Roots of Resilience:

Exploring Social and Environmental Impacts of Community-Managed Food Forests in Boston, Massachusetts

A thesis submitted by

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Abstract

Food forests are lot-sized urban green spaces that provide numerous ecological and social benefits. *Roots of Resilience* investigates the impact and significance of Boston Food Forest Coalition's (BFFC) food forests on those involved in its management and maintenance. This research explores the experiences of BFFC stewards and staff, focusing on how these urban green spaces contribute to community healing, equity, and environmental benefits. Through interviews and analysis, the study reveals that while existing literature often emphasizes the environmental advantages of food forests, BFFC's initiatives are uniquely grounded in fostering community connections. This thesis highlights how these food forests, designed to address sustainability challenges such as heat resilience, flood mitigation, and food accessibility, serve as transformative spaces that not only offer ecological benefits but also promote social cohesion and personal growth. By examining the intersection of community needs and ecological design, *Roots of Resilience* provides insights into how food forests can be both a catalyst for community empowerment and a sustainable element of urban planning.

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Table of Contents

List of Figures

List of Tables

INTRODUCTION

In the early 2010s, one would come across an empty lot near Egleston Square while walking down Boylston Street in Jamaica Plain, Boston. At the time, the neighborhood was beginning to see a division of populations: an educated, largely white population and a working class, immigrant and Hispanic population, with the former rapidly gentrifying the neighborhood (Kriegman 2014). Several decades prior, a house had burned down in the lot. The space remained vacant until neighbors came together to clean it up and developed the idea of starting a garden of some sort. This garden was later established as Egleston Community Orchard in 2014. When they approached the City of Boston, the group of neighbors were denied permission to use the city-owned lot. However, as abutters and neighborhood occupants, the neighbors believed they had the right to decide how the vacant lot should be used, as it was part of their community. They continued to clean up the space without city approval. This led to the creation of a guerilla garden on Boylston Street. Guerilla gardening often takes place in abandoned sites that gardeners do not have legal access to. Now named Egleston Community Orchard, the area is now part of a community land trust known as the Boston Food Forest Coalition (BFFC), ensuring it will be collectively owned and managed by the community in perpetuity.

Food forests are open green spaces intentionally designed to mimic patterns of nature and typically integrate a variety of woody perennial food-producing plants, such as fruits and nuts (Clark and Nicholas 2013). The design of food forests is typically based on a land management practice called permaculture. Unlike monoculture, meaning the cultivation of a single crop which dominates current agricultural techniques, permaculture attempts to mimic natural, closed-loop ecosystems in their stability, diversity, and resilience (Permaculture Research Institute 2024).

Food forests are designed to require less maintenance and produce increased food outputs over time (Park, Turner, and Higgs 2018).

These community-organized and managed spaces are typically lot-sized parks and are free and accessible to anyone, distinguishing them from similar initiatives like community gardens and urban farms which often have limited access to the public. BFFC is among several grassroots initiatives across the United States dedicated to creating food forests, but it is the first of its kind in Boston. With a goal of protecting land from development and creating open green spaces, BFFC has fully established 10 parks, with two currently under construction and several more in the planning stages (BFFC 2024).

BFFC is a small but growing organization with a dedicated staff that provides guidance and support for the implementation and maintenance of food forests. The daily hands-on maintenance and programming for these food forests are carried out by volunteer stewards, often local residents who work to maintain the sites. Stewards also aim to boost community engagement by hosting events and workshops that help people connect with nature, access healthy food, and interact with one another. Many of these stewards are community leaders who helped establish food forests in their neighborhoods. Alongside the staff and stewards, BFFC has a board of directors composed of community members, staff, and stewards, forming the organization's governance structure. As BFFC's network expands, so will its team, as well as the knowledge of food forests.

The concept of food forests first caught my attention a year ago during my internship with the Neponset River Watershed Association. My curiosity deepened after a conversation with a steward of the Edgewater Food Forest, situated just a block from the Neponset River. When I mentioned food forests to several of my peers, none of them were familiar with the concept, nor had they seen any in Boston. This piqued my interest in understanding the reach and

impact of food forests, prompting me to delve further into the topic for this research. Current literature on food forests is sparse as it is a new and emerging topic, but most literature so far focuses on environmental benefits, often overlooking the motivations and experiences of the people and communities involved in bringing food forests to life. Similarly, a lot of literature focuses on the benefits of community gardens, urban agriculture, and green spaces. This led me to consider the role food forests play in communities and how it may differ from these spaces.

Roots of Resilience explores the experiences of key stakeholders in BFFC's food forests, focusing on both stewards and staff members, and examines how food forests' geographic location may align with sustainability planning initiatives in Boston, including aspects such as heat resilience, flood mitigation, equity and access issues, and food accessibility. By doing so, I was able to gain insight into what makes BFFC's food forests unique. My research revealed that while BFFC's food forests are grounded in sustainable agriculture and design techniques, stewards use them primarily to focus on fostering community and resilience. By resilience, I refer to the capacity of the environment and communities to bounce back from disturbances (Meerow and Newell 2019). Additionally, while this research focuses on how food forests serve current communities, their overarching goal is to remain a permanent fixture within these communities. To fully reap the benefits of food forests, which require several years for plants to produce abundantly and flourish, it is crucial to involve younger generations. This ensures they can enjoy the rewards and continue to steward these spaces into the future.

The rest of this introduction will outline the vision, goals, and collective ownership model of the BFFC, setting the stage for the subsequent chapters. In order to understand BFFC's food forests, Chapter 1 will zoom out to look at Boston as a whole and analyze where food forests, specifically the ones discussed in this research, are located and how their location aligns with the City of Boston's city plans and BFFC's objectives. This will be followed by a chapter

examining BFFC's collective ownership model and its implications for stewards who volunteer to care for the food forests. I will analyze the complexities of property and ownership and assess stewards' experiences as collective owners of food forests. This research will conclude with a chapter that highlights food forests' ability to foster various aspects of community. Because this is a new area of research, this thesis is informed by a thorough review of literature on ownership, resilience, and community engagement that I have interwoven throughout the text. By weaving these theoretical frameworks throughout the text, I aim to create a contextual backdrop for understanding how food forests operate and thrive within their communities.

Understanding Food Forests: BFFC's Vision

BFFC's food forests are not wholly natural spaces, nor are they gardens. They disrupt commonly understood binaries of natural versus human-made and native versus alien plants. Some scholars believe that we are currently in the age of the Anthropocene, which characterizes a period where human actions affect arguably every aspect of nature. It implies an inseparable connection between humans and nature, and claims that the human-created idea of 'wilderness' or 'wild' is artificial (Cronon 1996). In the age of the Anthropocene, the question arises of how to define a 'natural' ecosystem. Is a food forest natural if it was completely constructed by humans? When considering native plants that benefit local ecosystems, we must ask: native to where, and for whom? And what is the significance of native plants in a landscape that is constantly evolving due to climate change?

The discussion on native versus alien rests on elusive definitions, but generally, 'native' represents a species that has naturally grown and evolved locally while 'alien' portrays a species that was introduced to an area beyond its natural range (Warren 2023). Native plant species tend to have the positive connotation of returning nature to its original existence before humans

disturbed it and are often favored in Western culture. They are typically favored due to their ecological benefits, including support of local wildlife, preservation of local ecosystems, and reduced need for chemical use as they are more resistant to local pests and diseases (National Audubon Society 2024). This preference for native plants somewhat contrasts BFFC's approach to food forests, which blends both native and non-native elements.

BFFC's food forests offer a compelling case to explore how communities conceptualize their food forests and whether those concepts align or deviate from these binaries. While this research focuses on BFFC, it is important to note that there are several similar initiatives across the country that may serve as sources of inspiration for their work. For instance, Seattle is home to the Beacon Hill Food Forest, while Atlanta has the Urban Food Forest at Brown Mill. Both of these projects have established large, single food forests. In contrast, the P-Patch Program in Seattle and the Philadelphia Orchard Project, much like BFFC, use smaller areas to establish networks of green spaces throughout their cities. These projects also emphasize collaboration with community-based groups and volunteers to design and establish orchards full of edible plants in its neighborhoods (POP 2024).

In this context, BFFC's food forests represent a unique hybrid of park and garden elements. Each park integrates features such as paths and benches alongside fruit and nut trees. As described by a staff member of BFFC, a "food forest park is essentially a park that's designed with food forest elements throughout it." At BFFC, the true core of a food forest is defined by the community members. BFFC does not have a standard for what a food forest should look like. At the forefront of each park design is the community's vision for the space. If they envision a space for native plants, BFFC helps them decide what plants to use. If the neighbors want to make use of preexisting black walnut trees, BFFC helps them build a walnut cracking station in their park. Due to close collaboration with neighbors, each food forest within BFFC has unique

qualities. An article from Edible Boston quotes its executive director, Orion Kriegman, describing a food forest: “It’s not a traditional community garden. It’s not an urban farm. And it’s not an urban wild or a park. It’s sort of all those things,” (Floreak 2020).

Within BFFC there are two types of food forests sites, land trust sites and coalition sites. *Land trust sites* are held within BFFC’s community land trust (CLT). As part of the CLT, these food forests and their stewards receive certain benefits, such as assurance from the organization that the land will remain in the hands of the community, as well as funding for programming and extra help with maintenance. The others are *coalition sites,* in which the land is held by a different organization, such as the Boston Nature Center (BNC) or the Trustees of Reservations, nonprofits dedicated to preservation and conservation of land in Boston and across Massachusetts. For example, Leland Cooperative Garden was established around 40 years ago by neighbors and has a design similar to a food forest as a lot-sized, publicly accessible park with edible plants. It is currently part of the network of gardens held by the Trustees of Reservations and is partnered with BFFC due to their similarities in design and overall objective of providing open and accessible food and green space. A steward that participated in this research described these partnerships as grounded in “solidarity” and “mutual aid” among like-minded organizations. They also co-sponsor events and workshops, come together for BFFC’s annual meetings, and work toward the same goal to increase open space in Boston.

In an Edible Boston article, BFFC’s executive director also described the ecosystems that BFFC’s food forests attempt to replicate. “We’re trying to mimic systems that we see in nature about how plants enjoy and benefit and have greater health when they grow in community with other plants. It’s how you can get a lot of production in a small area if you’re willing to diversify what you’re producing,” he says (Floreak 2020). In my research, a BFFC staff member added

that although they focus on perennials–plants that return each year–they also consider plants that people are familiar with and would enjoy seeing in their parks.

The Edible Boston article also discusses the types of plants found in Ellington Street Community Food Forest, describing the park's unique medicinal mandala, reflecting the "cultural traditions of neighborhood residents," (Floreak 2020). The author also calls food forests a "neighborhood backyard" in that they provide edible plants to forage from and a community space for neighbors to meet and kids to play. In general, BFFC prioritizes communities' wants and needs in plant selection over solely focusing on ecological sustainability through the use of native plants, although they aim for both.

Figure 1 Ellington Community Food Forest featuring its medicinal mandala. Image courtesy of BFFC.

BFFC's Goals

Egleston Community Orchard is an example of BFFC's vision for the rest of Boston, characterized by open and inviting green spaces for people of all backgrounds. This vision is coming to life across BFFC's ten (and counting) food forest sites. BFFC's vision began with the new stewards of Egleston Community Orchard and other local groups, united by a common goal of transforming various vacant lots across the city into lively green spaces. With Egleston Community Orchard as a jumping off point, BFFC has endeavored to create more spaces that serve as community assets for a diverse range of neighbors and places to connect across race and class. As stated on the homepage of its website, the organization prioritizes communities that have inequitable access to urban green space (BFFC 2024).

Not too long ago, the organization was run only by the executive director, pursuing a vision of community-centered green spaces. As BFFC grew, the concept of food forest parks garnered interest, leading to their establishment in neighborhoods like Jamaica Plain, Mattapan, Dorchester, and Roxbury. A BFFC staff member explained that all of its current food forests have been established through "in-reach" efforts, where communities approached BFFC and expressed an interest in creating a food forest in their neighborhood. BFFC typically starts by engaging in discussions with interested communities. During these conversations, BFFC ensures that establishing a food forest aligns with the community's goals. If not, BFFC directs them towards alternative options. In interviews, staff members clarified that BFFC does not aim to compete for space with initiatives such as affordable housing. They respect community preferences. But if a community is interested in a food forest, they are more than willing to help. Lots are typically acquired from the city at a nominal cost.

BFFC has goals of improving green space equity, increasing climate resilience against heat, connecting communities of climate leaders, and establishing food autonomy for stewards and community members across Boston. By creating a space dedicated to free and accessible fresh food, food forests contribute to communities' abilities to establish control over their food systems. So far BFFC has conserved over 130,000 square feet of urban land and aided in planting over 525 edible trees and shrubs. Additionally, it provides educational workshops, aiming to teach and support stewardship teams. It aims to have 30 food forests by 2030, establishing a powerful network of stewards and community members across Boston (BFFC 2024).

BFFC's Collective Ownership Model

In conversation, BFFC Staff Member 1 described BFFC as a "501(c)(3) nonprofit community land trust with the mission to own land on behalf of the stewards." On its website and in interviews, BFFC emphasizes that food forest parks are collectively owned spaces (BFFC 2024). BFFC staff members used terms like "ours," "we," and "us" to describe how the food forests are collectively held by the stewards, the community, and BFFC. Staff Member 2 described the organization's dedication to community control of development. "As a community land trust, we are trying to–through the park visioning process, construction, and then park management, like pruning the fruit trees, caring for the space, hosting community events–support neighbors to do that. And so the land is owned by the land trust, and so therefore, it's owned by the neighbors," he explained. BFFC strives to follow residents' lead, ensuring that the community is in control of its own development (Staff Member 2).

BFFC has a Board of Directors, which Staff Member 1 described as its government structure. "Technically, the board hires and fires the executive director who employs the rest of

the staff team. The board sets the vision and the policy for the organization," he said. As BFFC grows, it anticipates the need to create more mechanisms to uphold its governance structure in order to maintain stewards and community members as key decision-makers. For example, Staff Member 1 suggested the possibility of creating a stewardship council if there is a perceived need for additional stewardship input and voice in the organization's governance structure.

BFFC's website describes the organization's community land trust (CLT) as "a legal structure that holds and protects land for community use." Describing BFFC as a "structure" underscores that it exists to provide support for the creation and maintenance of food forests. This was echoed by Staff Member 1. Say, for example, that an extreme situation occurred in a food forest where a stewardship team implodes or a key leader moves away. Staff Member 1 explained that in extreme circumstances, BFFC as a CLT has the fiduciary responsibility to step in. He said, if "leadership just doesn't continue at a site, we're there to back it up… we're the backbone of that work…we have the right to step in and solve problems like that. That's part of what our responsibility is." While one of BFFC's priorities is enabling stewards to oversee the food forest parks, this suggests that above all else, its objective is to ensure these spaces remain open and accessible to the public. It is BFFC's job to do the behind-the-scenes work, such as legal land ownership obligations, in order to allow stewards to focus on maintenance and programming in their food forests (Staff Member 1). In this case, he described the CLT as "yours" in reference to stewards: "*your* community land trust is here to help you."

The concept of collective ownership as described by BFFC is complex. BFFC's Associate Director explained in *The Forest Garden Podcast* that there is a significant cultural shift required to help people understand collective ownership in a society that is generally accustomed to individually owned property (Bishop and Amato 2023). Ownership over a space such as a food forest is not as easily defined as a garden in one's backyard or a plot in a

community garden. BFFC's food forests fall into a separate category. They are not strictly gardens, nor are they nature preserves that are intended to remain untouched and unengaged. They are created and maintained by community members for their community, serving as places where people can forage for food, connect with nature, or interact with neighbors. Each person who engages with them may have a different experience and intent, making these spaces deeply personal as well.

BFFC is currently battling with preconceived notions of ownership. People are accustomed to city-owned parks, usually managed by municipal employees who lack a personal connection to the space, as well as community gardens where individuals can claim a small plot of land. In contrast, food forests in Boston are managed by volunteer community members with the help and support of BFFC. Thus, much of BFFC's work involves challenging conventional individualized models of land ownership and educating stewards and community members about what successful collective ownership of food forests looks like. The questions of what ownership means in the context of a food forest is explored in Chapter 2.

Methods

Semi-Structured Interviews

To understand how BFFC stewards and staff members perceive and experience food forests, I performed semi-structured interviews with three staff members and five stewards at BFFC. Because no comprehensive registry of stewards exists, I connected with the steward I had previously met and used snowball sampling to identify other stewards who might participate in my research. My questions for stewards revolved around their experiences in their respective food forest, placing emphasis on notable benefits they have gained from their stewardship and future goals.

The stewards and staff members I interviewed represented five different food forests across Boston, which I chose to focus on in this research. The food forests discussed are the BNC Food Forest and Edgewater Food Forest in Mattapan, Egleston Community Orchard and Leland Street Cooperative Garden in Jamaica Plain, and Upham's Corner Food Forest in Dorchester. Below is a table designed to help give clarification for various connections between stewards, staff members, and food forests. More detailed descriptions of these food forests will be presented throughout this research.

Name	**Location**	**Type**	**Year Established**	**Interviewees**
Boston Nature Center Food Forest	500 Walk Hill St., Mattapan	Coalition Site	2013	Steward 3 Steward 4
Edgewater Food Forest	640 River St., Mattapan	Land Trust Site	2021	Steward 1 Steward 2
Egleston Community Orchard	195 Boylston St., Jamaica Plain	Land Trust Site	2014	Staff Member 1
Leland Street Cooperative Garden	4 Leland St., Jamaica Plain	Coalition Site	1975	Steward 3
Upham's Corner Food Forest	11A Everett Ave., Dorchester	Land Trust Site	2021	Steward 5

Table 1 Information on food forests mentioned in this research.

Media Review

In order to gain a broader understanding of BFFC's food forests and their representation beyond the perspectives of those directly involved, I examined news articles and podcasts related to BFFC. Additionally, I explored BFFC's website, which offers extensive information about the organization, its food forests, and its initiatives. I also reviewed other relevant websites that provided supplementary information about food forests and aligned with my research interests. This approach helped me gather diverse insights and perspectives on the impact and perception of BFFC's work.

Map Analysis

For the map analysis discussed in Chapter 1, I placed the location of the five main food forests discussed in this research on maps created by the Boston Parks and Recreation Department (BPRD). The maps were taken from the City of Boston's Open Space and Recreation Plan (OSRP) from 2023, which analyzed optimal areas in Boston for open space expansion. I also utilized ArcGIS Pro to determine the Service Area of each food forest to analyze their proximity to local supermarkets and farmers' markets. A detailed description of how these maps were created and how I used them for this analysis is in Chapter 1.

Observations

Although not a substantial method for this research, I visited a few of the food forests, including Upham's Corner Food Forest, BNC Food Forest, and Edgewater Food Forest where I attended a Halloween event in October 2023. I made general observations about their layout,

location within neighborhoods, and how people were engaging in these spaces. This contributed to my overall understanding of what food forests are and how they are used and engaged with.

Limitations

Before delving into this research, it is important to recognize some limitations that may have affected the collected data. First, the interview sample was quite small, eight people total. The interviews were kept to around 30 minutes to respect the participants' time, which limited the number of questions that could be asked and meant that not all their insights were able to be included in this research. For future research, expanding the pool of interviewees and spending more time in the food forests would be beneficial.

CHAPTER 1: MAP ANALYSIS

Food forests are described as having many potential benefits. The benefits listed by BFFC align closely with the City of Boston's sustainability goals and focus on Environmental Justice (EJ) populations, including climate resilience, equity, and improved food access. EJ research has found that marginalized communities are more likely to be exposed to environmental and health hazards (Fernandez, Harris, and Rose 2021; Meenar, Heckert, and Adlakha 2022). Robert D. Bullard began this discussion in the 1980s by calling attention to discriminatory environmental practices, jumpstarting the ongoing EJ Movement (1993). Boston and BFFC are both committed to prioritizing EJ populations in their efforts. This chapter will explore how BFFC's objectives align with those of the City of Boston and assess whether food forests are being established in areas of Boston that would benefit the most.

Food Forests: Climate and Equity

The potential impact of food forests on climate resilience comes from their vegetation. For example, areas with dense vegetation cool air temperatures and effectively absorb water, helping to mitigate flooding. BFFC's food forests are designed with equity in mind, allowing communities to participate in the design and vision of their food forest. This is especially important for Boston communities that could benefit from community-managed green spaces. The City of Boston is also working to expand its open space network in these communities, aligning with BFFC's mission. Additionally, food forests provide free and accessible food, further enhancing their value. Initiatives like Mattapan Food and Fitness (MFFC), which aims to enhance community health through increased physical activity and access to healthy food, and the Urban Farm Institute, which uses urban agriculture to tackle issues such as limited access to

fresh produce, illustrate Boston residents' commitment to expanding food access and education. This combined effort to enhance climate resilience, expand open space, and promote food equity through food forests supports Boston's broader goals of urban sustainability and climate resilience.

Over the past decade, the City of Boston has created multiple plans aimed at building a more resilient city. The Climate Ready Boston initiative, introduced in 2016, is the city's overarching plan to combat climate change impacts. It includes strategies in policy, planning, programming, education, and the addition of green infrastructure throughout the city. Additionally, the city launched the Healthy Places initiative, which includes three key plans: the 2022 Heat Resilience Solutions for Boston report, the 2022 Urban Forest Plan, and the 2023-2029 Open Space and Recreation Plan (OSRP). These plans aim to address the city's vulnerability to climate impacts, such as sea level rise and higher temperatures, with a focus on protecting the most affected residents.

The maps used in this analysis are sourced from the OSRP, specifically the Boston Parks and Recreation Department's (BPRD) Parcel Priority Plan (PPP), which was done for the OSRP. Part of the PPP aims to identify opportunities and needs for open space in the city through geospatial analysis, providing maps of heat, flooding, park access, and equity. These topics were selected based on the 2015-2021 OSRP, which identified them as high priority. A suitability analysis was done for each topic using Geographic Information System (GIS) techniques to evaluate and identify the most suitable locations for open space expansion. In PPP's suitability analysis it used a color scheme of yellow to red, with red indicating the highest need for open space. PPP's methodology largely draws from TPL's Climate Smart Cities Methodology, with additional criteria to address factors like park size and physical access that TPL's analysis did not cover.

BPRD divided its city-wide maps into individual neighborhoods in Boston. The analysis here will focus on the maps of Jamaica Plain, Dorchester, and Mattapan, where the food forests discussed in this research are located. This chapter will assess how food forests in these three neighborhoods relate to climate resilience, equity, and food access and whether they are being sited in areas that could most benefit from them.

Climate Resilience

This section will highlight potential environmental benefits of food forests, such as heat resilience and flood risk mitigation. BFFC recognizes that food forests contribute to heat resilience and provide the added benefit of reducing water runoff, which can help mitigate flooding.

Heat Resilience and Flood Mitigation

Temperatures are rising globally, with urban areas experiencing a more significant increase–a phenomenon known as the urban heat island effect. Cities, due to their high population density, contain more surfaces that radiate heat, such as dark, paved, and impervious surfaces, and fewer spaces that absorb heat like those with trees and vegetation. Materials and colors that absorb more heat, such as asphalt and buildings with dark-colored roofs, also contribute to this effect (City of Boston 2022).

Temperature disparities within cities have been influenced by systemic inequities and historical racism, which have had lasting impacts on Boston's neighborhoods. For instance, redlining, a discriminatory practice that graded neighborhoods based on perceived mortgage lending risks, has contributed to temperature disparities. The areas perceived to be the most 'hazardous' areas were marked in red. A 2020 study examined the long-term effects of redlining

on urban heat exposure in over 100 cities in the United States. The study found that redlined neighborhoods experience significantly higher land surface temperatures than non-redlined areas. These redlined areas, which are often characterized by lower-income status and fewer green spaces, are an average of 5 degrees Fahrenheit hotter in summer (Hoffman, Shandas, and Pendleton 2020). According to BFFC, Boston neighborhoods affected by redlining, such as Dorchester, Mattapan, and Roxbury, are currently experiencing daytime temperatures averaging 7.5 degrees Fahrenheit higher than areas with more extensive tree canopy cover (BFFC 2024).

Areas of the city with abundant trees and green spaces generally experience cooler temperatures because trees cool the air through transpiration and evaporation. During transpiration, trees absorb water through their roots and release water vapor through their leaves, cooling the surrounding air. Additionally, rainwater collected by leaves and soil evaporates into water vapor, further lowering temperatures (EPA 2024). Trees also provide essential shade on hot summer days. Due to temperature disparities and insufficient tree canopy cover in historically marginalized neighborhoods, these areas are prioritized in Boston's resilience plans and BFFC's initiatives.

Similarly, tree canopy and green spaces contribute to flood mitigation from excessive rainfall. As cities develop, there is a decrease in permeable surfaces like lawns, parks, and forests, and an increase in impervious surfaces such as roads, buildings, and parking lots (BPRD 2022). These impervious surfaces prevent water from infiltrating into the ground, potentially causing increased flooding due to excess stormwater from heavy rain events. To address these issues, The City of Boston is working to increase its urban forest, including the implementation of food forests which it recommends as a way to utilize vacant land (BPRD 2022).

Heat Score

The Heat Score data from the PPP identifies urban heat islands by analyzing satellite heat imagery of daytime and nighttime land surface temperatures. Areas with temperatures at least 1.25 degrees Fahrenheit above the daily average in late June and early July were used in the Heat Score suitability analysis to identify priority areas for open space (BPRD 2023). In Jamaica Plain, Egleston Community Orchard is located in a red zone on the PPP Heat Score map, indicating higher temperatures and higher priority for open space (Figure 2). Similarly, Upham's Corner Food Forest in Dorchester is also located in a red zone, even though it is near another slightly larger park (Figure 3). Although their size may limit their overall impact, food forests still provide shade and cooling effects to the immediate surrounding areas, details which may not be fully captured in analyses like this. As indicated by these food forests being located in areas of high priority for open space expansion, food forests are contributing to heat resilience as explained by BFFC.

Flood Risk Score

BPRD's Flood Risk Score evaluated areas for current and potential future stormwater and coastal flooding. PPP's analysis assessed current stormwater risk by evaluating estimated runoff potential and sinks. Runoff potential was estimated based on land use, such as residential areas with impervious surfaces like driveways and roofs, as well as soil type. Soil types vary in their infiltration rates, but vegetation enhances water infiltration by creating root channels, improving soil structure, adding organic matter, and more. Sinks were identified using elevation data and are depressions in the land where water can accumulate. The analysis also included any areas with high flood risk as high priority areas for open space. For coastal flooding, it used data for

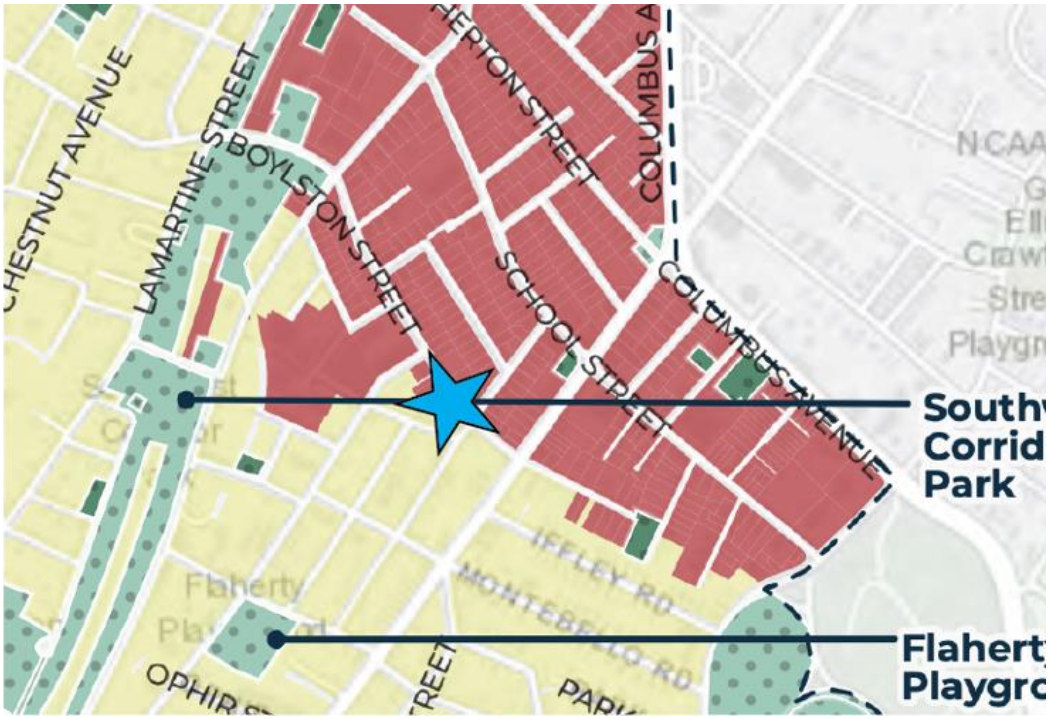


Figure 2 Egleston Community Orchard Heat Score.

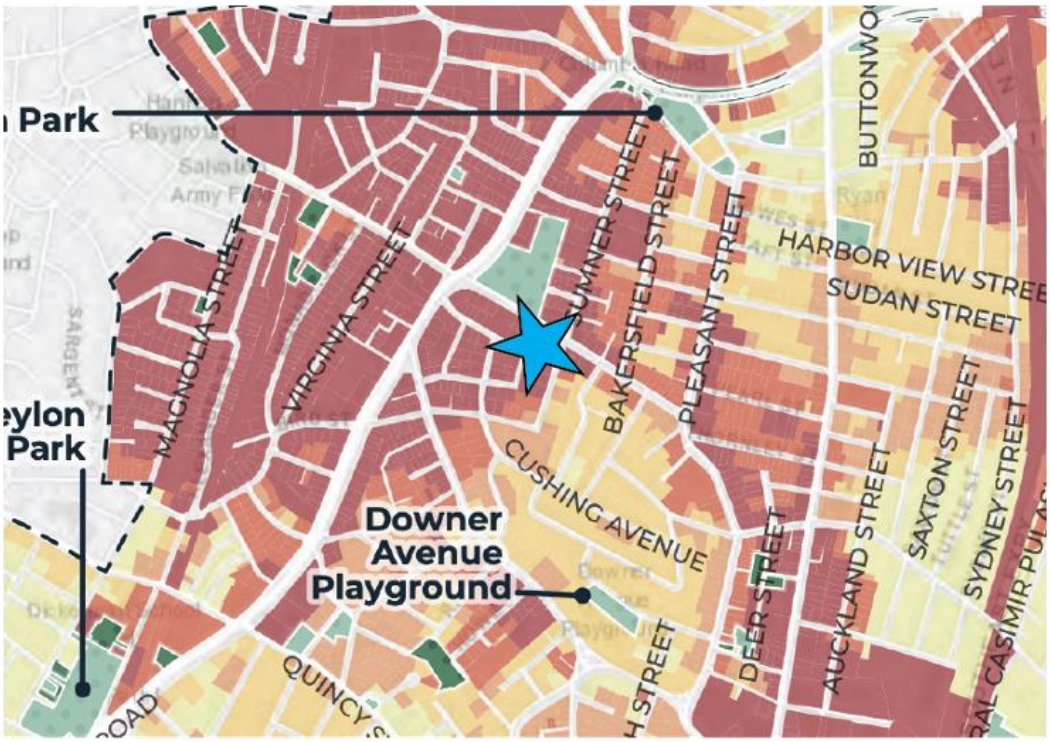


Figure 3 Upham's Corner Food Forest Heat Score.

current and future flood zones for 2030, 2050, and 2070 predicted sea levels (BPRD 2023). Flood zones are identified using Exceedance Probability, which is a statistical measure used to describe the likelihood of a flood event surpassing a certain magnitude or depth within a given time period. Areas with a 1% or greater Coastal Flood Exceedance Probability are considered a very high priority (BPRD 2023). The Flood Risk Score was evaluated on various levels, taking into account multiple factors that contribute to flooding, including permeable surfaces like food forests.

BPRD explained that it used flood risk in its analysis for the expansion of open space because such areas function as sponges for rainstorms and buffers for coastal flooding (BPRD 2023). Of the neighborhoods discussed in my research, Dorchester seems to be particularly at risk for flooding due to its location along the coast of Dorchester Bay and the Neponset River (Figure 4). While Upham's Corner Food Forest is not in a high-risk flooding area, some of the other food forests in Dorchester are, such as Savin Hill Wildlife Garden and Hope Garden. Despite their relatively small size, food forests contribute to flood reduction due to their vegetation and soil quality, which enhance water infiltration. The Edgewater Food Forest and Egleston Community Orchard are also in or bordering mid-high level flood risk (Figures 5 and 6). BNC is also located in a high flood risk area, despite being a large open space itself (Figure 7). This demonstrates that current food forests are located in areas that can benefit from their ability to absorb water and reduce the impact of flooding from stormwater runoff.

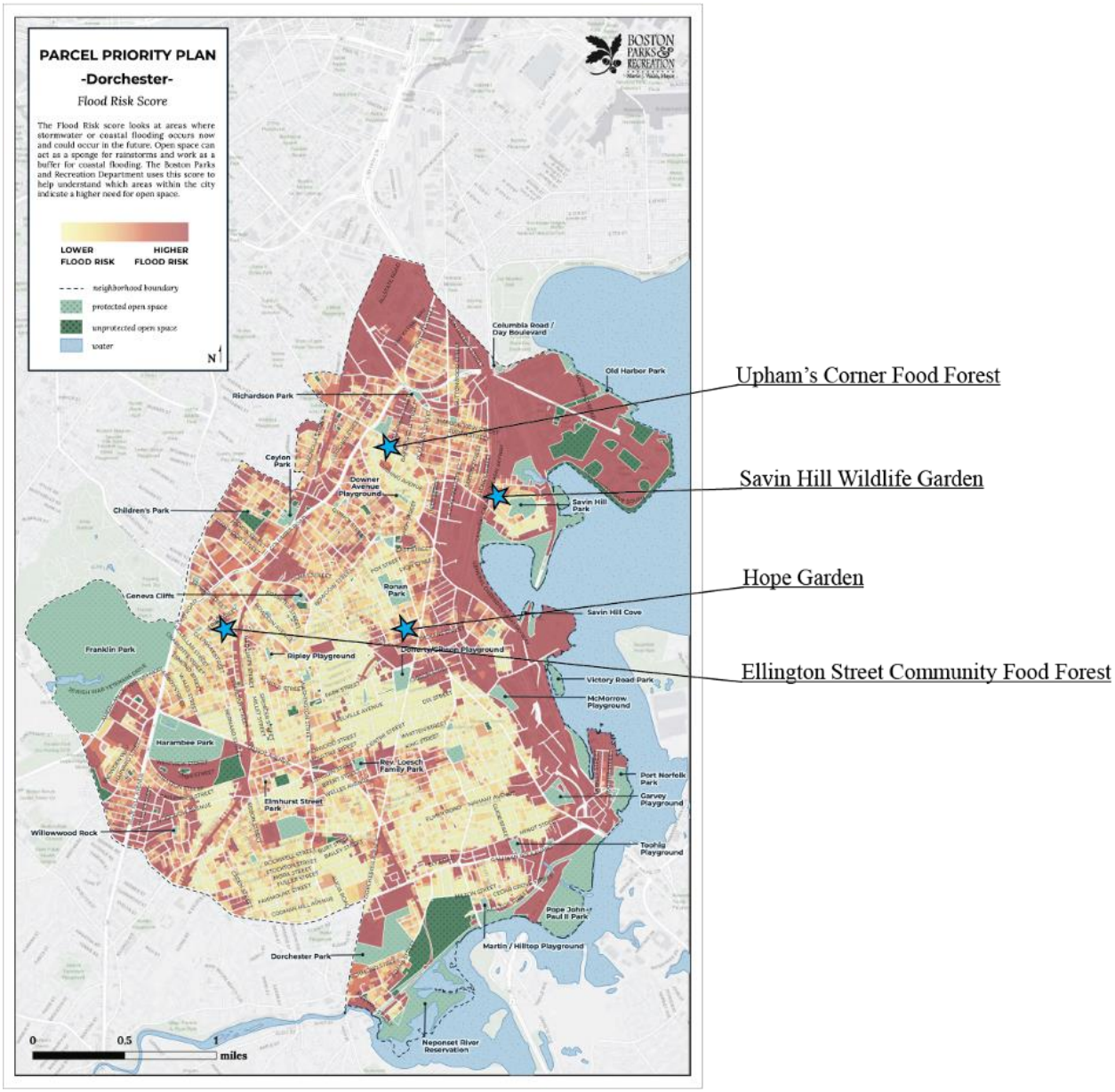


Figure 4 Dorchester Flood Risk Score.

Figure 5 Edgewater Food Forest.

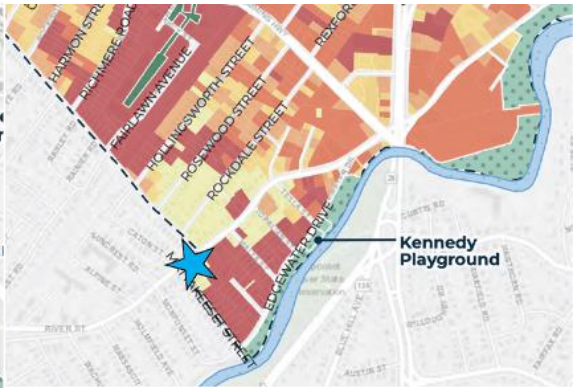


Figure 6 Egleston Community Orchard.

Figure 7 Boston Nature Center.

Equity and Access

The City of Boston and BFFC recognize the numerous benefits of green spaces and aim to expand access to those benefits, as highlighted in the city's Healthy Places initiative plans and BFFC's objectives. This section will explore issues of equity and access to open space in Boston and illustrate how BFFC has been successful in establishing food forests in communities with limited access.

Benefits of Green Space

The majority of scholarship on benefits of urban green space highlight the global trend toward urbanization and its implications for human health, such as food insecurity, increased stress levels, and reduced physical activity. Fortunately, urban green space provides a way for city dwellers to grow and harvest their own food, exercise, and reduce stress and anxiety (Bratman et al. 2012; Bedimo-Run et al. 2005). In their research, Stoltz and Schaffer (2018) analyze the benefits of edible forest gardens where they discuss a study in which participants with stress-related illnesses used an edible forest garden as part of group therapy. Participants shared comments about their experience, describing the space as calming, and expressing an overall sense of restfulness in the forest-like garden (Stoltz and Schaffer 2018; Pálsdóttir et al. 2017).

While there is a general consensus in scholarship that human well-being can be enhanced through interaction with green space, it is also acknowledged that access to green spaces, as well as the quality of such spaces, varies. Nesbitt et al. (2019) characterize equitable access as the capacity for individuals to attain access as desired, without being hindered by factors such as socioeconomic standing or racial and ethnic background. In cities, marginalized groups often experience reduced access to green spaces compared to other populations. The placement of green space in urban areas can also lead to the displacement of residents, commonly known as green gentrification or the urban green space paradox (Meenar, Heckert, and Adlakha 2022; Wolch, Byrne, and Newell 2014). This is due to the increase in value for properties located near green spaces. Community-managed green spaces, like food forests, have the potential to enhance access to green space while also mitigating displacement by promoting community control over local development.

Access Score

The Access Score assesses connectivity and accessibility of green spaces in Boston, focusing on the proximity of parks to residents, their connection to the city's bike network, and the extent of unvegetated space. Areas with a low access score have less green space or poor connectivity to green space. The score ranges from red (less access) to yellow (more access). Out of the food forests mentioned in this research, Upham's Corner Food Forest is located in an area with lowest access (Figure 8). The Leland Cooperative Garden, adjacent to a cemetery, is situated in the light orange range, indicating mid-level access. BPRD excluded cemeteries from its analysis because they are primarily used for burials rather than recreation (Figure 9). Similarly, Egleston Community Orchard is in a mid-level access range, dark yellow to light orange (Figure 10). These examples indicate that people in this area have limited access to open spaces, making the food forest a valuable addition for nearby residents.

Figure 8 Upham's Corner Food Forest.

Figure 9 Leland Street Cooperative Garden.

Figure 10 Egleston Community Orchard.

Equity Score

The Equity Score is based on the Massachusetts State EJ Populations criteria, which includes various demographic information. A high score (red) represents areas likely to face disproportionate environmental burdens or have historically experienced marginalization. As of 2023, Massachusetts identifies an EJ community by Census block groups and defines them using these criteria: median household income below a certain amount, majority-minority population, low English language proficiency, or a combination of median household income and minority population (Mass.gov 2022). Specific percentages and numbers for these criteria are available on Mass.gov's website. In 2022, Massachusetts reported that 79% of Boston's population fell within an EJ block group (Mass.gov 2022).

In my research, I found that all existing food forests fall within an EJ block group. The most frequently identified criteria for block groups with a food forest were having a majority-minority population, followed by low median household income. For example, the Edgewater Food Forest is in an EJ block group because the block group's population was 99% minority in 2020 (Mass.gov 2022). Their location within EJ block groups indicates that food forests are helping to expand open space for populations that stand to benefit the most, offering both environmental and social benefits as outlined in the introduction for this section.

Compared to Massachusetts' EJ population method, the PPP analysis used a similar but more detailed approach to identify its equity score. It considered various criteria, such as isolation due to English language proficiency, and minority and low-income status as identified in Massachusetts' EJ criteria. In addition, it included medical conditions, age groups (17 and younger and 70 and older), population density, disability rates, and obesity levels, as these

populations are disproportionately susceptible to hazards such as climate change impacts (BPRD 2023).

Based on the PPP geospatial analysis, it appears that BFFC food forests are located in areas ranging from moderate to high in terms of potential disproportionate environmental burdens, demonstrating that they have been successful in placing food forests in communities that could benefit the most. For example, the Egleston Community Orchard and Leland Street Cooperative Garden are both located in orange zones near red zones (Figures 11 and 12). As shown in Figure 14, several of the food forests in Dorchester are located in higher scoring EJ populations. Again, demonstrating that these food forests are able to provide benefits to their surrounding communities.

Although the Edgewater Food Forest is located in a small area with a lower equity score, interviews with two of its stewards suggest that there is likely more to the story than the PPP analysis reveals (Figure 13). Stewards from the Edgewater Food Forest emphasized potential for green space in Mattapan that is currently being underutilized. They also expressed concerns about gentrification in their neighborhood and discussed how community spaces like food forests can help anchor the community and help them see value in their neighborhood. This highlights the importance of incorporating personal experiences through community input alongside other knowledge, information, and analysis in planning.

Figures 11-13 Egleston Community Orchard, Leland St Cooperative Garden, Edgewater Food Forest

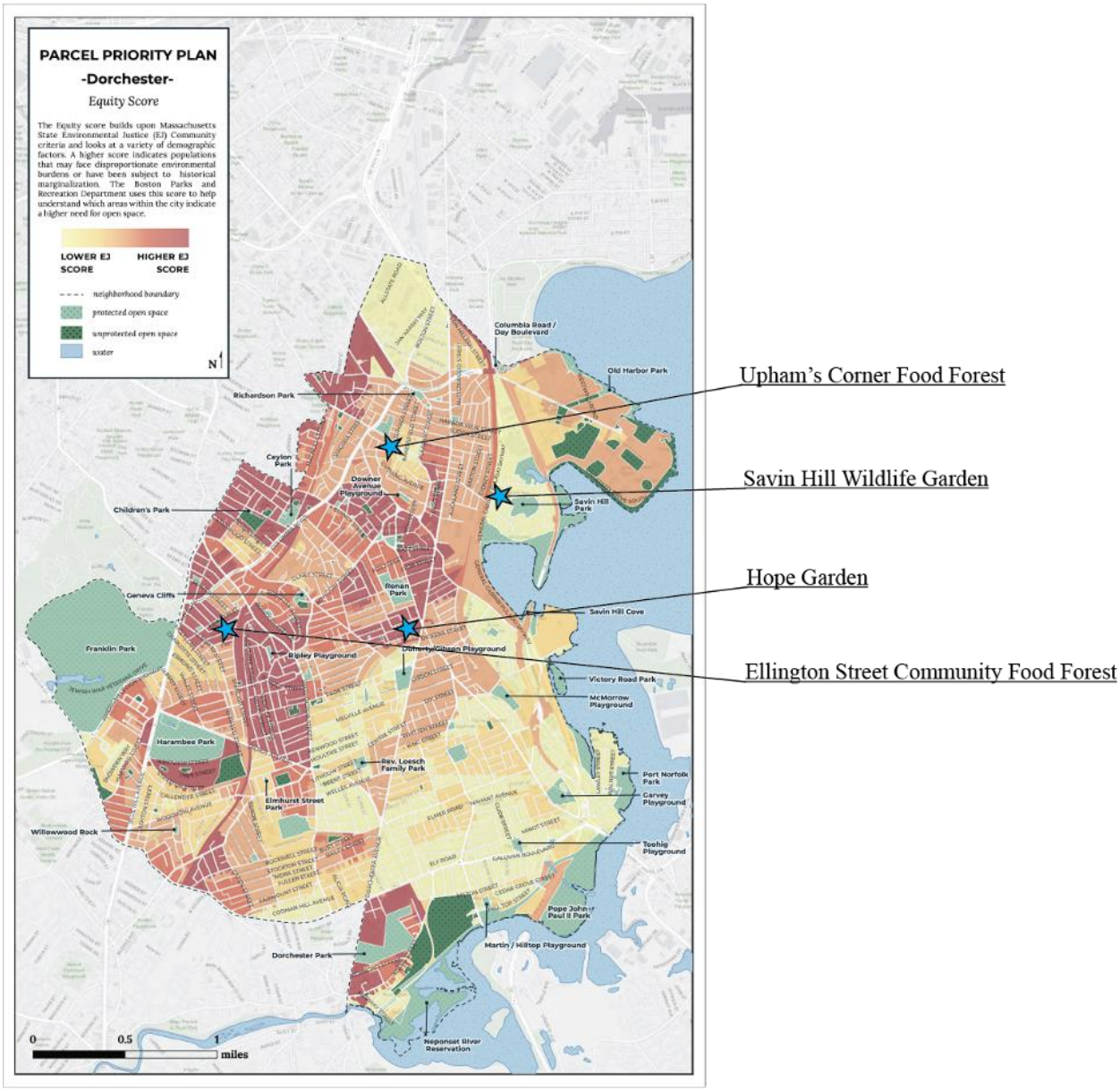


Figure 14 Dorchester Equity Score.

Accessible Healthy Food

One of BFFC's objectives is to promote food autonomy for its stewards and community members. By prioritizing neighborhood leadership, BFFC enables community members to choose the types of edible species planted in their parks, thereby increasing their control over local food systems. BFFC emphasizes the importance of allowing stewards and community

members to grow “healthy, culturally-relevant foods in their neighborhoods,” (BFFC 2024). This section will explore the accessibility of BFFC’s food forests and their proximity to supermarkets and farmers’ markets, which generally provide more affordable, healthier, and fresher food options compared to corner stores and marts.

Food Access in Boston

Aligned with environmental justice, food justice works to address racial inequalities within food systems, often through agricultural practices like urban gardens and farms. The recent history of urban agriculture dates back to the late 1800s and early 1900s, when western cities actively supported substantial food production through these means. Urban agriculture saw a significant rise during both world wars, often referred to as victory gardens. However, after the wars, the prevalence of community gardens declined due to shifts in population, urban restructuring, and suburban expansion (AU Online 2019).

During the civil rights movement in the 1950s and 1960s, wealthier white populations moved from city centers to the suburbs in a phenomenon known as “white flight”. In response, supermarkets relocated to these more affluent areas to increase profits, a practice called supermarket redlining. This resulted in lower-income populations having significantly less access to fresh and nutritious foods. Since supermarkets were inaccessible, people had to rely on fast-food restaurants and corner stores that primarily sold processed foods. This still holds true today despite the resurgence of alternative food production and distribution in the late 1960s and 1970s. For instance, community gardens and farmer’s markets became popular again after the negative health effects of processed foods—which became widespread with the industrialization of food in the early 1900s—were recognized (Morales 2011).

As a result, urban residents with limited food access became disconnected from food production, prompting initiatives aimed at reconnecting people to healthy food. For example, urban food autonomy movements seek to reintegrate food production within cities and restore knowledge about it. In addition to the food justice movement which advocates for universal access to affordable and nutritious food, the food autonomy movement emphasizes self-sufficiency in food production and control, aiming to empower communities to take charge of their food systems and free them from a larger, oppressive food system (Giraud 2021).

BFFC's food forests embody these principles by providing free, accessible produce and actively involving community members in the design and management of the food forest, thus promoting both food justice and autonomy. This approach is particularly beneficial to communities in Boston, which were significantly affected by the growing disparity in food access during the 1900s. The Mayor's Food Access Agenda 2021-2023 listed the low-income neighborhoods of color of Roxbury, Dorchester, and Mattapan as having, in 2018, some of the highest rates of food insecurity in the city. It also highlighted that these same neighborhoods, as well as Hyde Park, which is southeast of Mattapan, have sections that are more than ½-mile from a grocery store (City of Boston 2021). Boston's mayor, Michelle Wu, has a food justice agenda which includes increasing residents' access to fresh, nutritious, and affordable food by supporting urban agriculture (Mayor Wu for Boston 2024).

Boston hosts a range of initiatives aimed at improving food access and production, such as Eastie Farm in East Boston, the Urban Farm Institute, various community gardens, and the Boston Food Access Council. While these efforts enhance food justice and security by making food more accessible, BFFC's food forests are distinct in their capacity to promote food autonomy. They allow residents to manage the development, design, and daily operations of the food forests. Additionally, food harvested from a food forest is free and accessible to anyone,

providing an open and inclusive approach to food production. In contrast, accessing community gardens can often be difficult due to long waitlists. Food forests are mentioned in city's 2022 Urban Forest Plan as spaces that address food insecurity through trees that grow fruits and nuts. BFFC is also recognized as a community-based food program to consult for species selection and guidance on food-bearing trees (BPRD 2022). As a new and evolving topic, we may see more clearly over time how food forests fit into the current food landscape in Boston.

By having open and free access to fresh food, BFFC's food forest parks are contributing to Boston's food agenda. Because most food forest parks are in early growth stages, they currently produce limited food. However, the goal is to eventually distribute and donate food to the community. Currently, within BFFC, the Old West Church Food Forest and Ellington Community Orchard provide surplus produce to shelters, elder care facilities, churches, and local residents (BFFC 2024).

Stewards' Commitment to Increasing Food Access

Food forests' ability to produce healthy, accessible food for communities was a common theme through the interviews with stewards. Steward 2 from Edgewater Food Forest in Mattapan spoke of her dedication to accessible healthy food. As a dietician, access to healthy food has been an important aspect of her life and career. Likewise, during her time in California, Steward 1 from the Edgewater Food Forest was employed at a worker-owned, 100% organic, vegetarian co-op. Their passion for healthy and accessible food led to their support of establishing a food forest in the two vacant lots on River Street.

Demonstrating the significance of food in food forests, one of the stewards from the BNC (Steward 4) discussed the significance of connecting with food through cultivation. "There are so many edible plants growing all over the place," he said, "and it's really empowering to learn

that." Similarly, Steward 5 from Upham's Corner Food Forest mentioned that prior to the construction of the food forest, he did not know what a pawpaw was. By engaging with the food forest, he learned that a pawpaw is native to the Boston area. He was excited to share that, although the pawpaw tree has not produced fruit yet, he is eager for the day it does. He also mentioned that the community has been fortunate to have been producing Asian pears since the beginning. This illustrates that, even though some plants in food forests may take several years to fully mature and thrive, food forests continue to yield benefits during this period.

BFFC Staff Member 1, while discussing the impact of food in food forests, said "we're growing food and changing our diets, eating more from the landscape, and thinking about perennial foods that our ancestors may have eaten but aren't available in supermarkets." Access to healthy food in local grocery stores is something that neighborhoods in Boston struggle with. The Mattapan Food and Fitness Coalition serves as an example of the numerous organizations striving to increase the availability of nutritious, affordable, and easily accessible produce. As an organization, it also supports and promotes physical activity, youth development, cohesive green spaces, and community empowerment, demonstrating the interconnectedness of these elements (MFFC 2024). It was also involved in the development of the Edgewater Food Forest as it aligned well with the organization's objectives of producing accessible and healthy food while creating a space to build relationships with nature and the community.

Boston Food Retailers

Using the latest available data, I used ArcGIS Pro's Network Analyst Service Area tool to identify supermarkets and farmers markets within the service areas of several food forests (Figure 15). The Service Area creates a polygon around each food forest, within which everyone has access to it by walking. For each food forest, I calculated service areas spanning 5-, 10-, and

15-minute walks because residents are most likely to walk to reach a food forest. I excluded the Old West Church Food Forest located in west End Boston. I chose to focus on supermarkets and farmer's markets because they tend to provide more affordable fresh foods. Although the number of food retailers has likely fluctuated since this data was collected, I specifically identified two Stop & Shops and one Whole Foods within all 15-minute service areas of nine out of ten food forests in Boston. This analysis only provides a preliminary glimpse into food access in Boston, but it underscores the limited availability of accessible supermarkets in the city. This highlights how food forests, while not a replacement for supermarkets or farmers' markets, enhance access to healthy and fresh foods. It is illustrated by the presence of only three supermarkets located within the communities they primarily serve.

Conclusion

According to maps created by BPRD, food forests generally provide benefits to the communities where they are situated. They provide flood mitigation, temperature reduction, shade production, and contribute to increasing accessible and equitable food-producing open spaces throughout Boston. The Combined Score, which includes Heat, Flooding, Access, and Equity Scores, assists BPRD in determining the areas with the greatest need for open space (Appendix A). All food forests examined in this research fall within a mid to high priority range for open space overall. Therefore, BFFC has been successful in its objective to establish these parks in communities that would most benefit and who lack access to such spaces.

Additionally, the combined score maps reveal that much of Boston would benefit from increased open space. Therefore, it is important for BFFC to continue expanding its networks and preserving natural spaces for Boston residents. However, due to their small size, it is challenging

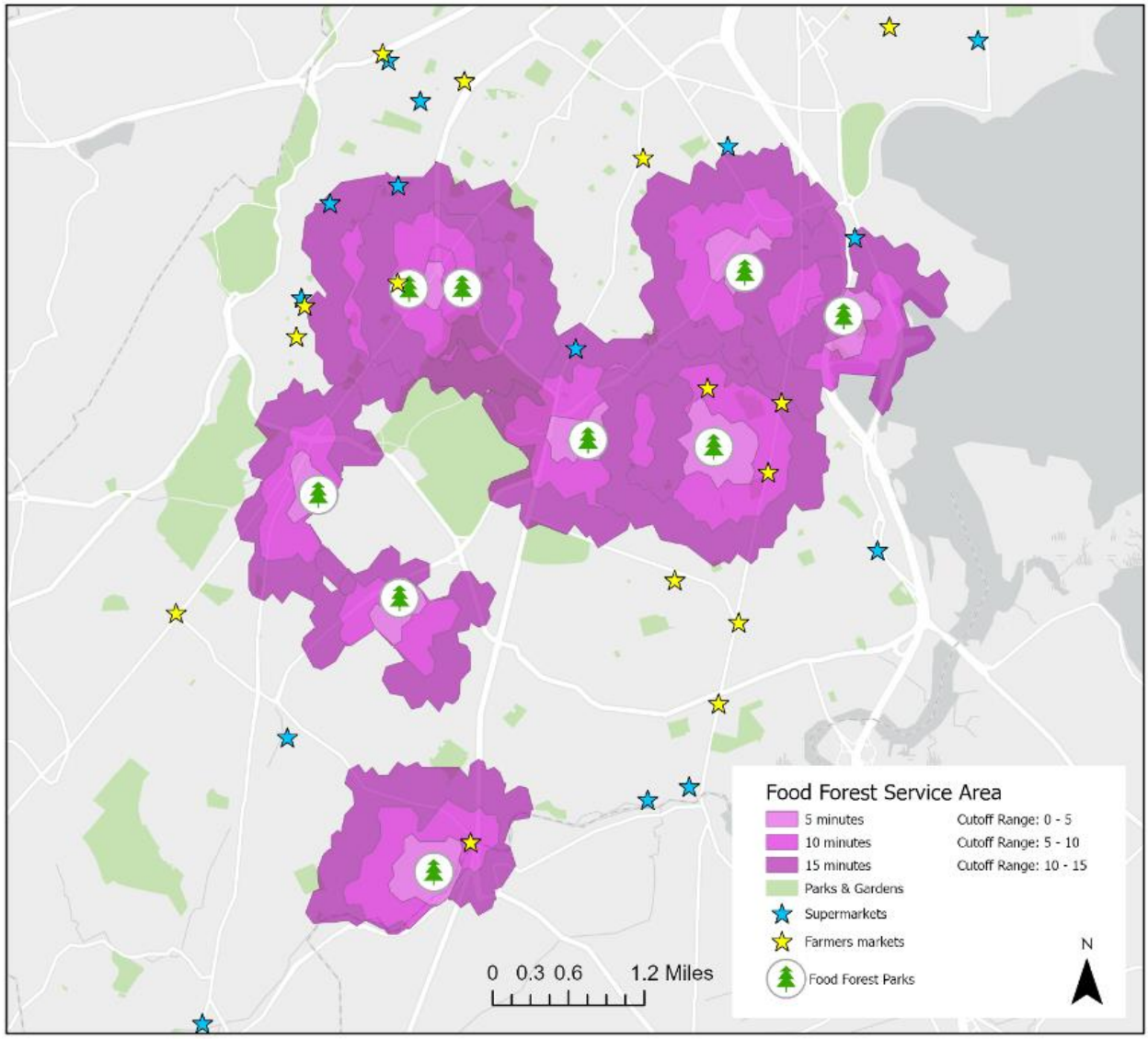


Figure 15 Food Forest Service Areas with supermarket and farmers market locations. Map courtesy of Hannah Gruber.

to assess the citywide or even neighborhood-wide impacts of food forests, which is why gathering insights from individuals directly involved is important.

CHAPTER 3: PROPERTY AND OWNERSHIP

Understanding the geographic locations of food forests helps illustrate general environmental and community benefits that food forests offer in Boston. Additionally, these spaces, distinct from traditional gardens and municipal parks, create unique opportunities for community interaction. They are also unique in that they are managed through communal ownership shared by BFFC, stewards, and community members. As part of its community ownership model, BFFC actively promotes public use of these areas, fostering engagement and shaping how individuals perceive and relate to these spaces. Theory on property frequently uses gardening to demonstrate the concepts of property and ownership. While this theory may apply to food forests in some cases, these spaces are fundamentally different from typical gardens, which are often maintained for personal benefit or aesthetic purposes. In this chapter, I analyze the intricacies of property and ownership in relation to the distinctive characteristics of food forests in Boston.

Disrupting the Commodified View of Property

Property and ownership are quite complex. Although we often operate as if owning property allows unrestricted use, fine print tells a different story. Property owners are bound by easements, restrictions, and various regulations, and cannot simply abandon or alienate from their property at will. There are rules and regulations that limit what one can do with their property. This raises questions about how property is acquired and what ownership truly entails. This section will give an overview of foundational theories on property and ownership, by John Locke, Oscar Newman, and Nicholas Blomley.

A Liberal Take on Property

John Locke presents a foundational liberal perspective of individual acquisition and possession of property in his "Second Treatise on Civil Government" (1690). He traces back to the creation of humans and their purpose on earth, stating that whether guided by natural reason or the teachings of the Bible, the earth is a common and equal resource for all. Locke then addresses the question of how one comes to acquire property. He begins by explaining that individuals have autonomy over their bodies and the labor they perform. So, when a person uses their labor to perform an action, such as picking an apple, that physical act of picking the apple makes it their property.

In Locke's perspective, a person can acquire property by mixing their labor with it, such as through farming land, as long as they utilize everything they produce. Locke states, "*As much Land* as a Man Tills, Plants, Improves, Cultivates, and can use the Product of, so much is his *Property*," (Locke 1690). He goes on to explain that if one produces more than they can use, they are infringing upon the rights of others to access and benefit from those resources. Locke also identifies money as emerging from a barter and trade system for the excess of goods created through labor on one's property, such as food and clothing. Unlike these perishable goods, money does not spoil, allowing individuals to exchange surplus produce, like apples, for money and staying within the bounds of the Law of Nature. This system only works because of mutual consent to use money to exchange for items of actual value. For Locke, property rights are a natural extension of individual rights and are justified by the labor applied to the land or resources.

Ownership and Gardening

Nicholas Blomley, a legal geographer, studies the various complexities of property that stem from neoliberal economic policies, characterized by an emphasis on free-market capitalism and limited government intervention. In contrast to Locke's liberal perspective of property as a natural right, the neoliberal view emphasizes property as a commodity and an asset that fosters personal independence and security. Blomley notes that "eighteenth century liberalism locates private property as the foundation for individual self-interest and optimal social good," while the neoliberal view of property shifts focus to maximizing economic efficiency and market-driven outcomes, often prioritizing private gain and economic growth over broader social benefits (Blomley 2004).

Blomley uses Oscar Newman's concept of defensible space to demonstrate that property is not just a static concept but involves active participation that simultaneously shapes individual identity and communicates ownership to others (Blomley 2004). Newman suggests that property is typically equated with private ownership, which he believes should be demonstrated through visible actions. He emphasizes the importance of creating clearly defined spaces that residents feel responsible for, as well as a clear distinction between public and private spaces. For example, when a vacant lot previously used for dumping trash or other criminal activities is acquired and maintained, visible acts of ownership, such as gardening, can deter further criminal activity. People perceive the space differently when it is associated with someone who owns and cares for it (Newman 1995). Newman highlights the significance of garden space and the act of gardening as a means of establishing privatized claims to land. He illustrates this by describing his efforts to reclaim a public area prone to criminal activity by assigning previously public land to individual families. Encouraging residents to garden and set up fences helped establish their proprietary feelings over the space (Newman 1995).

Blomley (2004) examines how private property and public gardening intersect, focusing on how community gardens challenge traditional ideas of property ownership. In contrast to Newman, he argues that legal ownership of property does not necessarily define one's connection to a space; rather, it defines one's unspoken agreement with others regarding what actions are allowed in that space. For example, a homeowner is expected to maintain the appearance of their property for the neighborhood.

Additionally, ownership of a space may arise from a sense of personal investment, which can be developed through participatory activities like gardening. Public gardening initiatives create shared spaces that encourage community participation and collective care. Blomley suggests that these gardens represent a type of "un-real estate" where their value is measured by social and environmental benefits rather than the monetary profit that can be accrued through exchange. Thus, he emphasizes the need to rethink property and ownership models to foster more inclusive and sustainable cities, highlighting how community gardens build community, provide local food, and enhance urban green spaces (Blomley 2004).

In "Un-real Estate: Proprietary Space and Public Gardening" (2004), Blomley describes his own research on the Atlantic Street Greenway in Vancouver. In his study he explains, "rather than asking 'what is property?', I wanted to ask how people used property talk," citing Ackerman, 1980 (Blomley 2004). He conducted interviews with residents to analyze how they talk about the greenway. He discovered that the Greenway allowed some residents to experience a sense of collective ownership by participating in its establishment and maintenance. Rather than being managed by individual landowners, the Greenway was maintained by a group of people, each contributing to different aspects of the space. This involvement allowed individuals to develop a special connection to the sections they had personally worked on and to the space as

a whole. However, perceptions of the space varied, with some individuals viewing the sections others had worked on as owned or controlled by them, despite the areas remaining public.

The Greenway demonstrates that ownership is not as clear-cut as Newman's idea of defensible space, where individual ownership is thought to create the best outcome. While Newman focuses on the design and management of spaces to promote safety, Blomley critiques the legal frameworks that can exclude certain groups from accessing or benefiting from these spaces, arguing that property can be influenced by social interactions and are subject to negotiation and contestation. In Blomley's research, ownership is shared among the municipality, the neighborhood, the street, and specific residents that have formed a relationship with the space. Similar to food forests, this blend of individual and collective ownership makes the Greenway a complex shared space (Blomley 2004).

The Relationship of BFFC Stewards to Food Forests

Rather than directly asking BFFC stewards about ownership or property, analyzing how they describe their experiences of stewardship, as well as how they relate to the space, offers insight into their role as collective owners of the land and what "collective ownership" means in practice. One distinguishing feature of food forests is that each steward seems to have a unique relationship with their food forest. As articulated by BFFC Staff Member 3, "every steward's relationship to the space is very different…why they take care of the space, what value they get out of it." The following section gives an overview of ways in which stewards have formed relationships with their respective food forests.

A Sense of Responsibility Formed through Actions

While establishing Upham's Corner Food Forest in Dorchester, BFFC Steward 5 said he did not have a strong preference for the type of open space that would fill the vacant lot on Everett Avenue. However, he expressed a lack of interest in a community garden since he already has a garden in his backyard. He also reasoned that community gardens have individually owned plots and are often locked and inaccessible to the entirety of the community. Steward 5 wanted an open space for everyone in the neighborhood. To his benefit, the Forest Hills Neighborhood Association and other stakeholders involved in the decision chose to establish a food forest on the lot. Steward 5's involvement in the creation of the food forest included taking initiative to lead the process of acquiring the land from the city. With the help of a local architectural landscape organization, he worked on creating a plan, which took about a year to develop. After the plan was complete, it took several additional years to finalize the acquisition of the vacant lot by BFFC and build the food forest.

In response to learning about the history of his involvement with Upham's Corner Food Forest, I asked about his commitment to stewardship. He said, "what do you do? Walk away? No, you can't really just walk away from something like this, and I don't think it's particularly onerous. It's not like we're out there every day doing something, we don't really have to be there all the time." He continued, "it's more like we [stewards] don't have a choice, you know…I would not be leaving it until I couldn't do it anymore, or until there are enough other people to do it." Steward 5 displayed a sense of personal responsibility for the land, similar to that of a homeowner who cannot abandon their property. He is neither legally required nor formally obligated to maintain the food forest as he could choose to step down from being a steward. However, he feels a personal responsibility to continue his stewardship and care for the space for the benefit of others, similar to how a homeowner maintains their property for the good of the

neighborhood. His involvement in its creation and ongoing maintenance likely contributed to his sense of responsibility and ownership. He noted that tending to the food forest is not a particularly burdensome task. Its design to be relatively self-sustaining is another aspect that distinguishes food forests from typical gardening, allowing him to easily continue taking care of the space.

Community Control

In Mattapan, the stewards from the Edgewater Food Forest (Stewards 1 and 2) expressed a deep commitment to maintaining community control of the food forest. Seeking to find an alternative to a community garden which already existed in the neighborhood, the Edgewater Neighborhood Association wanted to create a space where the community could foster a sense of connection to the land. To foster this connection, it was important to them that the vision originated from the community. Steward 2 explained that the association wants the "community to always be connected and for communities to feel real ownership." She added, "this was city land, that was all our collective land, right? And then community members said, we want to build this. They put in the work." By actively participating in the establishment of this food forest, the two stewards experienced a piece of community control over the development of their neighborhood, which in turn fostered a unique connection between the stewards and the food forest.

Steward 1's relationship to the vacant lots on River Street started long before the creation of the food forest. Her close connection to the space, fostered by her upbringing next door to the site, influenced her vision for its use. When she was younger and the lots were vacant, Steward 1 used the land as a shortcut. Upon moving back from California a few decades later and

discovering the lots were still unused, she considered acquiring them to use as a community farm. Fortunately, a community-led food forest resonated with her intentions and desires for the space. She explained that part of the reason she did not want a community garden was because they are very reliant on individuals to maintain their plots. By establishing a food forest, Steward 1 can oversee the entire park and collaborate with other stewards to manage different elements. This demonstrates how she is able to maintain a certain amount of control as a neighbor and steward through BFFC's collective ownership model.

Stewards handle most of the decision-making and programming within each park, while BFFC provides support and useful information on technical aspects of food forest. By working with BFFC staff, stewards are able to maximize the potential of their spaces and personalize them as much as possible. After discussions with BFFC, the Edgewater community decided to keep the black walnut trees that had existed in the space for years, making them a key feature of the food forest. Reflecting on the presence of black walnut trees, Steward 2 remarked, "it was already telling us that we are a food forest. Just, you know, if you could just manage me a little bit more." With the help of BFFC, stewards at the Edgewater Food Forest are able to hold workshops about the trees, and in early 2024, they conducted a sapping workshop. When boiled down, the sap creates a delicious and high calorie treat (Steward 2). Every aspect of the food forests that stewards engage in strengthens their bond with the space and enhances their ability to extend this connection to the community through events and workshops. By prioritizing the black walnut trees and learning how to harvest from them, stewards discovered they could share this knowledge with others, expanding the network of people who are benefiting from and connecting to these spaces.

While they were able to make use of the black walnut trees, Steward 2 also mentioned that the community's vision for its preferred plants did not fully materialize. They initially

wanted apple trees but found that black walnut trees release a chemical that is harmful to them. This made apple trees, as well as other sensitive plants, unsuitable for the food forest. Through discussions with BFFC, the Edgewater community was able to come up with plants that could coexist with the black walnut trees. It appears that although they did not have as much freedom in what plants they could grow, the stewards learned and discovered new ways to make the space their own, such as having sapping workshops to highlight the black walnut trees. Steward 2 said, "it's been a learning process…but we feel this is our community food forest." By prioritizing community control, the Edgewater Food Forest effectively cultivates connections between its stewards and the space, as they actively participate in decisions regarding the creation, design, and programming of the food forest.

Challenges in 'Collective' Ownership

The concept of collective ownership may seem straightforward and easy to implement. This section explores how this model was applied to community gardens in New York City and examines how BFFC's model of collective ownership over food forests differs from the NYC approach.

Trust for Public Land's Community Garden Model

Research by Efrat Eizenberg examines the Trust for Public Land's (TPL) model for acquiring urban community gardens in New York City. TPL is an organization that protects land for community benefit. In 1999, it purchased 64 auctioned garden sites across the city with the intention of keeping these spaces under the management of existing gardeners. TPL's model for its newly acquired 60+ gardens included a board of directors to represent all of the gardens. The board decided to establish three separate land trusts for three city boroughs: Bronx, Manhattan,

and Brooklyn-Queens. Throughout this process, gardeners maintained control over the gardens and assumed leadership roles as a result. These gardeners found themselves suddenly responsible for tasks far beyond simply tending their individual plots. Some took part in land trust meetings and discussions to shape their management approach, while others were involved in forming the board of directors. In this model, TPL stressed the importance of strong community involvement in creating community gardens, emphasizing that these gardens primarily serve as resources for city residents (Eizenberg 2012).

In this case, TPL's community garden model fell short. The three land trusts and gardeners quickly started to feel the burden of responsibility of owning and managing the land. A large amount of extra work was placed on the gardeners who had previously been responsible only for planting and maintaining their garden sites. In the new model, they spent a lot of time working to establish a board for each land trust, learning about management of gardens, and conducting administrative management tasks for maintaining the land trust and its property. Some gardeners expressed a sense of dissatisfaction with the responsibility placed upon them, noting that they did not feel they had been given a choice. The newly formed land trust management structure ended up diminishing the grassroots essence that these gardens had brought to the community (Eizenberg 2012).

However, in his research, Eizenberg compared TPL to another organization that had taken a top-down approach and redesigned a similar number of gardens *without* the gardeners' input. This resulted in an even greater disconnect between the gardeners and the space than TPL's model had caused. They felt like visitors in the new gardens, perceiving them to be public parks instead. The spaces now lacked the gardeners' identities, cultures, and aesthetics (Eizenberg 2012). Eizenberg concluded that with TPL's approach, residents were able to personally invest in the spaces and therefore the gardens "became their own backyard, their own

piece of land," (2012). Although TPL's model created extra work for gardeners, it succeeded in achieving a sense of ownership among gardeners over the gardens. A gardener in Harlem said, "I definitely think that the feeling of connection to the land and that kind of ownership really has to do with labor and time; the time that you sweat and worked in that place. And that is what makes you feel connected to it," (Eizenberg 2012). This relates to Locke's perspective on labor and property by demonstrating how labor in gardening creates a personal connection and association with the space. Furthermore, TPL's participatory model supports Blomley's argument that community involvement in space management enhances a sense of ownership and connection, demonstrating the social factors that influence these aspects.

BFFC's Model

One of the BFFC's goals in establishing food forests is to increase community control over neighborhood development. BFFC staff believes they are able to do so through the CLT model and collective ownership. From research on TPL, Eizenberg argued that through collective efforts, gardeners were able to create a sense of ownership and empowerment over their surroundings. A gardener described their experience, saying "the seeds of community green space is the heart of the hard-working people who were there originally…it was the people themselves saying 'we need to make it a better place for our community and build ourselves for ourselves by ourselves," (Eizenberg 2012). Similarly, a quote by Brenda Jones from the Edgewater Food Forest highlighted on BFFC's website says, "being a steward means I have some type of control over what's going on in my neighborhood," (BFFC 2024).

Eizenberg argues that community control over development is essential for creating spaces that offer maximum benefits to residents, as it ensures that communities have direct input. This is in alignment with BFFC's model including a board of directors that oversees the

organization. Its board of directors is "composed of community members for whom the land is being held", and they are the legal owners of the land (BFFC 2024). Unlike TPL's community garden efforts, however, BFFC recognizes the considerable responsibilities involved in its volunteer steward positions. When asked how BFFC plans to allow communities to maintain agency over food forests as the organization grows, Staff Member 1 explained its goal of having at least 51% of board member positions be occupied by stewards. They would prefer to aim higher but are aware of the commitment it brings. He explained, "we can't have a one-to-one correspondence [of one steward from each food forest on the board] because that's a burden actually on volunteers who are already doing a lot." The rest of the board consists of community and staff members. Its website states that having the Board of Directors run by community members is a way for the land to remain in community control (BFFC 2024).

Overall, stewards appear to feel a sense of autonomy regarding decisions about what should be included in food forests and any future plans. It appears that decisions are made collaboratively among stewards and neighbors and implemented independently, except when they need support or funding from BFFC. The only exception is coalition sites, in which land is held under other organizations. For example, BNC Food Forest, since it is located within the nature center, stewards are limited in what they can and cannot do. Steward 4 described this food forest as having somewhat of a "different character" than other sites due to its location. He mentioned that there is limited signage and labeling of plants. The paths are all grass and there are no benches or places to sit. This may be due to Mass Audubon's goal of creating natural habitats and wild-feeling spaces (Steward 4). BFFC Staff Member 1 mentioned this as a drawback to being a coalition site versus a land trust site. A land trust site can access more support from BFFC, and therefore stewards have more autonomy over the space.

While there are similarities between Eizenberg's study of TPL's community gardens and BFFC's food forests, there are also differences. The focus of TPL's community gardens is primarily on creating green spaces that gardeners can personally invest in, with an emphasis on labor and time as key factors in fostering ownership (Eizenberg 2012). The scope of BFFC's food forests extends beyond personal investment to include broader goals such as food justice, environmental resilience, and community empowerment. While they both prioritize community involvement and ownership, BFFC's approach places a stronger emphasis on integrating ecological and social objectives.

Conclusion

The involvement of stewards in food forests adds a new layer to the complexities of property and ownership, informed by the foundational theories of Locke, Newman, and Blomley. Locke's emphasis on individual labor and natural rights resonates with the stewards' personal investment in the establishment and maintenance of the food forests. Newman's focus on design and management aligns with how food forests' planning and physical upkeep impacts community safety and interaction. Meanwhile, Blomley's exploration of social and relational aspects highlights how collective ownership and community engagement in food forests foster diverse and meaningful connections between stewards and these spaces. Together, this illuminates how stewards' participation in decision-making and maintenance contributes to the broader community-led development of neighborhoods in Boston and their own connections to these spaces.

CHAPTER 4: FOSTERING COMMUNITY

A common theme from interviews with BFFC stewards and staff is the role of community in food forests. BFFC aims to ensure these spaces benefit their surrounding neighborhoods, with stewards and board members often being local residents themselves. The programming of food forests centers on active community involvement, particularly benefiting neighbors within walking distance. A key focus of this research was to examine how stewards and staff engage with food forests, their interactions with the spaces and fellow stewards, and their perceptions of the personal benefits, such as enhanced community connections and opportunities for learning and growth. Additionally, it explores their hopes for how others will experience these spaces and what they believe sets food forests apart from other urban green spaces. This section will delve into their insights on food forests' impact on community healing, resilience, and connection through nature and food, demonstrating how engaging with and learning about nature forges relationships among community members.

Community Healing and Resilience

In discussing the roles of food forests, BFFC staff members highlighted their potential for fostering healing and community connections. Staff Member 2 noted that humans have an innate affinity for plants and food, which serves as a simple yet effective way to bring people together and facilitate connections among community members. “We believe that community resilience is climate resilience,” he said. However, he noted a concerning trend. He believes our societal “muscle” for building relationships is weak. This insight into the role of food forests in promoting community resilience and healing provides an important lens through which we can understand their impact beyond just environmental benefits.

Resilience in Egleston Community Orchard

Jamaica Plain, commonly referred to as JP by locals, is a vibrant neighborhood. Egleston Square is located a couple blocks northeast of Franklin Park. As previously mentioned, a group of neighbors embarked on a mission to transform an empty lot into what would later become Egleston Community Orchard. Tragically, while the lot was being cleared up by the neighbors, a young man lost his life in front of the lot. Witnessing his friends and family holding a candlelight vigil nearby, the neighbors invited them to use the lot as a space for mourning. This gesture unofficially established the lot as a community gathering space.

BFFC Staff Member 1 explained that this incident heightened residents' concerns regarding the cycle of violence affecting their neighborhood and its broader implications. According to a 2023 Boston Herald report based on Boston Police Department data, the neighborhoods with the highest violence from 2018-2022 were Dorchester, Jamaica Plain, Mattapan, and Roxbury (Cawley 2023). However, the use of the newly cleaned vacant lot as a place for mourning also allowed residents to envision a neighborhood capable of healing (Staff Member 1). This space unintentionally became a symbol of peace and hope among neighbors. It inspired community members to initiate various neighborhood projects, including the revival of a previously dormant "haunted" house (Staff Member 1). This demonstrates that community members were inspired by what appeared to be happening in Egleston Community Orchard, spurring them to initiate other projects and events for the community.

This event illustrates one of several social impacts of food forest parks. BFFC Staff Member 1 described this and similar events as fostering community resilience. He explained that building resilience continues to be possible in the lot on Boylston Street because "people know each other, are talking to each other, and in the face of shocks and tragedy are coming together rather than falling apart." At the time, Egleston Square was a diverse neighborhood, and BFFC

did not yet exist. However, looking back over a decade later, it is clear that Egleston Community Orchard was one of the first initiatives that helped establish the organization. Starting with Egleston Community Orchard, BFFC embraced a vision of bringing people together across differences.

BFFC Staff Member 1 also highlighted the importance of the cross-cultural community that was being built. He spoke about "getting to know each other across race and class" and bridging language barriers. "That was a space where two communities that overlap and often were like ships passing in the night, all of a sudden intersected," he shared. This exemplifies an aspect of BFFC's mission that it aims to spread across Boston. With a goal of creating 30 food forests by 2030, BFFC wants to create a network of stewards across Boston. This would allow three times as many communities to experience the benefits of food forests, including fostering connections between individuals who might not have otherwise met. Similarly, having about 10 stewards at each site will create a web of connectivity between 300 community leaders throughout the city (Staff Member 1). Staff Member 1 said, "that's a constituency that can start to speak with a voice about its agenda around climate, resilience, and racial justice in Boston."

Resilience in Edgewater Food Forest

Similarly, the stewards of Edgewater Food Forest in Mattapan were interested in creating a communal space where people living in a historically marginalized neighborhood could connect with each other and with nature. Established in 2021, the Edgewater Food Forest is situated in one of Boston's southernmost neighborhoods. The food forest is set back from the street and is enclosed by a wooden fence, creating an extra sense of seclusion. In its design, the Edgewater community opted for a fence to surround the space and a gate to fully enclose it. Each

morning and evening, a steward unlocks and locks the gate to ensure the space remains in pristine condition for its neighbors.

Maintaining open spaces is important to the Mattapan neighborhood, which transformed into a predominantly low-income neighborhood of color several decades ago. Reflecting the broader mission of BFFC to address racial equity challenges, the stewards of Edgewater Food Forest, Stewards 1 and 2, expressed interest in creating an accessible open space for their community. Steward 1 noted the abundance of vacant lots in low-income neighborhoods in Boston and wanted to demonstrate their potential by establishing a food forest. She considers these empty lots to be "a treasure that just hasn't been realized." An article from the Dorchester Reporter echoed this sentiment, highlighting the impact of the Edgewater Food Forest on increasing green space in Mattapan. A steward interviewed for the article said, "there's a lot of beauty in Mattapan that people forget about, and I want to help bring it out, and for the whole city to share it. There's a lot of amazing green space here; I want it to be a destination for the rest of the city." She hopes initiatives like this will help residents recognize the natural resources available in their neighborhood (Sheehan 2021).

Considering this context, Steward 2 mentioned the community's desire to include culturally significant foods in planning for the food forest. A large portion of the neighborhood's population is from the Caribbean or the southern United States. Unfortunately, native fruits from those regions would not thrive in Boston's climate, so instead, the community decided to include plants that people would be familiar with and could easily connect with. While food forests are intentionally designed with natural ecosystems in mind, BFFC prioritizes the wants and needs of the community above all else. This commitment ensures that the food forests serve as vital resources for local residents rather than solely focusing on environmental aspects. BFFC Staff Member 1 emphasized this by explaining, "Although we do tend to center on native perennials,

people are familiar with apples and pears and other fruits that are not necessarily native. And so it's thinking about what the human value of the space is. I think it's because at the end of the day, it's a human designed space."

Steward 1 also described her desire to preserve the land for current and future generations in Mattapan. Having spent her early life in Mattapan and returning years later, she described her experience witnessing gentrification, in both California and Boston. Before current residents moved in, Mattapan was primarily inhabited by white, Jewish families. She explained that the current residents, predominantly low-income people of color, who purchased homes in the late 70s and early 80s, are now senior citizens and will soon be leaving the neighborhood. She said:

> "I see the potential that this community can flip again, very easily. And it could be done in a good way, or it could be done in a bad way…and so for me the food forest is already this place where neighbors can get together and get to know each other. And that's already creating our community to fight the potential of what's going to happen. And to stand up for this community, and, you know, fine, there's nothing wrong with it changing, but not to be decimated from what it was," (Steward 1).

By using the food forest as an anchor for current residents, Steward 1 aims to create a sense of community and appreciation for the neighborhood's existing assets. This engagement may help mitigate the impacts of gentrification in the surrounding community and create strong relationships among community members, thereby fostering community resilience among residents. It is one of the reasons she is actively trying to get younger community members involved in the food forest. "We're not gonna be around forever. This space, I hope, will be around for over 100 years. Way, way past when I'm gone," (Steward 1). This highlights that while food forests are designed with current communities' input, it is essential for future generations to engage in and carry on the stewardship established by the present generation to ensure continued benefits.

In every sense, Steward 1 is passionate about ensuring that the food forest remains under control of the community. She said, “I have a voice. I want to make sure my voice is heard because I feel like there are good ways and bad ways for neighborhoods to transition. And so for me, I see the food forest as a way to help make our community stronger, you know, and for people to see value in our community.” Food forests are unique among green spaces in that they actively encourage people to engage with one another and interact with a valuable asset within their community, reinforcing resilience and healing in the process.

Connections through Nature and Food

As hubs for learning, BFFC’s food forests foster connections through nature and food. This section explores how they facilitate relationships among stewards, nature, and food, enhance access to healthy food, and support personal growth and learning. By prioritizing community needs alongside ecological considerations, food forests offer a holistic approach to urban green spaces, empowering individuals and strengthening communities.

A Food Forest Ahead of Its Time

Over 40 years ago, the Leland Cooperative Garden in Jamaica Plain, originally called Leland Street Community Garden, was established. Kathleen Robinson, a “veteran steward” at the garden, documented its history from 1982 to 2008. In the early 1980s, the Forest Hills neighborhood within Jamaica Plain was vastly different from today. The area was adjacent to an area of Boston considered “bad” or “dangerous” due to decades of decline and lack of city investment. This reputation made buying and selling homes difficult, especially since it was a redlined district where obtaining home insurance was challenging. In nearby neighborhoods like Dorchester and Roxbury, landlords would sometimes resort to arson on properties they could not

sell to claim insurance money. When Steward 5 mentioned that the lot for Upham's Corner Food Forest was likely once the site for a house that had burned down, this might have been the reason. The same scenario could apply to Egleston Community Orchard which was also described as previously having a house that had burnt down. Vacant lots like these were nearly worthless, often turned over to the city when owners stopped paying taxes (Robinson 2008).

At the end of Leland Street, next to Forest Hills Cemetery, three empty lots, known by neighbors as "The Lots," had become dumping grounds for construction waste and old cars, and was a site for illegal activities such as drug dealing. Eventually, cleanup days were organized, during which neighbors discussed repurposing the lots as community space. The land was purchased by the now defunct Boston Natural Areas Network, with ownership later transferred to the Trustees of Reservations, which is now partnered with BFFC. More recently, the Leland Street Community Garden changed its name to the Leland Street *Cooperative* Garden to reflect its maintenance and use by the community as a whole, as opposed to having individual plots as a community garden typically does (Robinson 2016). The Leland Street Cooperative Garden's status as an open and accessible space where edible plants are cultivated led to its affiliation with BFFC.

BFFC Steward 3 got involved with the Leland Street Cooperative Garden seven years ago after moving from Germany to Boston. While walking his dogs in his new neighborhood in Jamaica Plain, he stumbled upon an unusual plot of land. He saw vegetables growing without a surrounding fence and was intrigued. "It wasn't your usual community garden," he explained. According to the Leland Street Cooperative Garden's website, "[it] is a community garden in the truest sense of the term. Dedicated to creating a neighborhood gathering place, the garden is free from individually owned plots and fences, locks and keys. Everything in the garden is open for all to use," (Leland Street Co-operative Garden 2024). It was a food forest ahead of its time.

The unique charm of the open and communal garden space is what motivated Steward 3 to get involved. Recognizing the space's alignment with his interests in sustainable agriculture, eco-friendly lifestyles, and resource-conscious living, Steward 3 decided to volunteer as a steward and began actively learning more about food forests. For example, he enrolled in a permaculture design course, where he learned about creating agricultural systems modeled after relationships found in natural ecosystems. Drawn to the park's distinctive, open design and inspired by his passion for sustainable agriculture and eco-friendly practices, he embraced the opportunity to learn from and contribute to the food forest. His participation, including enrolling in a permaculture design course, illustrates how food forests can function as centers for education and personal development.

An Accessible Space for Connection and Learning

Both stewards from Edgewater Food Forest expressed their desire to create a space for people to learn and engage. Steward 2 explained, "We're trying to encourage everyone to learn more about the connection between plants and a healthy diet and there's so much to share, so much to learn." Another space for learning within food forests is through programming that stewards organize for their respective communities. Steward 2 continued, "We're doing all kinds of activities in the food forest itself to make that information accessible to the community." They hope to host movie nights and yoga sessions during the summer, as well as other annual events, such as the Halloween celebration held last October. The event was geared toward children, with a pumpkin decorating station, snacks, music, and face painting. However, the pride of the adults in introducing their children to the food forests was very visible. As attendees mingled, they shared their excitement with each other about introducing their kids or grandkids to the space.

In addition to individual food forest programming, BFFC offers workshops to educate stewards and community members on food forest-related topics. Steward 2 expressed how her role allows her to learn about food forests, which motivates her to share her discoveries with other community members. Through volunteering with BFFC, Steward 4 from BNC Food Forest has met like-minded people who care about sustainability, the climate crisis, and finding alternative systems to capitalism. Stewardship with BFFC provides an opportunity to connect with new individuals and draw inspiration from their perceptions of these various aspects of life. He mentioned that his stewardship experience has taught him about a wide range of edible plants and enabled him to connect with and learn from other stewards.

Steward 3 from Leland Street Cooperative Garden considered learning to be one of his biggest takeaways from his stewardship experience. In addition to food forest techniques, he has also learned skills that are applicable outside of the food forest, such as group management and conflict resolution. He explained that volunteering is full of new challenges, and he can never quite predict what may happen next. However, he noted that stewardship is also about friendships and participating in a community, “with all the pros and cons with it.”

Furthermore, Steward 2 from Edgewater Food Forest explained how the mere existence of food forests provides learning opportunities. “It's a wonderful space to just be in, you know, it's a vibrant space in the spring, and in the summertime, you can see things growing or blooming. We have dogwood trees, and many people don't know that dogwood trees also create fruit, right? But you get to see the beautiful blooms. And then, later on, you see where the blossoms were, there's fruit there,” she explained, “each time you're there there's something new to learn.”

Steward 1 also recounted an instance when she saw a man enter the food forest. She mentioned that she uses such opportunities to engage with visitors, introducing them to the

space. It has been noted that, apart from the stewards, the general public has limited awareness of food forests and their purpose. For people who stumble upon food forests in their neighborhoods or are curious to learn more, there are also educational signs throughout the parks with various facts and information. For example, some signs say, “Why Does This Space Look Wild?”, which explains sections of food forests that are left unattended in order to “allow nature to do the regenerative work it’s designed to do.” Furthermore, each edible plant is tagged so people know what they are picking. Some tags also have descriptions about when and how it is best to eat or cook the fruit.

Learning and education can help knit communities together. Some stewards expressed a desire to educate their communities and create connections among people through nature and food. Others implied that one of the main reasons they steward is to learn. Through stewardship, they are able to connect with new people who have different skills and mutually share knowledge. In an article from Inhabitat, BFFC’s executive director said: “We don’t want to reinvent the wheel. We want to connect the dots between the many community organizations already doing great work in Boston and build an educational network in which people can learn how to establish a food forest in their own neighborhood,” (Beach 2015). This highlights the importance of information sharing, which BFFC facilitates through workshops and ongoing support the creation and maintenance of food forests, as well as among stewards themselves.

Steward 2 noted her interactions with people currently planning a food forest in Dorchester and how they seemed to have learned from the experiences of the Edgewater Food Forest. “We’re all just looking to learn more from each other,” she explained. She expressed excitement about the growing popularity of food forests in Boston, anticipating increased tree conservation, more greenery, and enhanced community connections and access to healthy food.

She added, “If there are any ways that stewards at the Edgewater Food Forest can help in any way, we’re always happy to do that.”

Human-Nature Harmony

BFFC Steward 4 volunteers at the BNC Food Forest, another site affiliated with BFFC. The nature center’s commitment to preserving nature is evident in the design of its food forest, setting it apart from food forests established in vacant lots. BNC’s food forest lacks some of the park-like features of other BFFC food forests, such as outdoor furniture or stone pathways. Instead, it features grassy paths that wind through a dense array of edible plants, bushes, and trees, creating a feeling of walking through a lush forest.

Steward 4 began his stewardship journey as the world was adapting to life with COVID-19. BNC was closed for the first year of the pandemic, which significantly reduced its stewardship team. When a volunteer day was announced, Steward 4 decided to participate. He thoroughly enjoyed the tree-planting session and continued to attend weekly workdays. When asked about his reason for joining the stewardship team, he described his personal journey of self-discovery and connection. Over the past few years, he has been working on actively reshaping his worldview by fostering a deep connection with nature, helping him understand his place within the natural world. He has also been reassessing societal norms and food systems, viewing food forests as spaces where nature, food, and social interactions intersect. “So many people are very disconnected from [nature] and disconnected from their food…I think it's kind of a hole in a lot of people,” he said. “I feel like it’s really important for us to be involved with our food, and where it comes from and working with plants together.” In this sense, he believes humans should converse and work in harmony with nature.

Figure 16 BNC Food Forest, October 2023. Image courtesy of Hannah Gruber.

In Heather Paxson's book, *Eating Beside Ourselves: Thresholds of Foods and Bodies*, she explores the relationships between humans and food, emphasizing that eating involves various entities and perspectives, not just humans. She explains, "what makes *food* food, in both substance and significance, concerns its relation to a myriad of eaters—not only human eaters but others besides," (Paxson 2024). In a food forest park, numerous relationships and connections are formed, including human-to-human, human-to-nature, and nature-to-nature interactions. Stewards mentioned the natural dynamics of food forests, such as its design that mimics ecosystems and supports wildlife in addition to serving human needs. Unlike community gardens, where people may find it frustrating if animals eat their fruits or vegetables, food forests

are designed to support both humans and wildlife in their resemblance to natural ecosystems. Stewards recounted instances where they could not be upset by rabbits nibbling on freshly planted crops because the food is meant for everyone and everything to eat. They also discussed efforts to implement natural pest control methods, such as installing owl houses to deter rodents or bat homes to reduce mosquitoes. The use of biomimicry in designing systems within food forests fosters a unique connection between humans, plants, and animals. One that does not typically occur in a community garden, public park, or natural reserve.

Conclusion

Interviews with stewards and staff highlight that food forests are instrumental in fostering connections through nature and food. Beyond their environmental benefits, these spaces contribute to community healing and resilience. They serve as spaces for communities to engage with each other, learn from one another, and heal together. They also serve as venues for personal growth and learning, offering insights into oneself, others, and practical skills related to gardening and agriculture. By addressing community needs while integrating ecological and educational aspects, food forests provide a comprehensive approach to urban green spaces that enhances community strength and well-being.

CONCLUSION

As demonstrated in the map analysis in Chapter 2, food forests can notably contribute to climate resilience. As urban green spaces, they naturally contribute to mitigating climate change impacts such as urban heat island effect and flooding. Their location in historically underserved communities in Boston enables them to align with the city's goal of expanding green spaces for those who would benefit the most. The geographical analysis of food forests is important as it aligns with BFFC's objectives, yet this research discovered that the features that matter most to people relate to their capacity to forge community.

BFFC's model of collective ownership enables stewards to connect with food forests through various aspects, creating relationships that can differ from those formed through traditional individual gardening. Through their collective involvement in the creation and maintenance of the food forest, stewards embrace the space, making it an integral part of their community. Food forests serve as multifunctional and multifaceted urban green spaces in their ability to facilitate various aspects of community, such as interpersonal relationships, connections with and through nature and food, and opportunities for learning. BFFC's food forests aim to achieve goals like food justice, environmental sustainability, and community resilience, all contributing to the strength of the communities they serve. Ultimately, it is the interpersonal relationships that stand out as the most significant outcome of food forests.

Overall, BFFC's food forests diverge from food forests described in current literature, which paints food forests as primarily dedicated to mimicking nature. While the foundation of BFFC's food forests is based on urban agroforestry techniques like permaculture, interviews revealed that stewards prioritize their role as a community resource over their function as a space that mimics natural ecosystems. This does not mean that these two aspects cannot coexist. BFFC effectively bridges the gap between environmental and community benefits.

BFFC's food forests are unique in their ability to prioritize community involvement while being ecologically mindful, setting them apart from other urban green spaces. BFFC's approach aligns with the concept of ruderal spaces, as described by Stoetzer (2018) in "Ruderal Ecologies: Rethinking Nature, Migration, and the Urban Landscape in Berlin," where spaces are "neither wild nor domesticated" and blend human intervention with natural processes. In this way BFFC's food forests embody a unique combination of human-centric design and ecological resilience, making them an exceptional model for urban green spaces. Unlike traditional nature preserves, which are meant to remain 'untouched' by humans, or gardens that often emphasize individual ownership, BFFC's food forests are distinctly human-made landscapes where the community actively participates in the design and maintenance. Their collective ownership fosters a sense of connection among residents, who engage with the space not just for personal benefit but for the shared purpose of creating and sustaining the environment for the benefit of others.

At the same time, these spaces are designed with a foundation in ecological awareness. BFFC does not seek to restore the land to a specific historical state by exclusively using native plants. Instead, it acknowledges the realities of climate change, understanding that while native plants can benefit existing species and ecosystems, this may not always need to take priority in an evolving climate. The selection of plant species in BFFC's food forests is culturally significant, while reflecting both community preferences and the goal of creating a cohesive, self-sustaining ecosystem where plants support one another.

> "Although we do tend to center on native perennials, people are familiar with apples and pears and other fruits that are not necessarily native. We think about what the human value of the space is. Which I think is because at the end of the day, it's a human designed system…We're looking at and getting inspiration from ecosystems and woodlands and trying to understand how plants like to live together. Also getting inspiration from scientific studies and from ancestral practices, indigenous practices,

> practices that are still continued today in other parts of the world. And we're trying to think about all that as some form of ecological agricultural practice that we can build into the space that we call a food forest park," BFFC Staff Member 1.

BFFC is working with a combination of practices, allowing each food forest to have its own personality. For instance, the Ellington Street Community Food Forest's medicinal mandala is filled with herbs, rather than strictly native plants, while the Edgewater Food Forest preserves existing black walnut trees while introducing new plants that are both familiar to community members and compatible with the existing trees. Alternatively, in the case of Savin Hill Wildlife Garden, the community wanted a space purely dedicated to native plants for birds, bees, butterflies and other wildlife (BFFC 2024). Food forests are not simply spaces for immediate, individual cultivation, like traditional gardens, but are designed with long-term communal benefits in mind. While someone might grow carrots in a garden for a quick harvest, a food forest might prioritize planting trees like the pawpaw that will benefit future generations.

As BFFC Staff Member 2 explained, creating food forests serves to promote community and climate resilience in Boston. "The more we can build those green spaces, the more livable, and resilient our city will be in the future," he said. He also noted the urgent challenges posed by climate change, stating, "Our streets are flooding, but the more we can soften our ground, like food forests do–let stormwater in, plant trees–it'll offer ourselves a little bit of hope and a little bit of control as we enter this uncertain future." This hope and control are intended to be passed down to future generations, a fundamental principle on which BFFC was founded. With the intention of maintaining food forests as perpetual open spaces for communities, planning for an uncertain future was always a consideration. In regard to this uncertain future, Staff Member 1 said, "It's natural for us to look towards each other and say, 'How do we come together? And

what can we do to help? And I think the food forests are really vehicles for that energy. They capture that energy."

BFFC is a growing organization, but its drive started and continues to be grounded in local residents' desire to improve their community. "I think the important thing to understand about this entire initiative from day one is that it came from local folks saying, 'hey, I want to do something in my neighborhood that helps my neighbors and addresses climate change, addresses food injustice, and brings bees and butterflies back into my neighborhood'," BFFC Staff Member 1 said. "It was coming from that impetus that people have to take care of each other and show up in a very local way." Volunteering and interacting with food forests is getting people off their computers and social media, and personally interacting and connecting with one another. "That's how it started, and I think that's what it continues to be," (Staff Member 1).

POLICY RECOMMENDATIONS

This thesis outlines numerous benefits that food forests can bring to the City of Boston, aligning with its current plans for enhancing the city's resilience in the face of this uncertain future. Therefore, I recommend that food forests be more thoroughly integrated into city planning documents. Additionally, a public awareness campaign should be launched to disseminate information about food forests and similar green spaces, showcasing existing initiatives like the BFFC. The implementation of these two policies would not only increase public awareness but also inspire other cities and communities to adopt similar projects. As demonstrated in this research, food forests uniquely blend community, nature, and food, offering significant advantages to urban areas nationwide. However, the long-term success of these green spaces depends on the involvement of younger generations, who will need to continue the work initiated by current stewards and community members. Based on the outcome of this research, this section will further elaborate on these areas of improvement.

Addition of Food Forest in Boston City Planning Initiatives

This thesis has demonstrated that food forests offer numerous benefits, including tree planting, biodiversity, climate resilience, food security, community well-being and engagement, and personal enrichment. By comprehensively integrating these multifunctional green spaces into its urban green space planning, Boston can set a precedent for surrounding municipalities by promoting regional awareness of the benefits of these green spaces and techniques for their implementation. Listing food forests as essential tools in such planning is crucial. Advocacy, alongside support, will also play a vital role in realizing this vision. This will not only enhance urban green spaces but also promote sustainable practices and community well-being across the city and beyond.

Currently, I believe food forests are underrepresented in official City of Boston planning documents. They are acknowledged only in the 2022 Urban Forestry Plan. Despite their broad benefits, they are often overlooked in other strategic planning documents. For example, explicit endorsement in city plans like the OSRP and Heat Resilience Solutions for Boston are lacking. True, Boston has the capacity to provide grants to food forest projects, such as the $100,000+ grant awarded to the Edgewater Food Forest in 2022 through the Community Preservation Act, which funds projects aimed at creating or preserving affordable housing, historic sites, open spaces, and recreation (BPD 2022). The city also holds various meetings on green space planning in which food forests may be considered for specific city lots. Consistently recognizing food forests in official planning documents, however, would signal an official commitment to expanding these spaces where warranted. Highlighting food forests, or similar green space initiatives that aim to create and preserve urban green space in these documents would reinforce their importance and encourage more widespread adoption.

Public Information Campaign

National and state-level information clearinghouses dedicated to food forests and their role in green space planning would significantly enhance public awareness and engagement over this issue. These online platforms would comprehensively cover the subject along with related green space initiatives such as community gardens, urban agriculture, and public parks. The websites would provide detailed information on each type of initiative, highlighting its benefits, limitations, estimated costs, optimal locations, and implementation strategies. They would also feature profiles of organizations currently engaged in this work, such as BFFC, offering a wealth of examples for others to learn from or join. The information could help create a network of like-

minded organizations, much like BFFC's goal of creating a network of climate leaders across Boston.

To foster community involvement, the websites could include public input sections where individuals can share examples of successful food forests and other green space projects in their communities. This interactive feature would enable the exchange of ideas and best practices, benefiting cities nationwide. By providing a centralized resource, cities across the country could access diverse strategies for expanding food forests and maximizing green space. Organizations could use the platforms to discover and learn from similar initiatives, facilitating knowledge-sharing and collaboration. For instance, cities like Seattle, with Beacon Food Forest, and Philadelphia, with the Philadelphia Orchard Project, could offer valuable insights into different approaches to urban green space development.

The websites could also serve as a benchmark for cities looking to generally improve their green space planning. Boston, known for its advanced urban green space initiatives, could be a model for cities with outdated plans. By creating the pooled resources, cities can gain inspiration and practical guidance to enhance their own food forest and green space efforts. Establishing state and national information clearinghouses would support the growth of food forests and urban green spaces in general, contribute to sustainable urban development, and create a national network of organizations dedicated to expanding community resilience through food forest and green space planning.

Expanding Youth Programming

Given the long-term benefits and growth cycles of food forests, it is important to provide youth programming to educate, inspire, and involve young people in food forests and green

spaces. It will encourage them to support, if not eventually lead, community-driven initiatives and environmental stewardship.

As highlighted by the interviewees for this thesis, involving younger generations in initiatives like food forests is only natural. Food forests will remain supported through the efforts of BFFC staff, stewards, board members, and community members, but their future success depends on the involvement of younger generations. Just as Steward 1's goal in creating the Edgewater Food Forest was to benefit future generations, it is crucial that these younger generations continue the work that was initiated in establishing these communal spaces.

These spaces are also designed to benefit future generations, as many plants in food forests, such as the pawpaw trees at Upham's Corner Food Forest and the mushroom logs at Edgewater Food Forest, take time to mature and produce. While annuals like tomatoes offer immediate results, perennials prioritize long-term growth and sustainability. BFFC's executive director has emphasized the importance of these initiatives for his children, as they aim to provide them with hope and set them up for success in facing climate change. My observations of children engaging in food forests, such as the Halloween event at Edgewater Food Forest where stewards organized activities to help children experience the space as they would a public park, underscore their positive impact. Engaging them in the food forest fosters a connection that they may carry throughout their childhood. As Steward 1 mentioned, this connection can help them see value in their community as they grow older.

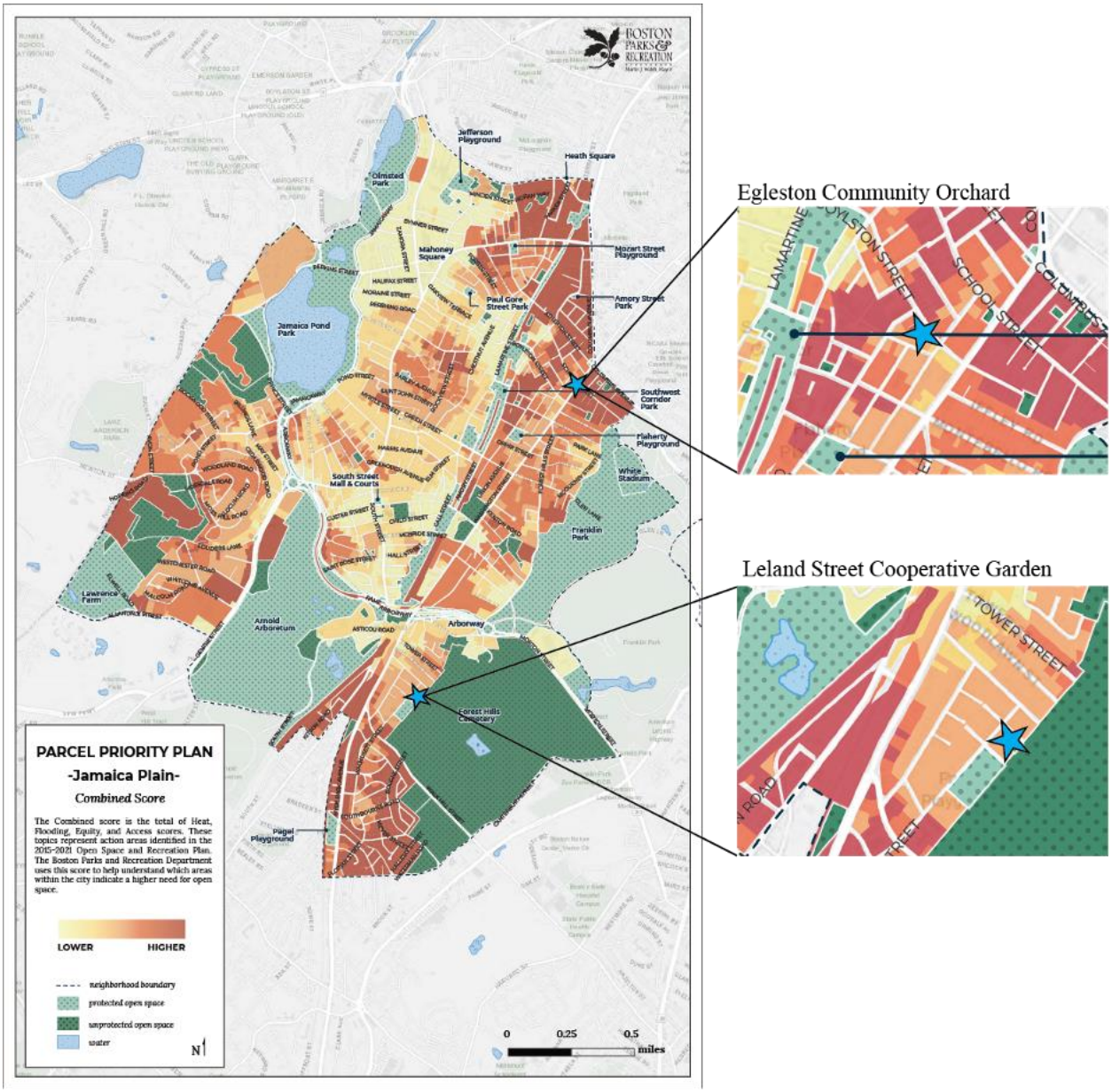
One way to increase engagement with younger generations would be for organizations like BFFC or food forest stewards to develop partnerships with local schools to integrate food forest education into the curriculum. Inspired by the Philadelphia Orchard Project which has a similar model to BFFC, this could include subjects like botany, ecology, and nutrition, taught through hands-on activities in food forests (POP 2023). Organizing regular field trips with

guided tours and interactive workshops could provide students with practical learning opportunities, making lessons more engaging and impactful. Similarly, establishing partnerships with environment-related summer camps or daycare programs to include trips to food forests could also be beneficial. These camps often combine education, hands-on experience, and nature exploration, fostering a deeper connection to the environment. Daycare programs could engage young children with food forests, promoting early environmental awareness and appreciation. Family days in which parents and children can participate together in food forest activities, along with seasonal events for children such as the Edgewater Food Forest Halloween event or Leland Street Cooperative Garden's annual Harvest Hoopla, could encourage family bonding and community building.

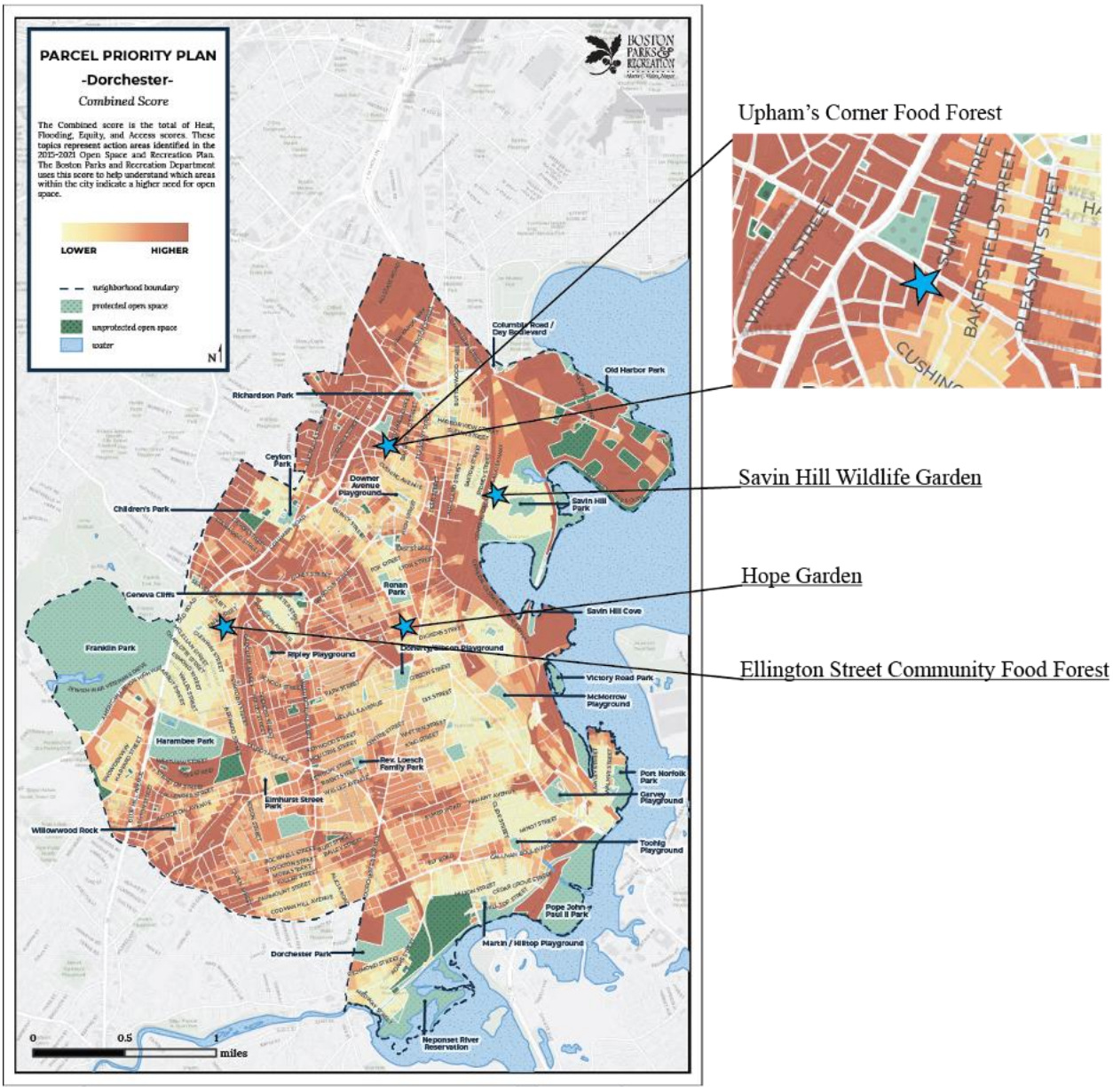
It could also be beneficial to leverage existing youth programs with BFFC's partners where applicable. For example, BNC could coordinate its family-oriented programming with BFFC, allowing families to engage with the food forest. This would provide unique educational opportunities distinct from the nature center's primary focus on nature preservation.

By integrating educational activities and firsthand experiences, Boston can inspire a new generation to care for and benefit from these green spaces. This initiative would support the immediate educational and recreational needs of youth and cultivate a lifelong commitment to environmental sustainability. Said BFFC Staff Member 1, "We're suffering from climate change and these little kids are going to inherit that. But they're also going to inherit what we're learning about how to do things differently in our city. And it's fun to teach them by doing it together."

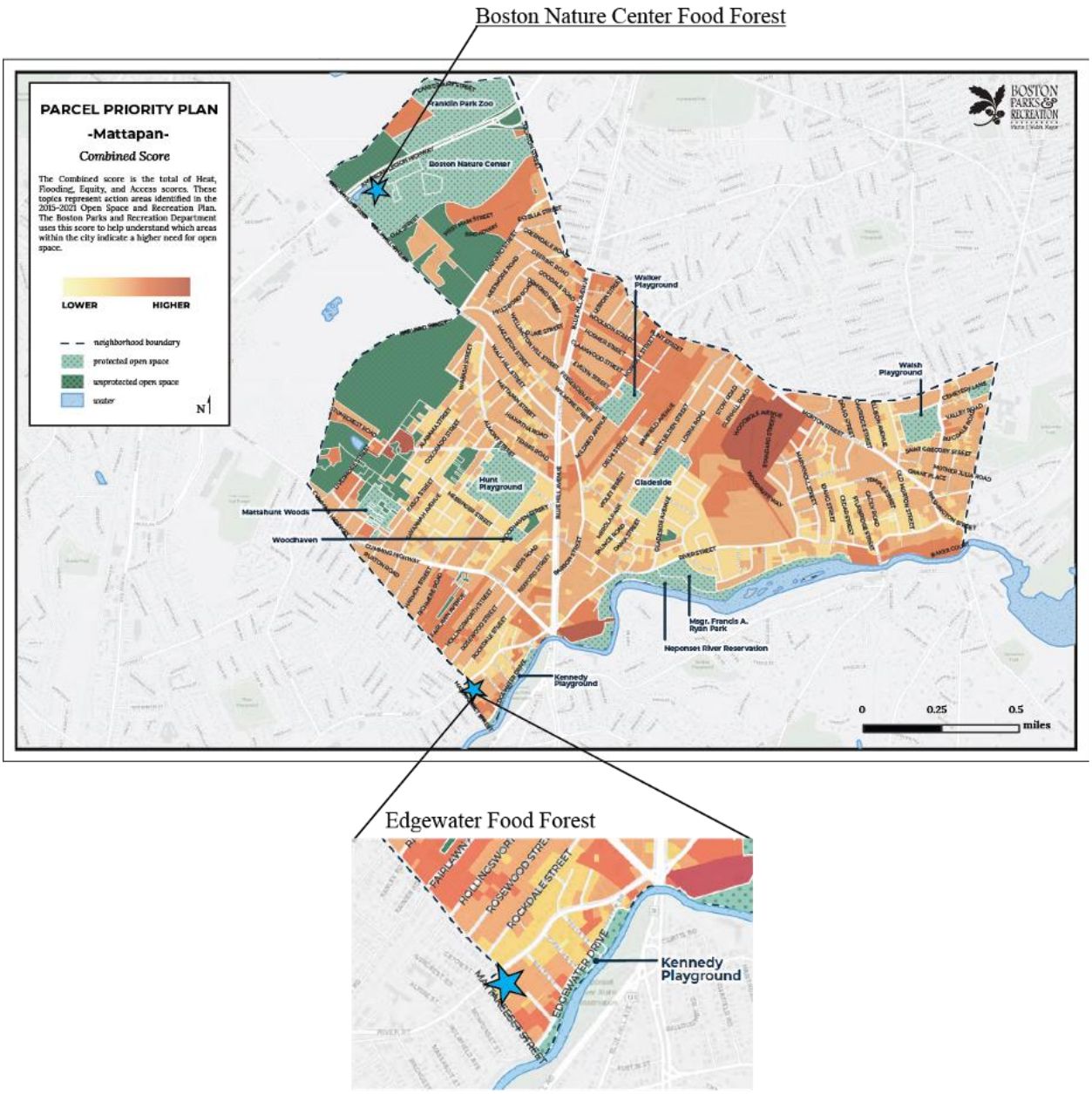
APPENDIX A - COMBINED SCORE MAPS



BPRD's PPP Combined Score for Jamaica Plain.



BPRD's PPP Combined Score map for Dorchester



BPRD's PPP Combined Score map for Mattapan.

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