardship organizations felt hopeful about their financial future.

Yet, stewardship organizations also showed remarkable resilience and capacity for adapting to the pandemic and disturbances writ broadly despite a reduced workforce (Landau et al.) and the sort of reduction in resources described by Dacks et al. and Merkle et al. Other approaches to increase capacity in land management organizations are posed by Floress and Cohen who suggest that a tool that we have all become familiar with over the pandemic, i.e., virtual participation, can actually broaden access to meetings and processes and therefore increase civic participation. Similarly, Alizadehtazi et al. demonstrate that citizen scientists can be safely and effectively recruited during a global pandemic and the fair financial compensation provided by researchers to new citizen scientists can cover basic household needs in a time of scarcity.

Adaptive learning at all scales is essential to an organization's ability to respond to the pandemic. Community partnerships play a pivotal role in shaping more localized responses of large land management organizations during this time of social unrest (Svendsen et al.). Furthermore, as Landau et al. demonstrate, experience with disasters and disturbances further builds organizational resilience. It is also worth emphasizing that stewardship organizations benefit from community involvement and are also an essential source of individual wellbeing.

Lessons for the future: How to develop social resilience?

A common theme that the pandemic has laid bare is that green spaces, and access to and use of nature, are critical components of social resilience and human wellbeing at multiple scales—individual, household, organization, and community. These articles point to the lasting impacts of the pandemic and point to how we as a society can chart a new path forward with an increased understanding of the critical role of nature in cities. Yet, key questions remain. How long might the psycho-social impacts of altered mindsets related to nature and sustainability last, or are these permanent shifts? How do we ensure that access to high-quality green space is equitably distributed? What sorts of programming and stewardship opportunities can foster public engagement with green spaces and strengthen inclusion of all residents? How can we avoid rigidly adapting to prior disturbances and build more flexibility and adaptive capacity into environmental governance and land management? What role can urban greenspaces play in providing food and other needed services during such disturbances, to counteract potential societal responses like lockdowns and supply chain interruptions?

Going forward, Svendsen et al. suggest that diversifying land management and environmental stewardship organizations

could help them better react and adapt to changing landscapes and demographics. The articles in this special demonstrate humans' incredible ability to adapt to disruptions like the pandemic by changing their notions of sustainability and relating to one another and their neighborhoods, communities, and other open spaces. Retaining and building upon our social and ecological relationships can help bolster our resilience to the next global—or local—disruption. At the same time, being careful to provide communities with equitable access to resources and governance roles may aid in ensuring that future disruptions do not exacerbate social vulnerabilities.

Author contributions

SS completed a preliminary draft of the manuscript. LC and MJ provided additional text and revisions. ES reviewed the manuscript and provided feedback. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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