Urban Forestry & Urban Greening 31 (2018) 221–229

Contents lists available at ScienceDirect

Urban Forestry & Urban Greening

journal homepage: www.elsevier.com/locate/ufug

# The trouble with trees? Social and political dynamics of street tree-planting efforts in Detroit, Michigan, USA

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ARTICLE INFO

*Keywords:*
Community engagement
Environmental justice
Political ecology
Species selection
Urban and community forestry

ABSTRACT

In Detroit, Michigan, a non-profit organization responsible for planting street trees on city-owned property in neighborhoods received "no-tree requests" (NTR) from 24 percent of residents approached between 2011 and 2014. This example reflects a barrier to urban tree canopy improvement. Power dynamics between stakeholders can be a key reason for resistance to tree-planting. In this study, we sought a deeper understanding of perspectives on the uses and consequences of power in a street-tree planting program in Detroit, Michigan by answering three questions: Who wins? Who loses? Who decides? Interviews with city residents who submitted NTR or received trees, as well as those within the non-profit organization, provided data for this study. Results showed that the non-profit organization made decisions regarding which trees to plant in particular locations, and maintenance protocols. Many residents felt they "lost" with the tree-planting program (i.e. they were unable to have their values integrated into the tree-planting program) due to lack of decision-making involvement about tree species selection and maintenance responsibilities. Negative experiences with trees, particularly lack of city tree maintenance, contributed to residents' views of the problems with the tree-planting program. Those within the non-profit organization focused on educating residents about the benefits of trees to increase acceptance of tree-planting, and expected residents to participate in tree maintenance. These findings demonstrate the importance of providing information relevant to participants who serve as partners in long term stewardship of trees, and the need to include residents in decision-making to identify and achieve shared goals.

## 1. Introduction

Trees provide numerous ecological and social benefits in urban areas, including mitigation of air pollution and stormwater run-off, reduction in noise, and decreased crime (Kuo and Sullivan, 2001). Local residents who engage directly in urban and community forestry can also build cohesion with one another by working to identify collective interests and capacities (McDonough and Vachta, 2005). As human populations in urban areas continue to grow, placing greater stress on the ecological elements of the environment, many cities around the world have set ambitious goals for increasing and improving the health of the urban tree canopy to achieve a range of benefits (American Forests, 2012; Conway and Bang, 2014). Yet, there are also costs associated with managing trees in urban environments. These circumstances are creating complex networks of governance to manage and reconstitute nature in urban settings (Campbell and Gabriel, 2016). Within this intricate arrangement, organizations and agencies working in cities encounter difficulties. Challenges to expanding the urban tree canopy include resistance to having trees planted on the city-owned street property in front of houses. In the city of Detroit, Michigan, USA, a non-profit, tree-planting organization received "no-tree requests" (NTR) from nearly one-quarter of residents eligible to receive a street tree between 2011 and 2014, thereby declining to have a tree planted on the city-owned easement between the street and sidewalk.

Power dynamics between participants in urban and community forestry efforts can be a key reason for resistance to tree-planting efforts. Scholars note that the development of goals and approaches to urban and community forestry often do not adequately account for the values of all stakeholders (Perkins, 2015). Models of urban and community forestry in the U.S., as well as the field of community-based natural resource management, acknowledge the necessity of understanding the ways power is distributed and used in any efforts to achieve ecological and social goals of diverse participants (Clark et al., 1997).

Still, Campbell and Gabriel et al. (2016, p. 253) note that "…the significance of critical approaches within the mainstream scholarly discourse in urban forestry and urban greening remains underdeveloped." Some scholars have examined types of urban greening

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https://doi.org/10.1016/j.ufug.2018.03.009
Received 11 August 2017; Received in revised form 9 March 2018; Accepted 10 March 2018
Available online 10 March 2018
1618-8667/ 

activities (i.e. urban gardening) that are an example of resistance to dominant and oppressive social structures in cities (White, 2011). However, no studies to date appear to have utilized a community-engaged research approach to investigate resistance *to* urban greening as an expression of opposition to institutions of control in urban environments. This is despite the growth in literature outlining how the traditional exercise of power in cities produces and reproduces uneven urban tree canopies that perpetuate social injustices, including disparate health outcomes based on socioeconomic status and race, in cities like Indianapolis, Indiana (Heynen, 2002), Milwaukee, Wisconsin (Heynen et al., 2006), Philadelphia, Pennsylvania (Brownlow, 2006) and Los Angeles, California (Byrne, 2012).

Urban political ecology offers a framework for examining power dynamics in urban and community forestry efforts by focusing on three key questions: Who wins? Who loses? Who decides (Heynen et al., 2006)? By examining these questions, researchers can better understand the decision-making power of different societal groups, and whether approaches used in urban and community forestry efforts adequately integrate the values of all stakeholders. There is currently little knowledge of how city residents and non-profit organizations facing challenges to improvement of the health of the urban tree canopy define the problem(s) with street tree-planting programs.

The purpose of this study was to gain a deeper understanding of how power was perceived, and used, by those involved in a street-tree planting program in Detroit, Michigan, and the social and ecological consequences of these circumstances. By examining answers to key urban political ecology questions (Who wins? Who loses? Who decides?) of residents who received trees and those who submitted "no-tree requests" as well as those within the non-profit organization, this research sought to clarify how these stakeholders characterized the problem with the street tree-planting program, and whether such perspectives could explain the submission of "no-tree requests." This research fills a gap in knowledge of power dynamics and their impacts on urban and community forestry programs. We also offer specific approaches to modify the structure of tree-planting programs to increase the equity and efficacy of urban and community forestry efforts.

## 2. Power dynamics in urban greening

Numerous studies have documented the inequitable distribution of environmental benefits in cities, such as access to healthy, safe parks and urban green spaces (Mohai et al., 2009). For example, a significant link between higher household income and greater tree canopy cover has been identified (Flocks et al., 2011; Heynen, 2002). Others note that mere distribution of the tree canopy is an inadequate measure of the justness of the urban tree canopy (Kondo et al., 2017). Rather, management of the canopy needs to be examined to assess environmental justice. For instance, recent studies have found a correlation between dense, unmanaged vegetation and higher rates of criminal activity (Kondo et al., 2017, Troy et al., 2012). Holifield and Williams (2014) additionally found that parks in predominately lower-income and minority areas often experience neglect due to decreased public funding, and problems with crime or perceptions of crime.

Since active involvement of citizens is a key determinant of how green spaces function in a community, discussions of environmental justice have expanded beyond issues of distributional justice to address procedural justice concerns (i.e. involvement in decision-making processes about the natural environment) (Jennings et al., 2012). This shifting focus of environmental justice studies integrates contributions from the field of urban political ecology, which focuses on understanding differential access to and control over resources among societal groups in urban areas (Halfacre et al., 2010).

Cities are built out of "socially mediated natural processes" (Heynen et al., 2006, p. 5), and with a capitalist economy at the helm, this socially structured process transforms nature into a commodity whose use is determined by elites with access to resources and decision-making power (Perkins et al., 2004). As a result, "elite" members of society will make decisions about greening to maximize profit and capital accumulation (Byrne, 2012; Conway et al., 2011; Landry and Chakraborty, 2009). For example, decision makers within the city will transform natural landscapes through strategic creation of well-maintained green spaces (e.g. in downtown areas) in an effort to attract wealthy investors, residents, and tourists, but not invest as much in the development of green spaces in low income neighborhoods (Bryson, 2013).

Recently scholars noted how traditional urban forestry decision-makers tend to value trees and make the case for investment in urban forestry based on quantifiable characteristics (e.g. carbon sequestration, stormwater flow management) which (1) omits some of the most prominent socio-cultural values associated with trees like beauty and cultural heritage that cannot be as easily quantified (Konijnendijk van den Bosch, 2015), and (2) does not consider costs associated with maintenance of different species of trees and how those costs will be distributed across different actors over time. In this context, "participation" of community residents serves to achieve greater productivity at a lower cost rather than influence decision-making to improve community well-being holistically (Campbell, 2015). Marginalized groups, who lack meaningful control over capitalist processes, often suffer environmental injustices as a result (Heynen, 2003), which can include inadequate access to *sustainably* managed environmental benefits that fulfill a range of values.

In response to such trends, studies have emerged to examine stakeholder participation in decisions about appropriate use of urban space (Poe et al., 2013). In Detroit, White (2011) conducted a case study of an urban farming initiative in which activists utilized a community-based model to involve residents in increasing access to healthy food. In regards to tree-planting programs, Donovan and Mills (2014) suggest a need to tailor such efforts to specific neighborhoods, particularly less affluent areas, and hire canvassers from neighborhoods where programs are implemented to improve the efficacy and thus, environmental justice, of tree planting. These results point to a need to explore the perspectives of residents, especially in less affluent neighborhoods and those that are predominately non-white, regarding appropriate and preferred methods of engagement in tree-planting programs.

## 3. Methods

### 3.1. Study area

Data for this study were collected in Detroit, Michigan, USA (Fig. 1). From the late-19th to mid-20th century, Detroit was known as "The City of Trees," with more trees per capita than any other industrial city in the world (Austin and Kaplan, 2003; Dietz, 1994). Dutch elm disease, urban expansion, and neglect led to the demise of over 500,000 trees in Detroit by 1980 (American Forests, 2012).

Race relations in the city increasingly deteriorated from the 1950′s onward, as an influx of African American immigrants from the South moved to Detroit seeking factory jobs (McDonough and Vachta, 2005). Those with enough wealth to relocate to the suburbs were predominately white. The city's population peaked in the 1950′s at 1.85 million with 16.2% African Americans, and declined to just 951,270 in 2000, consisting of 81.2% African Americans (Metzger and Booza, 2002). By 2016, the city's population had further declined to 672,795, with 82% African Americans (U.S. Census Bureau, 2016). In 2014, the city completed a 16-month bankruptcy process, spurring increased private investment to improve Detroit's economy (Detroit Free Press, 2014).

The size of the city's Forestry Division dwindled as population declined (Dietz, 1994). In 1989, a non-profit organization called The Greening of Detroit was founded to reforest the city, in response to the large-scale decline in the urban forest over the preceding several decades. The collaborative effort enlisted professional forestry associations

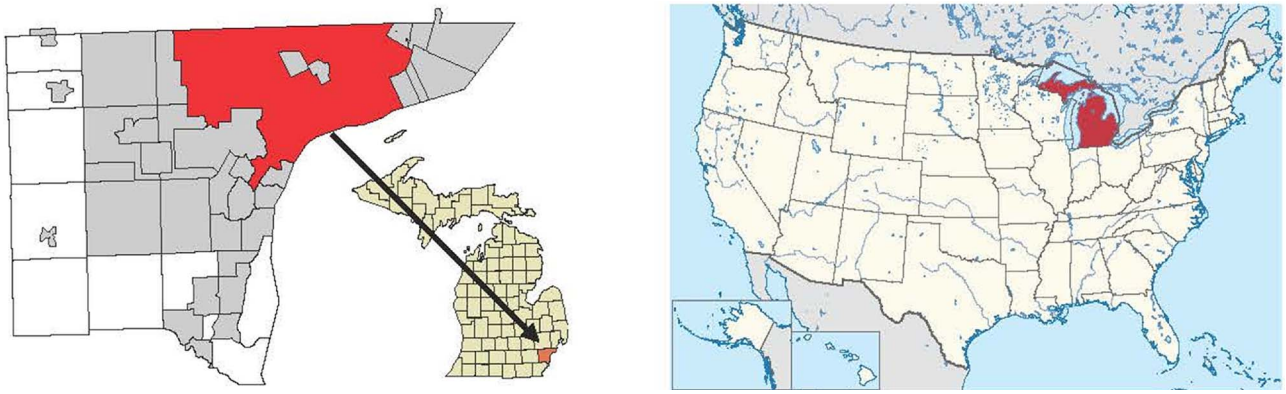

**Fig. 1.** Map showing Wayne County, Michigan, USA. City of Detroit boundary is filled in red. (Source: Wikimedia Commons).

and universities to inventory the city's trees and identify tree species to plant, with input from city residents.

The mission of The Greening of Detroit (TGD) is: "Inspiring sustainable growth of a healthy urban community through trees, green spaces, healthy living, education, training and job opportunities." TGD seeks to accomplish this mission by "planting trees, providing job training and involving our youth in the education of the natural environment" (The Greening of Detroit, 2018). At the time of this study, the organization employed 30 staff members, had 35 advisors and utilized the help of over 5000 volunteers. Volunteers assisted with tree-planting, but not in any follow-up activities. Detroit youth were hired to assist with tree watering in the summer months.

### 3.2. Unit of analysis and key variables

The unit of analysis for this study was individuals. The study included individuals who fit within each of the following three categories: (1) staff, volunteers, and board members of The Greening of Detroit (TGD) involved with the street tree-planting program, (2) city residents who submitted "no-tree requests" (NTR), and (3) city residents who received trees. These categories served as key variables for comparing data. In addition, during analysis, residents were categorized according to six possible responses to tree-planting, which served as another variable for comparing data collected.

### 3.3. Sampling design

Staff, board members, and volunteers within TGD and involved with the street tree-planting program were identified using snowball sampling. Roles of the interviewees within the organization varied, including: Seven staff members from the green infrastructure department, one volunteer leader for tree-planting events who also served on the board of directors, one staff member and two additional board members involved in administrative decision-making for the organization, two community engagement staff members and one government relations staff member. Most study participants from TGD were employees with the organization 5 years or less. Eight of 14 TGD respondents were women. Less than one third lived in the city of Detroit (Table 1).

Residents who submitted "no-tree requests" (NTR) and received trees were identified through snowball sampling with community groups and key informants in five neighborhoods. Study sites were sampled from neighborhoods that (1) were involved TGD tree planting events between 2011 and 2014, and (2) exhibited maximum variation in the proportion of residents who submitted NTR. The proportion of NTR received from all eligible residents between 2011 and 2014 was 24 percent (1834 total NTR) and the data exhibited a normal distribution. Therefore, maximum variation was based on sites in the bottom *and* top 10 percent in terms of proportion of NTR, and sites within 10 percent of the 2011–2014 proportion of NTR (i.e. low, average, and above-average proportion of NTR). This approach ensured that the researchers could capture the range of sites and responses to tree-planting (Kuzel, 1999; Patton, 2001).

**Table 1**
Demographic characteristics of TGD staff, board members, and volunteers *interviewed* (n = 14).

| Demographic characteristic | Categories of response | Number of TGD respondents |
|---|---|---|
| *Length of time with the organization* | 5 years or less | 9 |
| | 6–10 years | 1 |
| | 11–15 years | 0 |
| | 16–25 years | 4 |
| *Role(s) within the organization* | Employee | 10 |
| | Former employee | 1 |
| | Board member | 3 |
| *Status as a resident of Detroit, Michigan* | Never have lived in the city | 6 |
| | Former resident of the city | 4 |
| | Current resident of the city | 4 |
| *Gender* | Female | 8 |
| | Male | 6 |

Forty-one interviews occurred with 43 residents, since family members were sometimes interviewed together. Of the 41 interviews, 20 submitted NTR and 21 received trees. Approximately 60 percent of city residents interviewed were women, and two-thirds were retired home owners. All residents interviewed were non-white, based on the researcher's visual assessment of their race (Table 2). Key informants advised against asking residents to identify their race, since it could discourage participation in the study, particularly given the interviewer's status as a white woman who was not from Detroit.

### 3.4. Data collection methods

Audio-recorded interviews with TGD staff, board members, and volunteers occurred from mid-August 2015 through May 2016. Data via field notes were collected at several events based on interactions with TGD staff members and residents. These events included tree planting events, fund raisers, and board meetings. Data collected from TGD included: (1) The decision-making process for the tree-planting program, (2) benefits of the current approach, and (3) potential negative impacts of tree-planting.

Leaders of block clubs, or neighborhood-based organizations, informed methods used to invite residents to participate in the research. Multiple methods of data collection occurred between July 2015 and

**Table 2**
Demographic characteristics of city residents interviewed from three types of neighborhoods, based on proportion of residents who submitted NTR (n = 43).

| Demographic characteristic: | | Type of neighborhood, based on proportion of NTR submitted | | | |
|---|---|---|---|---|---|
| | | Low NTR (n = 9) | Average NTR (n = 21) | Above-average NTR (n = 13) | Total: |
| Gender | Female | 5 | 12 | 10 | 27 |
| | Male | 4 | 9 | 3 | 16 |
| Age group | Retired | 8 | 10 | 11 | 29 |
| | Working age | 1 | 6 | 1 | 8 |
| | Unknown | 0 | 5 | 1 | 6 |
| Home ownership | Own | 5 | 9 | 13 | 27 |
| | Rent | 1 | 3 | 0 | 4 |
| | Unknown | 3 | 9 | 0 | 12 |

May 2016 to ensure a more representative sample that did not exclude residents based on how they could be reached or their preferred method of communication (Buch and Staller, 2007). Data collection methods included audio-recorded individual interviews, field notes from doorstep interviews, and fields notes and transcribed dialogue of discussion at community meetings. Data collected from residents included: (1) Response to tree-planting, (2) decision-making involvement, (3) potential positive impacts of tree-planting, and (4) potential negative impacts of tree-planting.

### 3.5. Data analysis methods

Audio-recorded data were transcribed and coded in Nvivo, a qualitative data analysis software, along with typed field notes. Interview data and field notes were first analyzed for theory-driven codes. Data-driven codes were then created to capture emergent themes. Coding was an iterative process whereby the researcher reviewed and coded each source of data until no new ideas emerged (Emerson et al., 2011). The first author and a research assistant separately coded portions of the same data to ensure inter-rater reliability.

The researchers facilitated discussions with two community associations in a process of modified member checking to increase the credibility of the research results (Kirsch, 1999; Maxwell, 1998). Residents received a survey describing six possible responses to tree planting and were asked to indicate the categories with which they aligned. These were modified member checks, since respondents were primarily those who did not provide the original data collected. This strengthened the validity of the results, particularly transferability, by examining the degree to which the results were applicable to a larger group of residents beyond those interviewed originally.

## 4. Results

The results below outline the decision-making process The Greening of Detroit utilized for the street tree-planting program, the reasons for their decisions, and what aspects of decision-making process were problematic for some residents and why. These findings help to illuminate who felt they won and lost with each step of the decision-making process, and the overall outcome of the tree-planting program. The results begin with perspectives of those within the non-profit organization (subsection 4.1), and end with the views of residents who submitted "no-tree requests" (NTR) or received a tree (subsection 4.2).

### 4.1. How should The Greening of Detroit engage residents in tree-planting?

The Greening of Detroit's 2013 annual review states, "…we engage the residents and their community organizations in planting the trees they requested on their streets." However, interviews with staff and board members revealed the limitations of their engagement approach in providing residents with opportunities to influence decision-making at major points in the tree-planting process. The greatest degree of resident involvement came through the ability to submit an application to have a tree-planting event in one's neighborhood. Other neighborhoods did not request tree-planting events, but The Greening of Detroit (TGD) selected these areas for tree-planting based on goals stated in grants from entities interested in implementing green infrastructure projects. For example, the Detroit Water and Sewerage Department provided funding to plant trees to reduce stormwater overflow in areas along the Rouge River.

Upon selecting neighborhoods for tree-planting events, community relations staff members (2–3 full-time employees) received between one week and one month to engage with residents in those locations, as one employee noted: "…we just got our final tree-planting schedule September 1st. The first tree planting is October 3rd. So luckily, that's quick. I mean, that's good. Usually it's like a week before, so what can we do? Nothing." For some staff members, this protracted timeframe for discussions with residents resulted from a shift in priorities within the organization to achieve larger-scale tree-planting. One staff member explained, "Everyone's thinking bigger. I feel like the Board's really pushing us to do bigger things that are really going to get us noticed and cause more of an impact…"

This emphasis on benefits associated with planting a larger number of trees was echoed by another staff member: "I think the benefits of our current model is the numbers we can get in the ground. We get a lot of trees in the ground." A different staff member said, "…every tree in the ground has an X amount of carbon dioxide reduced, and X amount of stormwater absorbed, and also filtered, cleaning particulates out of the air, there's really no downside to planting trees." Another staff member noted, "The only negative thing is that we can't plant more trees…"

Within this system of larger-scale tree-plantings conducted efficiently, 'community engagement' focused on provision of information to residents about the decisions already made. The focus on educating residents on the benefits of trees was also connected to a historical narrative about residents and their experiences with a lack of trees in the city, which one board member shared:

> Just constantly educating people about why what we're doing is important and about sort of what they give up by refusing a tree that we're offering…if they don't know what they're missing, they've never had those benefits, all they see is the negatives.

In response to residents who submit tree-planting applications, one staff member said, "We just tell them like what our standards are, how we do our tree planting, like what's going to go down and maybe see what kind of community group they have going, how active it is in the community." At least one staff member would attend one or more meetings for the community groups, to share information about the organization's perspective on how and why tree-planting would benefit the neighborhood. As one staff member said:

> We explain the trees, the history of the trees, the history of Detroit, what's a good tree, what's a bad tree. Along with my booklets. They sit along where we give em the presentation and they can go through and they can look at the tree they're actually getting, and the leaves, maintenance... I told him [a colleague], we need to embrace the community because they just don't know, ya know, what a good tree is and what a bad tree is... We need to let them know the type of trees we're planting, the benefits of that tree.

Approximately two weeks prior to a tree-planting event, staff members would distribute door hangers in the neighborhood. Some TGD staff members avoided dialogue with residents at this stage:

> So we're pretty pressed for time, got a lot of work to do, limited staff, so we tend to do things like that during times where we know folks

> will not be home so that we can expedite that process. And then if they do see the flyer, then they can call in and make their complaints known.

Another staff member in community relations said this approach had changed to allow for dialogue with residents: "We started knocking on doors, talking to people… I go out when they flyer, I flyer, and I also go out during the tree drop." One staff member noted a lack of emphasis on resident involvement in the tree-planting decision-making process due to organizational attitudes toward community engagement:

> It's kind of one of those things that gets brushed off, like, 'oh, we've done this for 25 years, it's super easy to do.' But I think that it gets lost on people the amount of work that actually goes into the entire process. And having started from a small tree-planting organization to some of these large-scale plantings, the reaction [of residents] is very different.

Another staff member indicated that while planting trees is beneficial, there can be some unintended consequences for residents:

> …this wouldn't necessarily be an enduring long-term negative impact, but when community engagement is not done thoroughly or effectively, people may feel like the tree that was planted in front of their house was something else that was done to them, instead of for them.

#### 4.1.1. Selecting tree species to plant

TGD selected tree species to plant based on several factors, as one staff member said: "…it depends on the area, as you know, the utilities, the other tree that's planted there already at the other house, how much it'll spread. So right now, we're still doing shade trees and ornamentals." One staff member indicated that the program would be overall beneficial to residents because TGD's staff selects species to plant that are "street appropriate": "So, like ones that people are actually going to enjoy and they're gonna become established and they're not gonna destroy the property basically." A staff member said that inappropriate species selection by city officials in the past influenced the organization's approach to species selection:

> The top two species that were planted in Detroit are silver maple and Norway maple, and one of the reasons why these were planted was they were cheap to grow…and require little maintenance. But what wasn't known at the time was that these two species have a lot of negative impacts. Silver maples will actually grow into the cracks of sewers and break apart the sewer structure... All of the species we plant now have what is called small root crown ratio, so [they] will not have large surface roots that will lift sidewalks and break apart curbs.

Occasionally, this process allowed for some involvement of residents in selecting a species of tree to plant, though it was not systematic or formalized. One staff member said, "If they don't want shade trees we try to talk them into the ornamental trees." While observing staff members as they marked lawns to indicate what type of tree would be planted there, a researcher witnessed a resident telling a TGD staff member that she wanted a tree, but not a crabapple. The staff person made a note that a crabapple should not be planted at that address.

This range of resident experiences with involvement in tree-planting, from no prior notification to involvement in species selection, was reflected in the interviews conducted with residents (Fig. 2). Fourteen out of 25 residents who discussed decision-making involvement said they received some notification of the tree-planting and decided to submit a "no-tree request" (NTR) or accept a tree. Four residents submitted an NTR while 10 accepted a tree.

#### 4.1.2. Tree maintenance after planting

Although the organization committed to maintaining trees planted for three years, there was limited dialogue and no shared decision-making power with residents about tree maintenance needs and responsibilities. As one staff member described, "We encourage them to go out and water, and even on the community application it says you are responsible to water your tree, but we still go out and do it for three years." When asked what happens with tree maintenance after the first three years following tree planting, another staff person said, "it's up to the resident, because they are off the books."

This expectation of resident involvement in tree care partly came from the lack of city government or external investment in tree maintenance, as two staff members explained:

> …we don't have a financially capable partner. You know, it would be nice if the city came and helped out and it would be nice if we could actually remove trees, or just cut down trees. But the insurance is too high.

> In the city of Detroit, the Greening of Detroit is the only agency that does maintenance on trees with the exception of removal, and we don't have the funding to provide the structural pruning maintenance. That would yield more positive results quicker.

Lack of funding for tree maintenance was linked to perspectives on the value of this activity among funders and within the organization, as one staff member explained: "I think that it's really sexy to plant trees and fundable to plant trees but it's not sexy to maintain or to monitor those trees." Another staff member said, "as our scope has expanded, I do think that reduced maintenance as a priority."

### 4.2. Residents' responses to the tree-planting decision-making process

Six categories of response to tree-planting emerged, which reflected residents' satisfaction with their level of involvement (Table 3). Those who felt they won (i.e. they were able to have their values integrated into the tree-planting program) included residents who were happy with the tree they received (Category 6) and residents who were able to submit a "no-tree request" (NTR) and avoid having a tree planted that they did not want (Category 1). Those who felt they lost (i.e. they were unable to have their values integrated into the tree-planting program) included residents who were unhappy with the tree they received or submitted an NTR when they actually wanted a tree, but with greater assistance with maintenance or decision-making power in species selection (Categories 2–3), or removal of a dead tree first (Category 5). Additionally, anyone who wanted more information about the tree planted (Category 4)—which included some who accepted a tree—lost in some ways by not receiving valued knowledge about the trees. These categories will be used to compare residents' perspectives on the benefits of trees (subsection 4.2.1) and the potential negative impacts of tree-planting (subsection 4.2.2), thereby providing a better understanding of the reasons for residents' differing responses to tree-planting.

#### 4.2.1. Residents' views on the benefits of trees

While The Greening of Detroit's staff focused on educating residents about the benefits of tree-planting to gain buy-in to the program, the data revealed that views on the general benefits of trees did not vary among residents based on response to tree-planting. As a group, residents identified 10 potential positive impacts of planting trees (Table 4). Residents across all responses to tree-planting noted shade, beauty, and oxygen as benefits. Residents who submitted NTR or were happy to receive a tree both noted carbon dioxide capture and "helping the environment." Additionally, regardless of whether residents were happy to receive a tree or would have liked greater involvement in the tree-planting process, benefits mentioned included: Habitat for wildlife, property value increase, and "helping the community." Two benefits noted only by those happy to receive a tree were: roots cleansing the soil, and increasing the tree canopy.

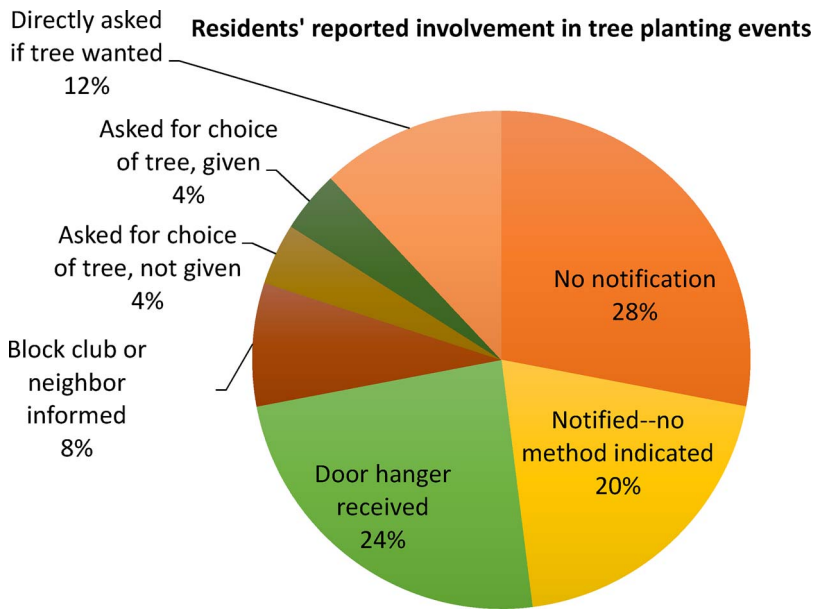


**Fig. 2.** Decision-making involvement in TGD's tree-planting events reported by residents (n = 25).

**Table 3**
Categories of responses toward tree planting expressed by those who submitted an NTR or received a tree (R) (n = 41). Number of respondents for each theme is provided in parentheses[a].

**1. Would not accept a tree** (16 NTR)
- Maintenance concerns: leaves, pruning, root damage

**2. Would accept a tree with maintenance of tree and/or infrastructure** (3 NTR, 3 R)
- General tree care, pruning, watering, underground infrastructure

**3. Would accept a tree if I could choose the type of tree** (4 R)
Preferred:
- Flowering/smaller tree species
- Trees with lush green leaves
- Tree without berries that fall

**4. I want more information about a tree planted** (2 NTR, 5 R)
- Tree growth patterns, care responsibilities, appearance over time, benefits of trees, maintenance assistance available

**5. Once a dead tree is removed, I would accept a new tree** (1 NTR)
- Safety or nuisance concern (1)
- Not enough space for new tree (1)

**6. Happy to accept any tree planted** (14 R)
- Believe trees planted would be better than species planted in the past
- Lack of trees in the area
- Able to choose preferred tree

[a] All respondents in Category 4 overlapped with other categories, so they are omitted from the count of "n" respondents for this theme.

### 4.2.2. *Concerns about negative impacts of tree-planting*

Residents across all categories of response to tree-planting also shared many of the same perspectives on potential negative impacts of tree planting, with an emphasis on maintenance and upkeep. However, the *degree* of maintenance concerns varied across categories of response to tree-planting. For instance, only those who did not want a tree at all (or wanted a tree under certain conditions) noted issues with existing large, dead trees or costs to keep up existing trees. A woman who would have accepted a tree if an existing tree was removed first said, "There is a big tree across the street leaning and it looks like it's going to fall on a car. The city came and looked at it but didn't do anything." A retired male resident who did not want a tree at all said, "I tried to get trees down for 20 years that were messing up the sewage. When I called the city, I got the run around." Another resident who would have accepted a tree with maintenance said, "The city doesn't do nothing for the tree…someone could get hit in the head [by a tree branch]." Residents who did not want a tree at all (Category 1) also noted more possible issues with trees, like sprinkler damage, decreased visibility, or crowding with existing trees than those who were happy to receive a tree (Category 6) or those who would accept a tree under certain conditions, signifying a potential connection between openness to tree-planting and experience with certain safety or financial issues with trees.

While TGD's approach to species selection included considerations about maintenance, this information either did not reach residents or did not address the entirety of concerns that residents had regarding maintenance. Nine of 41 residents interviewed said they would have

**Table 4**
Residents' perceived aesthetic, environmental, and social benefits of tree planting, based on category of response to tree planting (n = 27)[a].

| Aesthetic and environmental benefits of tree planting | Category 1: No tree wanted (n = 6) | Category 2: Would accept a tree with maintenance (n = 4) | Category 3: Would accept a tree with choice of species (n = 3) | Category 6: Happy about tree received (n = 14) |
|---|---|---|---|---|
| 1. Shade | 4 | 3 | 2 | 8 |
| 2. Beauty | 2 | 2 | 2 | 9 |
| 3. Oxygen | 3 | 1 | 2 | 5 |
| 4. CO2 capture | 1 | | | 1 |
| 5. "Help the environment" | 1 | | | 2 |
| 6. Home for birds and/or squirrels | | 1 | | 1 |
| 7. Roots cleanse soil | | | | 1 |
| 8. Increase the canopy | | | | 2 |
| Social benefits of tree planting | | | | |
| 9. "Help the community" | | 2 | 1 | |
| 10. Property value increase | | | 1 | 2 |

[a] All respondents in Category 4 (I wanted more information about the tree planted) overlapped with other categories, so it is omitted from this table. No respondents in Category 5 (I would accept a tree once a dead tree is removed) provided data on the benefits of tree planting.

accepted a tree willingly if they could be involved in selecting the species planted, often referring to past experience with tree maintenance challenges when describing their desire for more involvement. Four residents specifically noted a lack of city services to maintain trees. As one woman who received a tree said:

> I think when they planted the tree they should have asked me, gave me a choice, do you want this one, this kind or this kind? If there's two different kinds or however many... Even though it's the city property, we're gonna end up having to care for it and raking leaves and God knows whatever else we might have to do.

A block club leader who received a maple tree, even though she wanted a species that would be smaller at maturity, referred to size in terms of aesthetics and ease of maintenance: "When I think about bringing a tree to your neighborhood, again, my mind went to the small, beautiful, blooming tree that won't grow very tall... So just say that um the maples and elms and all that, we do not need those on these small pieces of property."

These perspectives on aesthetics, size, and ease of maintenance also emerged in the responses of those who were happy to receive a tree. Five of 7 residents who were happy to receive a tree despite a lack of choice were either new to the neighborhood or reported no city service issues. Some residents said they received assurances that the tree would not grow very large. As one young male renter who accepted a tree said, "they [TGD] said they [trees] didn't really grow that large so that's another positive." One resident was happy with the tree she received because it was a flowering species: "I was like, 'Oh my God! I like this one, yay!'…because I like any one with flowers and it has flowers on it."

Residents who submitted an NTR emphasized concerns with tree root damage to infrastructure or sidewalks, or general tree maintenance. An elderly female resident who submitted an NTR said, "Everybody wants beauty in their neighborhood and they like to see the trees, but, yeah, I don't want to be responsible for those trees." For some residents, this issue extended to trees planted by TGD. One man who accepted a tree perceived a lack of adequate communication regarding maintenance expectations and responsibilities:

> I've left several messages. My tree was planted last August. My wife loved it. It was a Japanese pink or mocha color blossoming tree. I was told that they would come back out and either water it or fertilize it. Haven't seen anyone. So I've been doing the best that I can, but... So where do I go from here?

## 5. Discussion

This study provides a deeper understanding of how power dynamics between a non-profit tree-planting organization and city residents in Detroit, Michigan led some residents to submit a "no-tree request." Results showed that the non-profit organization exercised sole decision-making power over tree species selection and approaches to tree maintenance, yet expected residents to take an active role in tree care. A decades-long history of negative experiences with trees, lack of city tree care, and inadequate city services broadly caused two-thirds of residents interviewed to either submit a "no-tree request" or only want a tree under certain conditions, including greater assistance with maintenance or the ability to select the type of tree planted.

Several staff and board members within The Greening of Detroit (TGD) understood that residents' negative experiences with tree damage to infrastructure, coupled with limited city management of trees in general, led to resistance to tree-planting. However, very few individuals within the organization noted how the current process used for tree-planting could *contribute* to resistance by continuing to exclude residents and their values from the decision-making process about how trees are managed in the city.

Instead, TGD staff and board members primarily believed that residents required education about the general benefits of trees and the "urban appropriate" species selected by the organization in order to accept trees. Residents across all responses to tree-planting identified many of the same general benefits of trees, suggesting that further education about the general benefits of trees would do little to increase residents' buy-in to the program. Additionally, even residents who were happy with the tree they received wanted more information about how fast and/or tall the trees would grow and how to care for the tree. This information need was not met by telling residents about how the species of trees planted now would be "urban appropriate." Overall, the tree-planting process did not provide a space for discussion or negotiation of species selection or tree maintenance needs and responsibilities. These results concur with Conway's (2016, p. 29) findings of "…the need for municipalities to better consult with residents when establishing urban forestry goals and identify actions residents can take to help meet adopted city's goals."

The implications of these results are wide-reaching. First, to gain more resident support for (and involvement in) the tree-planting program, TGD will need to provide opportunities for residents to be more intentionally involved in selecting the species of trees planted in front of their houses, rather than the ad-hoc method of giving residents a choice of an ornamental tree if they refused a shade tree. To achieve this deeper level of resident engagement entails selection of locations for tree-planting more than one month ahead of a tree-planting event. Additional time for community engagement in each location would allow staff members to present available species and enable residents to interact with TGD about species that would achieve mutually valued goals, such as improvement of air quality and beautification of the neighborhood, while balancing degree of maintenance needed. This step not only requires investment of time by TGD, but a willingness to consider a wider range of possible species assemblages to incorporate residents' values and concerns, and not just those of TGD.

These results also imply that TGD will have to accept that while this more in-depth engagement will likely lead to more acceptance of tree-planting among residents, a portion of residents will still submit a "no-tree request," after weighing the possible costs and benefits. TGD can facilitate informed decision-making among residents, but shared power requires that residents retain the right to abstain from the program. Although some within TGD may feel that this decision is a net loss for the resident and the city's tree canopy, this is not necessarily objectively true, as there are many uncertainties in the execution of such programs. Further, the resident is more apt to feel that they have "won" and may still support the goals of the organization to plant trees throughout the city, even if they choose not to have a tree in front of their house. Giving residents autonomy to determine the activities that occur in their neighborhoods will not lead to unanimous agreement about how to improve the urban tree canopy, but the results of this study suggest that it can foster greater confidence in the overall intentions of an organization that wishes to improve the justness and health of the urban tree canopy.

Mechanisms for following up with residents after tree-planting would also help to garner support for tree-planting, and allow for adaptation in maintenance protocols to account for emerging issues residents and TGD face, such as barriers to regularly watering trees, or trees that decline in health despite regular watering. This suggested policy shift is more time-intensive in the early steps of a tree-planting program, but could support and inspire long-term resident investment in tree maintenance, and may also help TGD prioritize their limited resources on activities that require special skills (e.g. pruning branches).

Lastly, tree-planting organizations like TGD can use the results of this study to structure their conversations with funders who help finance improvement of the urban tree canopy. As this study shows, it is not possible to increase one's operations from small to large-scale tree-planting initiatives that result in a healthier tree canopy over the long-term without a concomitant increase in organizational capacity to engage community residents in this work. Perkins (2015, p. 31) similarly

notes that, "…planting shade trees everywhere without communicating and working with residents will not be the solution to environmental injustice." Therefore, the more intensive community engagement strategy suggested above will require this effort to either be conducted at a smaller scale with existing staff resources, or greater funds to increase the capacity of the organization to work with residents. The results of this study provide an opportunity for TGD and similar organizations to demonstrate the expected benefits of increased investment in community engagement to funders whose focus is on improving the urban tree canopy.

## 6. Conclusion

Previous scholarly work on environmental justice as a social movement and urban political ecology pointed to a need to examine how residents and the non-profit organization that planted trees in Detroit, Michigan characterized the problem with the street tree-planting program to ascertain the reasons for submission of "no-tree requests" (NTR). Specifically, perspectives were sought on the following questions related to the street tree-planting program: Who wins? Who loses? Who decides? The results show that the non-profit organization's perspectives predominately guided action and at times conflicted in notable ways with those of residents. In particular, residents expressed concerns about long-term management of city trees to avoid negative financial, safety, and aesthetic consequences for their neighborhood and properties. These findings helped to explain residents' resistance to or dissatisfaction with the street tree-planting program.

A lack of attention given to understanding the range of potential negative impacts of tree planting, and ways to manage these impacts, is not unique to the city of Detroit, Michigan. Lyytimäki, Petersen, Normander, and Bezák, (2008, p. 164) assert, "Most studies and assessments describing provisioning, regulating, cultural, supporting or other ecosystem services explicitly or implicitly focus on 'goods' produced by green and blue areas, while "bads" are usually noted only briefly or left without attention." The development of urban forestry goals that aspire to cultivate environmental justice requires those with decision-making power over the tree canopy to integrate the lived experiences of those who refuse trees into policies and practices, which includes costs that disproportionately impact city residents in marginalized neighborhoods.

Remediating this situation, in part, necessitates a paradigm shift among tree-planting organizations and their funders. Planting a large number of trees cannot be a desirable goal in and of itself, nor the primary focus of strategies to achieve a healthier urban tree canopy and supportive community. This change in modes of operation implies that the measures of success for tree-planting programs cannot rest solely on the number of trees planted, or the survivability of trees three years after planting. Instead, to gauge long-term outcomes of tree-planting efforts will involve expanding metrics of success to include community engagement in decision-making, resident satisfaction with tree-planting, and resident involvement in tree stewardship over time.

To fulfill these broader indicators of success requires that organizations provide information about trees that is relevant to residents, such as anticipated appearance of trees and maintenance needs *over time* (e.g. watering, pruning). The ability to mobilize resources to act on an environmental justice issue is a key factor theorized to impact involvement in a social movement like tree planting. Resources include time, money, and knowledge of collective action strategies (Taylor, 2000). In this study, residents expressed limited ability to mobilize relevant knowledge of trees and tree care to participate in planting and stewardship.

City residents will also need to have a say in who should be responsible for various aspects of maintenance, acknowledging the assets and limitations of each of the groups involved (i.e. city government, non-profit organizations, residents and neighborhood organizations). Given the retreat of the city government from tree maintenance and limited capacity in general among municipalities to provide a range of city services, dialogue that facilitates shared decision-making and responsibility between non-profit organizations planting trees on city-owned property and city residents is a key component of tree-planting programs.

Future research should engage communities where these policy recommendations are applied to examine their efficacy. This includes perspectives on how increased involvement in decision-making and stewardship impacts residents' satisfaction with tree planting. Many scholars have noted the importance of urban forestry governance that is adapted to each local context where it occurs. In particular, understanding power relationships that shape urban forests can allow practitioners to develop programs that do not simply reinforce or magnify existing inequalities between participants that occupy different roles in the system (Bullock and Hanna, 2012; Konijnendijk van den Bosch, 2015).

The research fills a gap in understanding drivers of resistance to tree-planting programs, and particularly aspects that require more careful consideration and modification to achieve mutually valued goals of diverse participants in forestry programs. The degree to which urban and community forestry programs provide benefits such as improved air quality, social cohesion, and mitigation of urban heat island effect will depend upon how effectively those leading these efforts engage the citizens most closely affected. This study reveals that effective community engagement in tree-planting stems from a nuanced view of the roles held by various groups and individuals in fulfilling a range of values.

## Acknowledgments

Thank you to Quinton Merrill for help with data collection and preparation. Thank you also to the many willing research participants. This research was funded by Michigan State University Department of Forestry and College of Agriculture and Natural Resources, and The Greening of Detroit.

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