Not by trees alone: Centering community in urban forestry

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HIGHLIGHTS

- Urban forestry can both improve communities or exacerbate existing inequities.
- Environmental justice and anti-subordination greening concepts can inform our work.
- We can center marginalized communities' priorities via a community forestry approach.
- The field can support capacity, organize with community, and re-envision the forest.
- We point to innovations from the field and offer questions for greening practitioners.

ARTICLE INFO

ABSTRACT

Urban forestry and urban greening efforts are blossoming as cities and towns work to enhance their open spaces as green infrastructure that provides multiple benefits. This work has reached new urgency given the need for both high-performance landscapes that can mitigate the effects of climate change and accessible, safe green-spaces that can support community well-being during the COVID-19 pandemic. At the same time, activists, practitioners, scholars, and decision-makers–particularly those within Black, Indigenous, People of Color, and frontline communities who bear the brunt of negative impacts–are calling for the need to attend to environmental justice implications of greening efforts. Following a review of the literature, we draw upon our observations as researchers embedded in the field of urban and community forestry to offer three themes and related guiding questions that can help advance that work: 1) supporting human capacity and care (investments in people and organizations); 2) community organizing beyond the green silo (intersectional and cross-sectoral approaches); and 3) re-envisioning the functions of the urban forest (productive systems and biocultural approaches). Our perspective is inspired by the work of residents, practitioners, and decision-makers who are engaging in reflection and innovation in pursuit of "just cities" that can enhance diversity, equity, and inclusion as critical to and inseparable from sustainability and resilience. We suggest that the field of urban forestry draw upon a community forestry ethos as we center the needs, capacities, and priorities of historically marginalized communities at the heart of the work of creating more just, sustainable cities.

1. Introduction

Urban forestry and urban greening efforts–including tree plantings, park development, and the installation of rain gardens, bioswales, or other nature-based solutions–are blossoming as cities and towns work to enhance their open spaces as green infrastructure that provides multiple environmental and social benefits. This work has reached new urgency and attention given the need for both high-performance landscapes that can mitigate the effects of climate change by reducing urban heat island effect and retaining stormwater to help reduce flooding and prevent combined sewer overflow (see, e.g., Norton et al., 2015; Berland, 2017) as well as the need for safe, accessible, and welcoming open space that can support community health and well-being during the COVID-19 pandemic (Samuelsson et al., 2020; Slater et al., 2020; Soga et al., 2021). At the same time, activists, practitioners, scholars, and decision-makers—particularly those within BIPOC (Black, Indigenous, and People of Color) and frontline communities who bear the brunt of the climate crisis, the pandemic, and systemic racial injustice–are calling for

the need to attend to environmental justice implications of greening efforts (Nesbitt et al., 2019; Checker, 2021). There are potential inequities in distributional, procedural, and recognitional dimensions of urban greening, which can lead to uneven urban tree canopy, contribute to green gentrification, and fail to include all community members' voices and priorities in these efforts (Watkins and Gerrish, 2018; Gerrish and Watkins, 2018; Schlosberg, 2003, 2007, 2017; Anguelovski et al., 2020). As such, we suggest that the field of urban forestry draw upon a "community forestry ethos" as we center the needs, capacities, and priorities of historically marginalized communities at the heart of the work of creating more just, sustainable cities. The history of community forestry has its origins in rural areas in low and lower-middle income countries where there has been a communal need to improve access to firewood for fuel and to improve soil conditions (see, e.g., Charnley and Poe, 2007). In addition to growing trees in communal lots, the social goals of community forestry include local organizing and collective action as well as the development of forestry institutions. Community foresters have historically worked to aid local people in the execution of projects that would range in a wide provision of goods, benefits, and services. (See glossary on Civic Green: https://sites.tufts.edu/civicgreen/2020/11/18/urban-and-community-forestry/).

Following a brief review of the literature, we draw upon our own experiences and observations as researchers embedded in the field of urban and community forestry in the United States, listening to the call to action from the field, to offer three themes and related guiding questions that can help advance that work: 1) supporting human capacity and care (investments in people and organizations); 2) community organizing beyond the green silo (intersectional and cross-sectoral approaches); and 3) re-envisioning the functions of the urban forest (productive systems and biocultural approaches). Our perspective is inspired by the work of residents, practitioners, activists, and decision-makers at all scales – neighborhood to national – who are engaging in active reflection and innovation in pursuit of "just cities" that can enhance diversity, equity, and inclusion as critical to and inseparable from sustainability and resilience (see, e.g., www.thenatureofcities.com/the-just-city-essays/). The examples we share are drawn primarily from the United States, as this is the context in which we live, but we recognize that the work of advancing social, racial, and environmental justice and sustainability transformations is happening worldwide.

While frontline communities and BIPOC scholars and activists have long understood from their lived experiences that the benefits and burdens of greening are not equally shared (Bullard, 1990; Taylor, 2009), there is a renewed attention to tree inequity in the urban forestry practitioner community and to the patterns and processes that drive those inequities and injustices in the scholarly community. Research has demonstrated that urban tree canopy is spatially uneven by both race and class across multiple study sites and community contexts (Heynen et al., 2006; Schwarz et al., 2015; Watkins and Gerrish, 2018; Gerrish and Watkins, 2018). Urban tree canopy assessment and tree equity tools are proliferating to help decision-makers better understand and plan for a more equitable spatial distribution of trees within and across cities and towns (see, e.g., Locke et al., 2013, American Forests Tree Equity Score: www.treeequityscore.org/methodology/). Examining distributional equity at a moment in time, for all trees in a city, or at a single spatial extent is a necessary place to start, but we can do more by building upon these measures. Racial injustice is deeply encoded into American institutional structures that have historic and generational impacts on currently observed patterns, with the most prominent urban forestry example being the legacy effects of redlining on current access to green space and tree canopy (Grove et al., 2018; Roman et al., 2018, Schell et al., 2020). Scholars and activists are working to identify, analyze, and address the linkages between greening and gentrification (Anguelovski et al., 2019), including the different trajectories of "greening and whiteness" that vary with city development patterns (Connolly and Anguelovski, 2021). There is a need for context-specific, place-based and historicized research to untangle the deeply embedded "ecology of

segregation" (Pickett and Grove, 2020) and move towards an "abolition ecology" (Gilmore, 2017, Heynen and Ybarra, 2021), which can assist urban and community foresters working at both neighborhood and national levels.

Understanding the power dynamics and historical legacies around urban forestry is helpful in identifying priorities for managing the urban forest with an eye towards equity (Campbell and Gabriel, 2016; Sekulova et al., 2021). Who gains, who loses, and who is left out of urban greening processes? As the field of political ecology and practice has taught us - there is no such thing as apolitical greening and "there is no such thing as an unsustainable city in general. Rather, there are a series of urban and environmental processes that negatively affect some social groups while benefiting others" (Swyngedouw and Heynen, 2003, p. 901). At the municipal scale, we are in need of a better understanding of what drives urban forestry efforts politically (top-down, bottom-up, networked) and discursively (what frames and storylines are advanced) and when or how those drivers can shift over time (see, e.g. Campbell, 2017; see also www.forestforall.nyc). In general, civic actors–including local environmental stewardship groups–play a role in advocating for, managing, and transforming urban greenspaces (Svendsen and Campbell, 2008) and serve as part of the "social infrastructure" that activates and mobilizes green space to serve a social function (Campbell et al., 2021). Yet this social infrastructure is uneven across the landscape, with some neighborhoods having greater civic capacity and others having gaps (Johnson et al., 2019; Rigolon and Gibson, 2021; Sampson, 2012, 2017; Klinenberg, 2018). Given this unevenness, there are other tools and approaches for understanding and navigating the socio-political context that drives funding, investment, and support to certain sites, neighborhoods, and social groups and not others. Throughout the history of urban greening in New York (and America more broadly), elite actors have had an outsized ability to shape urban space–from Central Park to the High Line (Cranz, 1982, Scobey, 2003, Svendsen, 2013), how can this decision-making arena be made more equitable and inclusive for all?

Urban forestry and urban greening practices occur in a context of systemic racism and inequality that are endemic to United States society (see, e.g., Schell et al., 2020; Hoover and Lim, 2021; Heynen and Ybarra, 2021). Given that context, how can the field take seriously the call for Diversity, Equity, Inclusion, Justice (DEIJ) and anti-racism across our organizations, programs, and landscapes? Clearly, trees alone are not the (only) answer. Research and lived experience have demonstrated that greening has the potential to serve both as a positive driver of change for humans and ecosystems, but also as a driver of further inequities in the system. What if we were to analyze those unequal outcomes as a symptom of these deeper underlying and unjust conditions? How might this affect the way in which urban and community forestry policies, programs, and funding streams were articulated? There have been several efforts by the Biden administration to apply an equity lens to existing federal programs and policies nationally (see, e.g., Executive Order 13,985 "Advancing Racial Equity and Support for Underserved Communities Through the Federal Government" and the Justice40 initiative (www.whitehouse.gov/omb/briefing-room/2021/07/20/the-path-to-achieving-justice40/). The USDA Forest Service Urban and Community Forestry Program was established to work in partnership with states, nonprofits, and communities to maximize the benefits trees provide, help ensure healthy and resilient urban forest canopy, create green jobs, and offer education and outreach. A recent and heightened awareness of the metaphorical bridge-building needed to connect with, listen to, and serve under-resourced communities is driving innovation and greater inclusion in the program. Momentum is also growing in the philanthropic and nonprofit fields in the areas of greening, racial equity, and social justice. Numerous recent funding calls focus on working with and moving resources toward BIPOC and historically marginalized communities, focused on park equity and tree canopies. See, e.g., recent calls for proposals from the Prevention Institute, Robert Wood Johnson Foundation, and Doris Duke Foundation (preventioninstitute.

Table 1

Defining key concepts for advancing DEIJ in urban and community forestry research and practice, adapted from Schlosberg (2003, 2007, 2013)a and Anguelovski et al. (2020)b

	Concept	Definition	Example from urban and community forestry
Dimensions of justice (a)	Distributional justice	Amenities and dis-amenities are equitably distributed	Tree canopy evenly distributed across space, including when analyzed by race and class
	Procedural justice	All members of the public, including historically marginalized groups, are meaningfully and fairly involved in decision-making	Local community members are fully consulted and involved in shaping urban forestry projects
	Recognitional justice	Dignity, identity, and lived experience of all people is recognized and respected	All groups' perspectives – including concerns, forms of speech, ways of knowing, and cultures – are respected in urban forestry planning processes and programs
Justice principles (b)	Emancipatory and anti-subordination greening	Starting from recognition of durable, systemic inequality in society and working to address it	Shifting access to land and resources from dominant or privileged groups to historically marginalized groups
	Intersectional greening	Spaces understood from multiple, intersecting identities	Urban forests designed and programmed by, for, and with multiple identities, abilities, needs, and priorities in mind
	Relational greening	Draws on feminist approaches to understand people's diverse relations with nature, including their needs for everyday life	Multiple ways of knowing and being are acknowledge in urban forestry processes and spaces

Table 2

Key themes and questions for mobilizing a community forestry ethos

Theme	Questions for the field to consider
Supporting human capacity and care: Investments in the green workforce and civic stewards	● How do we broaden and diversify the field of who participates in urban and community forestry? ● What sorts of skills and capacities do community foresters need to work with diverse populations and different cultural contexts? ● How might we enhance the status and recognition of the work that is done to maintain and care for our urban forests?
Community organizing beyond the green silo: Intersectional and cross-sectoral approaches	● How can we center historically marginalized communities' priorities and needs so that urban forestry can be used as a catalyst to address social issues? ● How can we focus our equity work not only on access, but also on meaning, belonging, and connection to the urban forest? ● How can we surface, amplify, and learn from innovative and intersectional approaches emerging from the field that recognize and work to address multiple, overlapping forms of oppression?
Re-envisioning the functions of the urban forest: Productive systems and biocultural approaches	● How can we enable the diverse relationships with urban forests that people want to have? ● What would urban forestry look like if it had a "biocultural lens" that views natural resources as cultural resources? ● How can we work with diverse communities in collaborative and non-appropriative ways?

org/projects/people-parks-and-power) as well as the Arbor Day Foundation and Alliance for Community Trees (www.arborday.org/programs/alliance-for-community-trees/environmental-justice/). The Sustainable Forestry Initiative has organized a coalition of national organizations to create Urban and Community Forest Sustainability Standards, many of which highlight the need to engage BIPOC members of the public and support community engagement (https://www.forests.org/leading-standards-and-urban-forestry-partners-collaborate-to-develop-a-new-sfi-urban-and-community-forest-sustainability-standard/). These current approaches to DEIJ in urban greening will require sustained commitment as they continue to unfold and have impacts in the field over a long duration.

Research has a crucial role to play in advancing DEIJ in urban and community forestry, in part by honing key concepts that help define and operationalize what justice and emancipatory approaches look like. Hoover and Lim (2021) call on the research community to engage in "post-distributive justice" approaches that consider other dimensions of justice beyond the spatial distribution of amenities or dis-amenities– including trees and green spaces (following Fraser, 1995, 1997). These approaches start from recognition, include lived experience, and use engaged, participatory methods to study green space issues and move

toward a more anti-racist approach to research and practice. Anguelovski et al. (2020) offer an "antisubordination" approach, building upon Fiss' (1976) antisubordination principle that goes beyond anti-discrimination in order to "better considers the needs, identities, and everyday lives of marginalized groups" (Anguelovski et al., 2020, p. 1746). Originating in the legal field, antisubordination theory posits "guarantees of equal citizenship cannot be realized under conditions of pervasive social stratification" and as such argues "law should reform institutions and practices that enforce the secondary social status of historically oppressed groups." (Balkin and Siegel, 2003, p. 9). Applying this approach to greening scholarship "requires starting with the explicit recognition that durable categories of inequality continue to comprise part of systematic and asymmetrical structures of power and domination" (Anguelovski et al. (2020, p. 1752). We draw upon both a widened perspective of justice and explore justice principles through the lenses of emancipatory or anti-subordination, intersectional, and relational greening. We briefly define and give examples of how these key concepts show up in urban and community forestry in Table 1.

2. Approach

Inspired by this current body of research, we have reflected on our own observations as public servants and researchers within the field of urban and community forestry in the United States over the last 20 years; we find it helpful to join the discussion and dialogue about what the future of our field might look like. We further situate ourselves as four white women, mid-career professionals, working for the USDA Forest Service and the nonprofit Natural Areas Conservancy in New York City, which is Lenapehoking, the ancestral homelands of the Lenape. In this context, the Forest Service does not manage any land or have regulatory authority; we are researchers studying stewardship across New

York's social-ecological system and sharing insights from and with practitioners and scholars. We organize these observations under three main themes that offer a way forward for strengthening the role of community in urban and community forestry. Here we summarize these themes and guiding questions for the field (see Table 2 and Fig. 1) and in the following sections we expand upon this table with examples from practice. Our audience for this work is the field of urban and community forestry research and practice. Historically the arena of urban "natural resource management" has been largely white-dominated, though there is an increasing recognition of the need to strengthen diversity, equity, and inclusion in this field. Thus, we speak to our own growing and diversifying community of practice, aiming to serve as allies in the work of advancing social, racial, and environmental justice. While aimed at practitioners, these questions also suggest different pathways forward for researchers working across the spectrum from addressing basic knowledge gaps, to advancing applied research, to engaging in co-production with practitioners. For researchers seeking to engage in this work, the onus is on us to ensure that our research is relevant, timely, and responsive to this call for action.

3. Supporting human capacity and care: The green workforce and civic stewards

How do we broaden and diversify the field of who participates in urban forestry? What cultural and institutional shifts need to happen within our organizations to become more inclusive workplaces? How can we train current and future generations of the 'green workforce' to see themselves not just as arborists or foresters, but as 'community foresters'? What sorts of skills and capacities do community foresters need to work with diverse members of the population across different cultural contexts? How might we enhance the status and recognition of the work that is done to maintain our urban forests, including our municipal green workforces, while also acknowledging the care, expertise, and knowledge that lies in the civic realm?

Urban and community forestry involves much more than planting trees. Care and maintenance work are often unvalued or undervalued in our current structures and economies (Puig de la Bellacasa, 2011; Larrabee, 2016). It is clear that cultivating human capacity helps support green spaces that are functioning not just as natural resources but also as

Fig. 1. Key themes mobilizing a community forestry ethos, organized (smallest to largest circles) from the organizational level, to collaborative partnerships across networks that acknowledge intersectionality, to interactions with the ecosystem.

social infrastructure (Campbell et al., 2021; Latham and Layton, 2019). Typically, existing urban forestry programs fund trees and sometimes fund the tools to monitor and plan for those trees - but who consistently funds the organization, the people, and their training and capacity, and what are some of the best ways to measure the impact of this work?

We have seen several institutional attempts to address these questions over the course of our careers and the history of our agency. Since the 1930s, there have been national scale programs focused on conservation, job provisioning, and career development – including seminal efforts such as the historic Civilian Conservation Corps and the current Youth Conservation Corps and Job Corps. As elected officials seek to implement a new Civilian Climate Corps, there is a call to adapt existing programs to a focus on climate, to broaden to urban areas, and to diversity the recruitment of program participants and the host institutions that can employ trainees. Locally in New York City, during the 2007–2015 MillionTreesNYC Campaign–which most prominently achieved the planting of 1 million new trees in New York City–the MillionTrees Training Program was created. The program was supported by a combination of philanthropic, municipal, and federal funds and offered training, wraparound social services, and assistance with job placement in the field of urban forestry for young adults who were previously disconnected from the workforce. The program ended after a few years once the funding ran out, despite a desire and a need to sustain it in the long term (Maddox et al., 2010; Falxa-Raymond et al., 2013). Attention to workforce development and green career pathways in urban forestry is currently rising; both The Nature Conservancy and American Forests have national programs focused on educating and growing the green workforce. The Nature Conservancy's Healthy Trees, Healthy Cities began in 2014 as a partnership with the USDA Forest Service to combine tree health monitoring efforts with urban forestry workforce training for youth and others re-entering the workforce, and currently has an active program in Chicago (Rachel Holmes, personal communication July 15, 2021). The American Forests Tree Equity Career Pathways program began in 2018 to address very real labor shortages, but also to engage low-income urban residents in paid careers in urban forestry (Anderson, 2020). Urban WildFIRE (Fire Integrative Research Experience) is a workforce development program offered through collaborative efforts between Michigan State University Department of Forestry, Tennessee State University Department of Agriculture, and The Nature Conservancy that offers coursework and professional development opportunities to students traditionally underrepresented in field of urban forestry and fire management through a lens of diversity, equity, and inclusion (www.canr.msu.edu/for/programs/Urban-WildF.I.R.E./). These are just a few examples of urban forestry job training and career development programs that exist around the country, and such programs require additional support to create and sustain inclusive green career ladders.

Community organizations play a pivotal, but often unseen role in supporting public open spaces and activating them as social infrastructure – leveraging significant person power, time, and resources. In New York City, over 800 community organizations engaged in environmental action – what we call "civic stewardship groups'' responded to the Forest Service Stewardship Mapping and Assessment Project (STEW-MAP) 2017 survey, representing an estimated 540,000 members and staff and with budgets totaling approximately $800 million (Landau et al., 2019). The act of caring for local places can transform not only the physical environment, but also our relationships to those places and to each other. In addition to providing labor and increasing capacity, civic engagement strengthens democracy via empathy, innovation, and fostering social trust (Fisher et al., 2015). Civic stewardship can increase community and cultural relevance by providing locally tailored and specific programming, events, and activities (Campbell et al., 2021). These civic stewardship groups work in specific geographic territories, support a wide range of open space types, have different capacities and levels of professionalization, and operate via organizational networks that span across civic, public, and private sectors (Fisher et al., 2012;

Connolly et al., 2013, 2014; Johnson et al., 2019). As such, we know that engagement is uneven across the landscape, and this has a special consequence for vulnerable communities (Taylor 2009; Sampson, 2012, 2017; Klinenberg 2018). Our field can benefit from continuing to seek out and expand the types of partners with whom we work in growing capacity and supporting the social infrastructure of our urban forests through stakeholder mapping and partnership development tools such as STEW-MAP (see Svendsen et al., 2016; www.nrs.fs.fed. us/STEW-MAP/).

As we aim to support urban forests as social and biophysical infrastructures, how do we navigate municipal budgeting processes that separately fund "capital" and "expense"? How do we provide sustained, stable, and multi-year employment when funding that does come is often allocated by season, by budget year, and by administration? For example, in 2020, the COVD-19 crisis caused a drastic cut in budget for natural areas maintenance in NYC Parks. A citywide coalition called Play Fair advocated in 2021 to increase the NYC Parks municipal budget, including natural areas, and has led to the rapid need to "staff up" and hire more seasonal workers (www.ny4p. org/what-we-do/play-fair). When juxtaposed with the decades-long life of growing trees, this cyclical cycle of budget cuts, advocacy, and increases makes planning for ecological health particularly challenging (see also Pregitzer et al. 2018, 2021). Investment in the social infrastructure and human capacity that supports and shapes the urban forest would likely drive innovation and public benefits - including the big changes in our thinking and practices that are needed to truly adapt our landscapes and programs to contemporary disturbances from climate change, to extreme weather, to pandemics.

4. Community organizing beyond the green silo: Intersectional and cross-sectoral approaches

How can we center historically marginalized communities' priorities and needs so that the trees can serve as means to the ends of more inclusion, social trust, and better community quality of life? In taking an equity lens, much attention is placed on the amount and spatial distribution of greenspace and tree canopy. But what if we were to focus not only on access, but also meaning, belonging, and connection to the urban forest? How might we strengthen the social meaning of the urban forest in whatever stage or state it is in? What sorts of programs might we produce? How might we identify and support the ways in which trees and green space can be a catalyst to address social issues? How can we surface, amplify, and learn from innovative and intersectional approaches emerging from the field that recognize and work to address multiple, overlapping forms of oppression?

Urban forestry and urban greening does not exist in a silo – it is nested into planning practices at multiple scales from the neighborhood, to the city, to the region. Further, both urban spaces themselves and these planning processes are shaped by the historical legacies of white supremacy and settler colonialism that affect American society (Heynen and Ybarra, 2021). For example, ongoing processes of gentrification threaten the stability of communities. Everyone–particularly historically marginalized communities–has the right to high quality outdoor environments. Whole and inclusive communities require not only green spaces, but also affordable housing, meaningful work for decent pay, accessible transportation, child and elder care, food security, and a vibrant civic sphere. These sorts of solutions will not be produced by working in a "green silo" of the environmental realm alone, but will require holistic and creative planning, ownership, and financing efforts. Moreover, these approaches cannot authentically advance equity and inclusion without centering the capacities, priorities, and needs of historically marginalized and vulnerable communities. Intersectional organizing is one approach to doing just this as it "centers the experiences and leadership of people who are affected by multiple forms of oppression" based in constructs that include but are not limited to race, class, gender, and (dis)ability status (Warren et al., 2021; see also Kunreuther and Thomas-Breitfeld, 2015; Crenshaw 1989).

We can look to innovations emerging from the field – such as community land trusts, cross-class environmental justice coalitions, climate justice work, intersectional organizing, and inclusive planning efforts. All of these efforts overlap with urban and community forestry goals of improving the extent, distribution, and quality of the urban forest, as well as contribute to procedural and recognition aspects of environmental justice in how the work is done. Community land trusts support both access to open space and ensure affordable housing through community land ownership and some are focusing explicitly on BIPOC land access and stewardship (see, e.g., NYC Community Land Initiative, https://nyccli.org/; Land in Black Hands – Kingston Land Trust, https://kingstonlandtrust.org/land-in-black-hands). Land trusts exist in both urban and rural settings; the Chimacum Ridge Forest of the Jefferson Land Trust in Port Townsend, Washington, is one example of a community forest that is sustained through a land trust model (Shanasia Sylman, personal communication June 28, 2021; https://saveland. org/save-land/chimacum-ridge/). Further, there is a need for cross-sector and cross-class coalitions that are seeking different development trajectories that are more inclusive and sustainable for all. A neighborhood-scale example is the Gowanus Neighborhood Coalition for Justice that partners public housing residents, environmental stewards, and others seeking a "just rezoning" process for this historically industrial neighborhood surrounding the Gowanus Canal Superfund site (Andrea Parker, September 20, 2020, personal communication; https://www.gncj.org/). Guardians of Flushing Bay work in the diverse communities of East Elmhurst, Jackson Heights, Corona and Flushing, Queens on highly polluted waterways, Flushing Bay and Flushing Creek. They aim to prioritize communities with the greatest barriers to access to the waterfront and a healthy environment; these barriers often include race, immigration status, income, language, and physical ability. Guardians of Flushing Bay recognizes that these barriers to access are interconnected within other social justice struggles; and they work across domains to create a shared vision for their urban watershed and engage in issues from transit advocacy, to affordable housing at the waterfront, to mutual aid in the time of COVID-19, to environmental stewardship (Rebecca Pryor, personal communication; October 10, 2021; https://www.guardiansofflushingbay.org/). Working from a climate justice framework (see, e.g. Ranganathan and Bratman, 2021), Red Hook Initiative in Brooklyn began as a social service organization focused on public housing residents and given its location in a flooding vulnerable area, has focused on youth-led climate justice organizing, management of a community farm and CSA, and local tree stewardship (Marisa Prefer, personal communication, March 24, 2021; https://rhicenter.org/). Operating in dozens of cities across the country, Groundworks USA–which has taken a community forestry approach since its founding–has now developed a Climate Safe Neighborhoods project via a climate justice approach and works with residents and stakeholders to contextualize uneven climate impacts in their historical and racial context and to mobilize for change (Mingoya, 2021, https://groundworkusa.org/climate-safe-neighborhood). The solutions to our most complex and wicked problems of urban sustainable development will require creative thinking and novel collaborations across traditional disciplinary divides–including urban and community forestry–all while centering historically marginalized communities' voices in our commitment to justice, equity, and inclusion.

5. Re-envisioning the functions of the urban forest: productive systems and biocultural approaches

How can we enable the diverse relationships with nature that people want to have – broadening our sense of with whom and for what we are envisioning, planning, designing, and managing the urban forest? What would urban forestry look like if it had a biocultural lens? How might we surface, share, and learn from different principles, practices, leaders, and decision-making approaches in a collaborative and non-appropriative way?

If we broaden the understanding of what the urban forest is for, then

this opens up a whole range of potential planting choices, management practices, and stewardship arrangements that create new opportunities to center community priorities, needs, and goals. Oftentimes urban forests in the United States are managed to provide shade, to improve air and water quality, and for aesthetics and beautification. Currently, we see examples led by municipalities, NGOs, artists, and researchers where they are reconsidering the urban forest as a productive resource across its entire lifecycle - one that provides food, medicine, and other cultural products (McLain et al., 2014; Hurley and Emery 2018). We see this in advancing conversations around urban commoning, foraging, and planting and harvesting fruit trees - such as artist Marry Mattingly's floating food forest, Swale (https://www.swalenyc.org/), the Beacon Food Forest (https://beaconfoodforest.org/), the Canadian project "Not Far From the Tree" (https://notfarfromthetree.org/), and many other sites across the country and globe (see also Morrow and Martin, 2019). We also see innovations at the end of trees' life cycles, as managers are working to reclaim and reuse urban wood to generate value-added products, ranging from guitars, to furniture, to architectural installations. While this approach would be far from novel in our rural forests, for many centuries, urban trees have been treated as a waste product that is mostly chipped and removed at the end of their life. But projects and groups such as the Baltimore Wood Project (http://baltimorewoodproject.org/), Cambium Carbon (https://cambiumcarbon.com/), and Tri-Lox (https://tri-lox.com/about/) and others are working to change these assumptions and re-work practices toward more circular management systems.

Finally, as we seek to recenter the community in urban and community forestry, we can take cues from the ways in which the field of conservation is recognizing biocultural approaches that amplify local ecological knowledge and acknowledge diverse lifeways and ways of knowing as providing alternative pathways toward more sustainable trajectories (Sterling et al., 2017; Gavin et al., 2015; McMillen et al., 2020a, Nesbitt et al., 2020). One promising example from the field is the Hālau ʻŌhiʻa training course created by Kekhui Kealiikanakaoleohaililani, which trains conservation practitioners and natural resource managers in Native Hawaiian lifeways, cultures, and practices as a way of exploring multiple ways of knowing in order to "transform the way we view and steward our lands and seas" (Kealiikanakaoleohaililani et al., 2018). This program inspired an exchange between Hawaii and New York City-based stewardship practitioners, researchers, artists, and educators entitled "Learning from Place'' that later catalyzed a series of NYC-based "Stewardship Salons'' focused on nurturing this diverse community of practice in a non-hierarchical setting and exploring the notion of urban biocultural stewardship (McMillen et al., 2020b). Another example is the USDA Forest Service and The Nature of Cities' Urban Field Station Collaborative Arts Program, which aims to create transdisciplinary knowledge between artists, scientists, and land managers working on urban social-ecological systems in order to pose new question, reflect critically, identify new solutions, and reach the public in new ways (see https://ufsarts.com/). Through these engagements, we have found that there is fertile ground for more exchanges between folks working in urban, rural, and Tribal lands contexts and between scientific, artistic, and Indigenous ways of knowing (see also Wooltorton et al., 2020; West et al., 2020 for approaches from Indigenous scholarship and relational thinking in sustainability). It is important to note that alongside these efforts at knowledge exchange and co-creation come necessarily deep conversations and debates about rights, responsibilities, and access to land (see, e.g., Bavikatte and Bennett, 2015; Chenoweth et al., 2021). These debates both return us to key questions of community forestry (e.g., How are claims and property rights asserted on the land? Who manages the land? Who works the land? Who cares for the land? Toward what ends?) and encourages us to identify novel, transformative ways forward. By seeing "natural resources" as "cultural resources," biocultural stewardship aims for recognitional justice that respects diverse worldviews and enables multiple forms of biological and cultural diversity to flourish.

6. Conclusion

As researchers working alongside practitioners, we take seriously the call from BIPOC scholars, allies, and accomplices (see, e.g., Schell et al., 2020; Hoover and Lim, 2021) to analyze, interrogate, and ultimately dismantle systemic racism within the fields of land management, urban ecology, and urban and community forestry most specifically. The present moment, where cascading and compound disturbances (i.e., climate crisis, pandemic, hurricane, wildfires) intersect with long-standing and abiding raced, classed, and gendered structural inequalities underscores this call. Trees and forestry clearly have a role to play in responding to and mitigating the effects of the climate crisis. How might we harness the potential of a community forestry approach to ensure that we do not replicate the inequities of past programs and instead see this as a chance to embrace climate justice and an emancipatory greening approach? In this paper, we have aimed to synthesize key concepts from scholarship (dimensions of justice, anti-subordination greening approaches) and examples from practice that can be used to advance a community forestry ethos. We identified three key themes: supporting human capacity, intersectional community organizing, and re-envisioning the resource that we believe can help advance DEIJ in urban and community forestry. We hope that this piece inspires further dialogue, and we invite practitioners who are working in the field to advance DEIJ in urban and community forestry to share their own stories, struggles, and successes– in both informal and structured workplace conversations among colleagues and peers - and at regional, national, and global conferences and dialogues for broader audiences. While this article is rooted in our own experiences in the United States, we note that there are critical stories to share, research to advance, and practices to acknowledge from around the globe, including the challenges to successful community forestry created by existing inequities (see, e.g., Wong et al., 2020, Kenfack Essougong et al., 2019). We offer these themes, questions, and examples in a spirit of reflection as we continue to learn and take inspiration from many in urban forestry that are already in the field working with trees – through planting, restoration, and care - as a way to strengthen community.

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