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It's Not Easy Going Green: Obstacles to Tree-Planting Programs in East Baltimore

Michael Battaglia
Michigan Technological University Research Institue, mb807208@ohio.edu

Geoffrey L. Buckley
Ohio University, buckleyg@ohio.edu

Michael Galvin
SavATree, mgalvin@savatree.com

Morgan Grove
USDA Forest Service, jmgrove@gmail.com

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In 2006, government officials in Baltimore announced plans to double the city's tree canopy over the next thirty years. While the effort has already produced positive results, many parts of the city still lack trees. In this paper we consider whether two neighborhoods in East Baltimore – Berea and Madison-Eastend – are suitable locations for tree planting. We begin by calculating how much plantable space exists in each neighborhood. We then use interview data to cast light on how residents value the urban forest and whether or not they would support efforts to increase tree canopy in East Baltimore. The selection of East Baltimore as a study area is significant because it was here that the city's Division of Forestry encountered resistance to tree planting in the 1960s. A secondary goal of our research is to determine whether a shift in the ethnic profile of this section of the city over the past fifty years has changed the way residents perceive and value the urban forest. Our results show that while there is enough plantable space in these two neighborhoods to increase tree canopy, from approximately six percent to over 16 percent, residents are not yet ready to fully embrace an aggressive tree planting program.

Keywords
Baltimore, perception of urban trees, plantable space, Urban Tree Canopy, UTC

INTRODUCTION

While the urban forest is valued for the many environmental benefits it provides – such as reducing storm water flow, impeding soil erosion, and mitigating the urban heat island effect – a large and growing body of evidence points to the social and public health benefits of strategically planted trees. These include improvements to human health (Takano et al. 2002; Lovasi et al. 2008; Mitchell and Popham 2008), energy savings (Akbari and Konopacki 2005), and higher market values for homes (Payton et al. 2008; Sander et al. 2010). An increase in urban tree canopy (UTC) has also been linked to lower crime rates (Kuo and Sullivan 2001; Troy et al. 2012). For these and other reasons, cities across the U.S. are measuring tree canopy, adopting UTC goals, and developing programs to pursue these goals (United States Conference of Mayors 2008). Grow Boston Greener, Million Trees LA, MillionTreesNYC, and The Chicago Tree Initiative are just a few examples of programs with ambitious plans in place to increase canopy coverage in their respective cities.

Given the challenges of growing trees in an urban environment, advocates acknowledge that only a mix of planting on public *and* privately-owned and managed lands will allow cities to achieve a broad range of UTC goals (Grove et al. 2006). Thus, cities like New York have adopted an "All Lands, All People" approach, which takes into consideration the tree-growing potential of all urban lands – from parks and public rights-of-way to residential parcels, commercial properties, and vacant lots. This approach embraces cooperation and collaboration among government agencies and NGOs, and promotes the collection and integration of social and ecological information (Locke et al. 2013).

To promote expansion of the UTC as well as safeguard a city's investment in trees, Grove et al. (2006), Raciti et al. (2006), and Locke et al. (2010) recommend adoption of a strategy that incorporates the "Three P's" – Possible UTC, Preferable UTC, and Potential UTC. The first step involves mapping Possible UTC. Possible UTC refers to any non-road, non-building, or non-water land; that is, any location in the city where it is biophysically possible to plant trees. As living components of the urban ecosystem, trees must be planted in locations – and under conditions – that permit their survival. This may be difficult in an urban environment that lacks open space. The second step is to determine Preferable UTC; that is, identify where it is socially desirable to plant trees. In essence, where are trees needed and where are they wanted? This stage opens the door to public involvement in the decision-making process. Finally, Potential UTC centers on the economic feasibility of planting trees in a given location.

Like many cities, Baltimore is seeking to expand its urban tree canopy. In 2006, government officials launched TreeBaltimore, an initiative to double the city's tree canopy to 40 percent by 2036. Although overall coverage has increased since implementation of the new urban forest management plan, many parts of the city still have extremely low canopy cover (Galvin et al. 2006; O'Neil-Dunne 2009). To ensure that all citizens have access to the benefits of urban trees, it is imperative that resource managers and other decision makers recognize and address these disparities – a concern driving research agendas in many U.S. cities (e.g., Landry and Chakraborty 2009; Danford et al. 2014; Wolch, Byrne, and Newell 2014).

In this paper we address several issues associated with the Possible and Preferable components of a city's urban tree program and its ability to achieve a UTC goal. Our research focuses on two neighborhoods in Baltimore: Madison-Eastend and Berea. These two neighborhoods are high priority areas for increasing UTC (Locke et al. 2013) and have a history of unsuccessful tree planting programs since the 1960s.

We explore three research questions. First, is there sufficient space in the Madison-Eastend and Berea neighborhoods of East Baltimore to support an aggressive tree planting effort? Second, do residents in these two districts want more trees and, if so, are they willing to support tree-planting programs? Finally, we ask whether a change in the ethnic profile of these two neighborhoods since the 1960s has caused a shift in the way trees are perceived. Ultimately, a goal of this research is to help urban forestry personnel more effectively manage the city's urban forest by better understanding some of the variation in perceptions, values, and preferences for urban trees among urban residents.

PERCEPTIONS OF THE URBAN FOREST

While the benefits and costs of urban trees are well documented, less is known about the complex relationship that exists between people and urban green spaces (Balram and Dragicevic 2005). More specifically, how do residents of different cultural and socioeconomic backgrounds perceive and value the urban forest? The question is a significant one as failure to address the needs and desires of residents can pose problems for resource managers pursuing UTC goals. This is especially true if the city in question must depend on citizen support and cooperation to ensure the survival of young trees (Lu et al. 2010).

An early survey conducted in Detroit found that 63 percent of residents preferred to live in neighborhoods where the streets were lined with shade trees and small flowering trees. Only two percent responded that they did not want trees on their streets. The benefits identified most often by respondents were "pleasant to look at," "gives shade," and "increases property values." The participants were 70 percent African American and 30 percent white, with a relatively even distribution of income levels (Getz et al. 1982). A study carried out in a suburb of New Orleans produced similar results, with "aesthetic/visual," "gives shade," and "attracts wildlife" emerging as the most important perceived benefits. Eighty-six percent of respondents said that protecting trees was highly important, with 80 percent saying they would pay higher taxes to maintain the urban forest (Lorenzo et al. 2000).

Lohr et al. (2004) administered a nationwide phone survey to identify both perceived benefits and perceived problems relating to urban trees. According to the survey, the most important reasons to have trees were to "shade and cool" and "help people feel calmer." When asked about problems associated with trees, residents mentioned allergies and obstruction of store signs. The authors also determined that older respondents and those with higher levels of educational attainment were more likely to link trees with quality of life. Gorman's (2004) survey results from State College, Pennsylvania also suggest a correlation between positive attitudes toward urban trees and higher levels of educational attainment. Respondents in this study listed "give shade," "pleasing to the eye," "flowers on tree," "neighborhood more livable," and "increase property value" as positive attributes of trees. Negative features related to public

safety, such as damage to sidewalks and power lines. In their study of Alabama's urban forests, Zhang et al. (2007) found that awareness of forestry programs, employment, age (in this case, 56 years or younger), and annual income ($75,000 and higher) correlated positively with willingness to contribute money and volunteer time to urban forestry activities. Race, gender, and residence were not significant factors when it came to explaining attitudes toward urban trees (Talbot and Kaplan 1984).

Preferences for open space and recreation areas are often discussed in the context of culture (Gobster 2002; Elmendorf et al. 2005; Pincetl and Gearin 2005). In such cases, "culture" is inferred through race or ethnicity. Fraser and Kenney (2000), for example, reported that tree preferences in Toronto, Canada were divided along ethnic lines. Their findings indicate that residents of English descent prefer large shade trees, while Portuguese and Italian residents favor small fruit-bearing trees. Meanwhile, Chinese residents did not encourage tree planting in their neighborhoods. The authors maintain that these preferences are intimately tied to the landscape histories of each respective group's country of origin. Similar to Lohr et al. (2004), who found that a significantly lower percentage of African Americans and Asian Americans said trees were important to quality of life compared to other ethnicities, several studies suggest that African Americans tend to favor parks and recreational areas with fewer trees due to concerns about safety and crime (e.g., Gobster 2002; Brownlow 2006; Lewis and Hendricks 2006).

STUDY AREA

East Baltimore is one section of the city that has long exhibited a noticeable lack of trees. In an early attempt to increase UTC, the mayor's office, in 1965, allocated $326,000 to plant 8,000 street trees per year over a multi-year period. However, a tree survey conducted by city forester Fred Graves revealed that the cost of planting trees in East Baltimore alone – one of fourteen city sections surveyed – would exceed $385,000, more than the entire budget for the tree-planting effort and more than four times higher than the next most costly section of the city. Graves noted that East Baltimore was "practically denuded of trees" and that "the entire area has solid cement sidewalks without openings for trees" (quoted in Buckley 2010, 170). Despite high cost estimates, the Division of Forestry started to plant trees in East Baltimore two years later. It was at this time that city officials discovered another problem: many residents opposed tree-planting programs in their neighborhoods. Known in the local press as the city's "tree rebels," these residents claimed to prefer "clean, uncluttered concrete" to urban trees (Figure 1). They further argued that, "Trees belong in the country, not the city." According to Graves, this anti-tree sentiment was not evident in other parts of the city (quoted in Buckley 2010, 171-172).

Much has changed in the fifty years since residents of East Baltimore voiced opposition to the city's plans for tree planting. As manufacturing jobs declined, so too did East Baltimore's population. Formerly occupied by a diverse mix of immigrants from southern and eastern Europe, the area is now inhabited largely by African Americans. One thing remains constant – the area lacks trees, and thus it is an important target area for TreeBaltimore. However, the decision to plant trees here should not be made hastily. The limited budget of the Division of Forestry – and programs like TreeBaltimore – makes site selection extremely important. Many variables must be taken into consideration to ensure that new tree planting will be successful.

According to Galvin et al. (2006) and O'Neil-Dunne (2009), Baltimore will not be able to meet its UTC goal of 40 percent coverage by planting trees only in parks and along streets. In fact, such a strategy, even if carried out to its maximum potential, would fall far short. The greatest opportunities for increasing tree canopy in Baltimore depend on other lands. Moreover, they depend on the cooperation and collaboration of private landowners and other community stakeholders all across Baltimore.

Figure 1. An example of "clean, uncluttered concrete" in Baltimore ca. 1948. Note the lack of tree pits in this block and the attention given to the condition of the marble steps (Photo taken by A. Aubrey Bodine, Courtesy of the Maryland Historical Society).

Two neighborhoods, Madison-Eastend and Berea, were selected as study areas for this research (Figure 2). Madison-Eastend is the smaller of the two, occupying 66.7 acres just north of Patterson Park. Berea, meanwhile, comprises an area of 217.6 acres including the expansive Baltimore Cemetery. Selection was based on several criteria. First, it was necessary to pick neighborhoods near the "tree rebel" area of the 1960s to gauge how attitudes toward tree planting may have changed with time and shifting demographics. Another important criterion was to select neighborhoods with differing physical characteristics. Madison-Eastend and Berea vary greatly when it comes to lot and house size, as well as available green space, allowing us to investigate plantable space and resident preferences in different contexts. Finally, the selection was based on a tree planting prioritization scheme developed for Baltimore's neighborhoods. Modeled after Nowak et al. (2007), the plan assigned each neighborhood an index score between 1 and 100. The index is based on population and tree cover densities, with a score of 100 indicating a high population density and low percentage canopy cover and a score of 1 indicating a low population density and high percentage canopy

cover. Of the 271 neighborhoods with adequate data, Madison-Eastend ranked tenth and Berea twenty-third when it came to greatest need for tree planting (Battaglia 2010).

With respect to physical differences, Madison-Eastend is characterized by high-density row houses and a noticeable lack of greenery. Built between 1890 and 1920, the houses are situated close to the street with no space for front yards. Most have a small paved lot in the back, which connects to an alley. Much of the area's green space is concentrated at Bocek Park in the northeast corner of the neighborhood, and in the front of the office buildings located nearby. In contrast, Berea's row houses were constructed later, are relatively large, and have both a front and a backyard. Most residential streets are lined by areas of grass between the sidewalk and the street, known as "tree strips" or "tree lawns." Two neighborhood elementary schools and several churches contain additional green space.
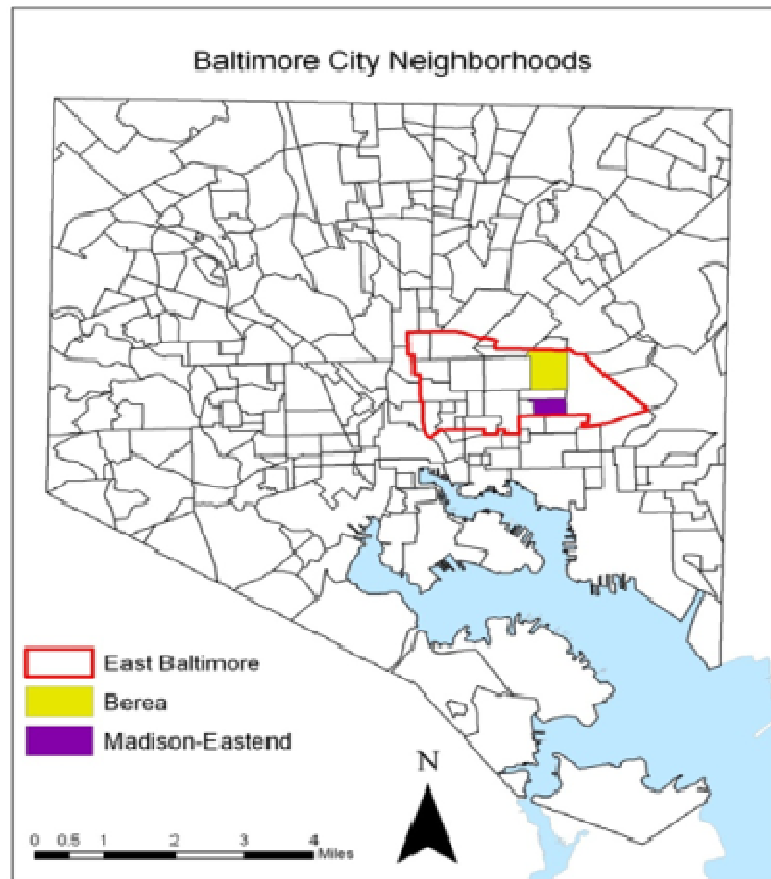
Figure 2. Berea and Madison-Eastend correspond roughly with the location of East Baltimore's "tree rebels" of the 1960s.

Regarding the area's demographic makeup, significant change has occurred in East Baltimore over the last several decades. Between 1970 and 2010 in Madison-Eastend, an area once dominated by working class immigrants of European descent, the African American population increased dramatically, from 14.24 percent to 90.26 percent. At 96.30 percent, Berea's African American population, having secured a foothold in the neighborhood much earlier, has remained relatively constant over the same period. Citywide, African Americans today make up approximately 63.82 percent of the total population (BNIA 2013). Both areas experienced an overall decline in total population from 1970 to 2010.

METHODS AND FINDINGS

Possible UTC

For the purposes of this study, plantable area refers to any pervious surface not covered by tree canopy. To assess plantable area (Possible UTC) within Madison-Eastend and Berea, geo-spatial analyses were conducted using ArcGIS 9.3 software. GIS shape files of neighborhood

boundaries, parcel boundaries, street centerlines, building footprints, pavement edge, tree canopy, and other planimetric data, along with 2008 aerial imagery, were obtained from the Mayor's Office of Information Technology (MOIT). An overlay method, similar to previous studies (Grove et al. 2005; Raciti et al. 2006), was combined with tree pit data we collected to produce final plantable area maps for each neighborhood.

Both neighborhoods in the study area have a considerable amount of possible tree planting space relative to the neighborhoods' size. The plantable area totals 23.55 acres for Berea and 7.08 acres for Madison-Eastend (Figures 3 and 4). Residential plantable space comprises a significant portion of the total for Berea – especially the eastern section – but only a very small amount for Madison-Eastend. This is because many of Berea's dwellings have both front and backyards. Both neighborhoods have planting opportunities along public rights-of-way (PROW) which include all land area that is not part of a parcel, such as roads, alleys, sidewalks, and other public transportation corridors. Other plantable space includes parcels managed by the City of Baltimore, schools, church groups, businesses, or other private entities. Both neighborhoods possess significant plantable space under this category.

With respect to planting opportunities along PROW, we counted 224 street trees and a total of 13,881 meters of potential planting length along Berea's streets, not including the cemetery, alleys, or streets with sidewalks less than four feet wide. According to these numbers, there is one street tree for every 61.87 meters of roadside length. With 7.62 meters between pits, there is a potential to add many more trees. However, the best possibility for planting along the public rights-of-way in Berea is on the open tree lawns. The sum of the open tree lawns' lengths is 2,972.7 meters. Most would be suitable for small or medium-sized trees. (Note: Although data specifying the locations of underground cables and sewage lines were not available, we eliminated from consideration sites where obstacles to tree planting were clearly present, such as locations with overhead electrical wires and street lights.) If tree planting along the public rights-of-way were prioritized, 390 new trees could be installed along the tree lawns alone. Combined with planting in empty tree pits, there is an opportunity to plant 418 street trees in Berea, which would almost triple the number in the neighborhood to 642.

Madison-Eastend has 83 street trees and a total of 6,948.5 meters of space along its roads, yielding an average of one street tree per 83.5 meters throughout the neighborhood. If the goal were to maximize street tree planting, at least 10 trees could be planted along a corridor that currently accommodates just one. The amount of actual plantable space along the public rights-of-way is considerably less. Because of the type of row houses present in Madison-Eastend, the length of the open tree lawns is only 194 meters. At 1.22 meters wide they are able to accommodate small or medium-sized trees. If planting were maximized, 26 new trees could be planted. If every location along Madison-Eastend's public rights-of-way were planted, the number of street trees could be increased from 83 to 140. That said, if both neighborhoods were to maximize tree planting they could increase existing canopy cover significantly – from approximately 5.26 to 16.08 percent in Berea, and from 6.23 to 16.84 percent in Madison-Eastend (Table 1). Cumming et al. (2001) found a stocking level of 13.9 percent for roadside trees across the state of Maryland. Using their 15.24 meter spacing, stocking levels in Berea and Madison-Eastend would be somewhat higher at 24.6 percent and 18.2 percent, respectively.

Figure 3. Berea Plantable Space. Many of the houses in Berea are set back from the street and possess both front and backyards. As a result, there is a great deal of residential plantable space. There are also opportunities to plant trees along public rights-of-way (PROW) and on properties owned by schools, churches, businesses, and the City of Baltimore.

Figure 4. Madison-Eastend Plantable Space. Unlike Berea, there is comparatively little residential plantable space in Madison-Eastend. This is due to differences in housing type and lot size. However, there are opportunities to plant trees along public rights-of-way (PROW) and in "other" plantable spaces, especially Bocek Park, which occupies the eastern third of the neighborhood.

Table 1. Existing and possible tree canopy cover in the study area.

	Berea	**Madison-Eastend**
Total Area (acres)	217.61	66.74
Tree Canopy (acres)	11.44	4.16
Tree Canopy (%)	5.26	6.23
Plantable (acres)	23.55	7.08
Plantable (%)	10.82	10.61
Possible Tree canopy (acres)	34.99	11.24
Possible Tree canopy (%)	16.08	16.84

Preferable UTC

The measures of Possible UTC only take into account where it is biophysically possible to plant trees. The next step was to understand preferences for UTC. Thus, we sought to explore how trees were perceived and valued in the study area and whether residents wanted and would care for additional trees. To determine this, we interviewed residents in both Madison-Eastend and Berea. Initial contacts with interview subjects were facilitated by the TreeBaltimore coordinator; additional respondents were contacted by referral or during the pit survey. After Institutional Review Board (IRB) approval was granted, research trips to Baltimore were carried out in

December of 2009 and April 2010. In total, 26 interviews were conducted. Sixteen of the residents lived in Berea, while ten resided in Madison-Eastend. Sixteen of the respondents were male. All of the residents interviewed were African American and all were at least 18 years of age. A semi-structured interview style was adopted to allow flexibility in the event an informant wished to speak about a topic not covered by the interview guide. Most interviews took approximately 15 minutes to complete. Interview notes were transcribed and later coded. The coding was analytic in nature with each interview assigned codes based on the nature of subjects covered.

While the interview data do not express the views of everyone in the study area, they provide a wealth of information regarding how some residents understand trees. There were several who said they think tree planting is a good idea, citing many of the same benefits mentioned in earlier studies. Some of these, such as aesthetic enhancement and shade provision, were widely acknowledged in Madison-Eastend and Berea. Less obvious benefits, such as water quality improvement and carbon sequestration, were referenced only a few times. While some residents expressed support for new planting, others opposed it. Their reasons for wanting to limit tree planting were wide ranging and included items not mentioned in earlier surveys. In the following two sections, we summarize our findings in terms of residents' positive and negative perceptions.

Positive Perceptions

Of the 26 interviews conducted in the study area, 14 revealed some type of positive perception of urban trees. One of the most widely understood positive attributes of trees was their ability to provide shade. Baltimore has a humid subtropical climate, with temperatures sometimes reaching 100 degrees Fahrenheit during summer months (National Oceanic and Atmospheric Administration 2013). These high temperatures can cause discomfort for residents, especially those whose homes are not air-conditioned, a point confirmed by a male resident of Madison-Eastend: "Man, it sure does get hot here, if you're around in summertime you see everybody sitting outside. No one wants to stay cooped up inside in the heat. Some trees would be real nice to have, especially some big shady ones. Maybe a nice big one right in front of my house!" This feeling was widespread among interview participants. It was especially important to those who did not have access to shaded outdoor areas in Madison-Eastend. One woman stated, "It's like sitting on top of a stove . . . out here." Several interviewees mentioned the common summertime practice of relaxing on the front stoop or porch. This was observed during the summertime tree surveys we conducted, when the sidewalks of Madison-Eastend filled with people during the mid to late afternoon hours. It was also clear that people gravitated to the side of the street that was not in direct sunlight.

Berea residents appreciated shade as well. One woman remarked, "Our block is lucky, we have all these big trees, they keep us cool when it gets to be summer. I know a lot of these blocks don't have any trees at all." A recent high school graduate commented that he was aware of the urban heat island effect, and that he knew tree shade would help reduce it by lowering temperatures. Some residents said they understood that strategically planted trees could save them money on their energy bills. A man in Berea remarked that he was aware of reductions in energy costs through tree planting and that he had planted a tree in his backyard the previous

summer for that reason. Another stated that he knew shade trees could reduce energy costs and, further, that he would like to plant a tree but his yard in Berea was too small.

Residents also valued the aesthetic appeal of trees. A woman living in Berea said, "This block just looks better, people here plant flowers and you get the flowers and the trees all together and it looks nicer than some of the other blocks around here." Another woman added, "I'm glad I live here. It's not the best part of the city, we have our problems, you know? But compared to some other parts, like across the tracks down there, they got it bad. You can go for blocks before you see a tree. . . . That's just depressing." A female resident of Madison-Eastend concurred: "Beautification is important in this area. It's a rough neighborhood. I think if you make it look nicer it wouldn't feel as rough."

The possibility of trees contributing to the mitigation of global climate change was mentioned on two occasions. Although the effectiveness of urban trees as pollution filters and greenhouse-gas reducers has been questioned (Nowak et al. 2007; Pataki et al. 2011), both interviewees had strong opinions on the subject. "I know all about global warming, we need to plant trees to stop it. I get that. I do know they provide oxygen. They take the bad stuff out of the air." The other respondent felt that it was one of the most important characteristics of urban trees. "We need more oxygen in our environment. Without oxygen, there can be no life. . . . So we have two choices, learn to treat our earth right, stop chopping down the rainforest, or start looking for another planet to inhabit. It starts right here though. Planting trees is very important."

Negative Perceptions

Although the ability to attract wildlife is often listed as a benefit of the urban forest (Dwyer et al. 1992; McPherson et al. 1997), none of the interview participants in East Baltimore viewed wildlife in this way. Instead, animals, such as birds, were considered nuisances. Bird droppings, in particular, were a source of frustration for residents. An elderly woman who has lived in Berea for over 40 years stated: "We have enough trees. We don't need any more. We got two on this block, and that's more than enough. I don't think most folks want trees. Everybody always complains about the bird manure anyway." Even those who otherwise were in favor of tree planting mentioned birds as a problem.

Insects were another perceived problem. Echoing the sentiments of an anti-tree rebel from the 1960s (Buckley 2010), a resident of Berea was not happy about a recent spike in the population of "caterpillars." Several participants also mentioned rats as a reason for opposing new planting, two of whom were convinced that trees attracted rats. According to 2009 figures from the Baltimore Neighborhood Indicators Alliance, the number of reported incidents of rats per 1000 residents was 215.70 for Madison-Eastend and 118.44 for the Clifton-Berea community statistical area (CSA). The citywide average was 59.69 (BNIA 2012).

Several residents said they were allergic to tree pollen. A resident of Madison-Eastend stated that after growing up in a part of Washington, D.C. that had many trees he was relieved to not have as many problems. In his words, "I don't want to have to start taking allergy pills again." A resident of Berea who otherwise supported aggressive tree planting lamented that he has been dealing with allergy-induced asthma his whole life, but that it was a necessary tradeoff.

Property damage from trees was another issue residents discussed. When initially asked how she felt about tree planting programs, an elderly woman in Berea responded "No thank you! No trees for me!" Throughout her time as a homeowner in East Baltimore she has had numerous problems with tree roots breaking her water pipes. A Madison-Eastend man pointed to a group of vacant row houses along Glover Street all of which had been infiltrated by tree branches. He maintained that these trees caused damage to electrical wires, and that he had experienced several power outages in the previous year. Heynen et al. (2006) described a similar situation in an African American neighborhood in Milwaukee, where trees were often removed due to property damage.

While none of the interview participants admitted to a preference for "clean, uncluttered concrete" like the former inhabitants of East Baltimore, many found certain aspects of the urban forest displeasing. In particular, residents did not appreciate the dead trees. When asked how he felt about additional tree planting on his street, a Berea resident responded, "Why would I want another tree when I can't get rid of this dead one? I've been on the city for a year to get rid of it but it's still right there." Another resident of Berea added: "I have lived here for over 20 years now, and I have seen trees get planted. Those trees that get planted just die. . . . The city wants to plant more trees, why the hell don't they just take care of the ones already here?" Another man agreed: "Sure, I think planting trees is a good idea. It's also a good idea for them to take down the dead ones before they start planting more." Several interviewees worried about large dead trees or limbs falling onto their houses during storms. The persistence of dead trees in the urban landscape and the high mortality that can result from lack of community support has long been a concern of residents and resource managers (Sklar and Ames 1985; Roman et al. 2013).

As with many large urban areas, parts of Baltimore have significant drug problems. According to 2011 statistics compiled by the Baltimore Neighborhood Indicators Alliance, juvenile drug-related arrests per 1000 people have declined over the last five years in the Clifton-Berea CSA and Madison-Eastend. Nevertheless, at 63.7 and 49.07, respectively, they remain significantly higher than the Baltimore City average of 30.26 (BNIA 2013). Interview participants linked trees to the drug trade on several occasions. One respondent from Madison-Eastend said, "No man, no, we don't need more trees. That's just another place to hide drugs. We don't need more of that around here." Another remarked "When I was a younger man running around on the streets, we used to use them (trees) as a drop spot (for drugs)."

Some neighborhood members worried that tree planting would be carried out for the wrong reasons. One resident of Berea was skeptical of outsider interference in his community. : His mistrust of outsiders stems from the recent bulldozing of entire blocks just a short walk to the west to make room for an expansion of Johns Hopkins Hospital. In particular, he worried about how other development plans might affect his community in the future. In his opinion, tree planting would be followed by gentrification and displacement of the remaining population of Madison-Eastend.

As Atkinson (2003) notes, gentrification rarely benefits underserved communities, leading Wolch, Byrne, and Newell (2014) to recommend neighborhood greening initiatives that are "just green enough" to improve the lives of residents but not enough to trigger sharp increases in property values.

Another resident of Berea was skeptical of urban trees for a different reason. He was concerned that tree planting was just the "flavor of the week" for whatever politician was trying to get elected to office. When asked about the possibility of trees on his street he recounted previous city initiatives that proved ineffectual. His feelings reflect the recent political turmoil in the city, where political corruption led to the resignation of the mayor (Bykowicz 2010).

Many citizens argue that there are more pressing problems that need to be addressed before the city dedicates funds to tree planting. One man suggested spending money on trash cans. Another questioned why the city had cut its trash collection days but was willing to spend more on trees. A woman from Madison-Eastend remarked, "It's just dirty around here. There's trash everywhere, people don't care." According to the BNIA there were 267.7 reports of dirty streets and alleys per 1000 people in Madison-Eastend in 2011, the highest rate in the city. The Clifton-Berea CSA ranked fifth highest with 171.87 reports per 1000 people (BNIA 2013).

Before trees are planted on or adjacent to a residence, homeowners must sign a waiver agreeing to water young trees and take basic steps to ensure their survival (TreeBaltimore 2007). Therefore, in addition to answering questions about their perceptions of trees, residents were asked how receptive they thought their community would be to tree planting initiatives. When asked whether he thought his neighbors would care for trees, the recent high school graduate from Berea stated: "It all depends. I think on this block it would work. I'd water a tree! Some of these houses around here though, well I don't know (laughs). Some people really don't care about that type of thing." An elderly gentleman in Berea was less optimistic. "More trees would be nice, but we have already had trees on this block and they die. People don't water them. And most of the time, even if they do get watered, they get killed anyway by the children. The children around here have no respect for anything. They run wild and do what they want. I've seen them tear little trees apart."

A woman from Berea differentiated between homeowners and those who rent, indicating she was not confident renters would put in the effort to take care of newly planted trees: "Most of us around here own our homes. Most of us have lived here for a long time. We care about our neighborhood and the way it looks, obviously. You go down that way (pointing south) though, I don't think they're gonna help out too much. They mostly rent. Folks that rent, why should they care?" Her belief that renters are less enthusiastic about tree planting programs is supported by the literature. In their study of Milwaukee's urban forest, Perkins et al. (2004) discovered that only 11 percent of those who took advantage of a free tree-planting program were renters in a city where 55 percent of homes are occupied by renters. In the study area, a majority of home occupants are renters as well. In Clifton-Berea, just 34.35 percent of housing units were owner-occupied in 2011 (BNIA 2013).

Older interview participants in Berea indicated that they thought attempts to plant trees in the future would fail because of changes in the population. According to several interviewees, a majority of the original African American residents of East Baltimore had migrated from rural parts of the South and knew how to take care of trees and plants. Now, only a few of the original transplants remain. The ability and desire to care for the natural world, they claim, has diminished among the people who have grown up in the city. As a former South Carolina resident living in Berea put it, "Some of these people don't know the difference between a pine

tree and an apple tree." As Ziederman (2006) points out, the migration of African Americans from the rural south to the industrialized north brought not only people, but agricultural skills and preferences as well. For the aging residents of Madison-Eastend and Berea, trees may be representative of a landscape preference that is rapidly dying out.

CONCLUSIONS

In this paper we explored the potential for tree planting in two of East Baltimore's neighborhoods, Madison-Eastend and Berea. Fifty years after residents derailed a major tree-planting effort, and despite significant demographic changes, large sections of these neighborhoods still exhibit a noticeable lack of trees. In the 1950s and 1960s, the residents of East Baltimore, many of whom were immigrants from southern and eastern Europe, found urban trees socially undesirable. When Blacks from the American South arrived in increasing numbers after 1970, they likely brought with them different attitudes with respect to trees. While many may have viewed trees in a more positive light – perhaps even socially preferable – they inherited a landscape that was largely devoid of canopy cover during a period of disinvestment in America's cities. Trees may have been socially preferable, but the legacy of the area's former residents – virtually treeless neighborhoods – ensures that a major effort to increase UTC requires a significant economic investment (see also Boone et al. 2010 and Buckley et al. 2013). Today, a new generation of African American residents voice strong opinions both for and against tree planting in East Baltimore.

An important objective of our research was to determine whether a change in the ethnic profile of a community – in this case, from southern and eastern European to African American – might signal a change in the way trees are perceived. Recognizing the small sample size and limited geography of our exploratory research, the qualitative data presented here suggest that using ethnic groups as vehicles to make broad generalizations about the perceptions and preferences of many people is problematic. This result is supported by Li et al. (2007, 515), who argue that, "The cultural variability within purported ethnic groups may be as great, or greater, than the cultural variability between them." Failure to recognize variability within a cultural, racial, or ethnic group poses problems. At best, it leads to the perpetuation of stereotypes. At worst, it implies the acceptance of a form of environmental determinism. Our research indicates that most people's perceptions of trees were practical and developed through lived experiences.

With respect to Possible UTC, our research shows that there is room to increase tree canopy in the study area from approximately six percent to more than 16 percent, making Madison-Eastend and Berea prime targets for TreeBaltimore. In Berea, most of the plantable area is located on residential parcels. Although all of the homes are considered row houses, a majority of the homes in the eastern part of the neighborhood are on large parcels that include front and backyards. In contrast, Madison-Eastend has limited plantable area on residential land because the row houses lack front yards, and most backyards are paved. Bocek Park and the land along the neighborhood's northern border account for most of the plantable area. Although plantable area is limited along public rights-of-way, there is still considerable space for tree planting.

While measuring Possible UTC is an important first step, gauging the degree to which residents support tree planting in their neighborhoods (Preferable UTC) gives us a better indication of how successful investments in green infrastructure may prove in the long run. The interviews we conducted in Madison-Eastend and Berea reveal mixed attitudes towards trees. Fourteen of the 26 participants supported tree planting because of perceived benefits such as shade and beauty. However, several of these individuals expressed doubt that residents – especially those who rent – would maintain trees planted in front of their homes, supporting the argument that tree care can sometimes place an unacceptable burden on the shoulders of lower income residents (Landry and Chakraborty 2009). The 12 remaining participants opposed tree planting and discussed a variety of negative perceptions, often in great detail, ranging from problems with pests and allergies to concerns about gentrification and the management of existing trees.

A serious issue that civic leaders in Baltimore must address is how to handle residents' negative perceptions of trees. The academic community has clearly elucidated the many benefits provided by urban trees, and municipal policy in Baltimore and elsewhere reflects this enhanced understanding of the benefits of urban forests. This perspective is not shared by everyone, however, and the question of how to deal with it is a challenging one. Acknowledging residents' negative perceptions is necessary in order to move forward. Reminding residents of the many ways trees could benefit them may sway their opinions. However, any type of educational program in Madison-Eastend or Berea should be carefully formulated to address neighborhood conditions and concerns. Clearly, focusing on property value increases and attracting wildlife would deter some residents from supporting tree planting. Highlighting energy savings and mitigation of the urban heat island effect is more likely to make a favorable impression.

TreeBaltimore's challenge, then, is not simply to overcome the limitations of Possible UTC, but to enlist the support of residents and address their preferences and priorities. Two opportunities emerge from this study. The first opportunity relates to the management of older trees. As residents made clear in the interviews, there are deep-seated concerns regarding the maintenance of existing trees, including the removal of dead, dying, and hazardous trees. Finding a way to meet the needs of residents in this regard may help to generate support for future tree planting efforts. The second opportunity is related to citizen involvement in the decision-making process. Exploring new and innovative ways to engage and empower communities like Madison-Eastend and Berea offers resource managers a chance to both address negative attitudes toward urban trees and restore confidence in city government. Thus, while planting trees in disadvantaged neighborhoods like Madison-Eastend and Berea would help close the gap with respect to tree cover equity, it is also clear that city officials and resource managers also consider the care and health of urban trees over the long term and its effects on residents' perceptions, values, and preferences.

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