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Exploring urban forestry non-governmental organisations (NGOs) in the eastern United States

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ABSTRACT

Urban forestry NGOs commenced gaining prominence in the socio-political landscape of the 20th century. Despite a dramatic increase in the number of urban forestry NGOs (50%) in recent decades, they are rarely described in the scientific literature, and they have not been investigated in any formal, systematic manner. Little is known about the origins of many of these organisations or how many formal urban forestry NGOs are presently active across the United States. Knowledge gaps persist pertaining to organisational structure, programming, and funding. To address these gaps in knowledge, this article presents findings from a survey of 81 urban forestry NGOs in the temperate forest region of the United States. We report on typical traits of urban forestry NGOs across five themes that include "origin", "organisational structure", "funding", "partnerships", and "programming". Nearly 80% of respondents indicated that their urban forestry NGO has helped develop, shape, or implement policy in their community (e.g. tree policies & ordinances, urban forest master plans). An overwhelming majority of NGOs (90% and 83%, respectively) indicated that both private citizens and local departments were important collaborators. A vast majority of respondents (86%) indicated that their NGO routinely engages in planting trees and over 70% of urban forestry NGOs routinely participate in public events including Arbor Day celebrations and local tree giveaways. There is widespread variation regarding the size, composition, and even function of urban forestry NGOs.

KEYWORDS

Canopy cover; non-governmental organisations; urban and community forestry; volunteers

Introduction

The benefits of urban forests have been well-documented in relation to perspectives concerning the environment (Nowak & Greenfield, 2018a; Nowak & Greenfield, 2018b), the economy (Donovan & Butry, 2011), and human health (Mei, Malik, Harper, & Jimenez, 2021; Wolf, Lam, McKeen, Richardson, Bosch, & Bardekjian, 2020). The USDA Forest Service (USFS) has estimated that 25% of the land area of the United States (U.S.) is urbanised (Dwyer & Nowak, 2000), positing that urban forests directly influence the daily lives of nearly 80% of the populace. Urban land area across the U.S. has also been projected to more than double by 2060, in contrast to decreasing urban tree canopy

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cover (UTCC %) (Nowak and Greenfield 2018). Thus, protecting and promoting urban forest area for present and future generations has presented itself as an emergent priority for many communities across the U.S. and around the world (Eisenman, Flanders, Harper, Hauer, & Lieberknecht, 2021).

Urban forest management has a rich history in the U.S. with a variety of legislative acts that have been passed at the local, state, and federal level in support of urban trees. Regulations have existed in Massachusetts, New Jersey, and Pennsylvania since the 1600s (Kuser, 2007; Hastings, 1921). In 1700, the City of Philadelphia required homeowners to plant trees, and in 1896 it hired its first professional arborist (Kuser, 2007). That same year, Massachusetts passed legislation establishing the position of the municipal Tree Warden – an individual responsible for the care and protection of urban trees (Ricard, 2005; Harper 2017). In 1966, Georgia was the first state to initiate an urban forestry programme and urban forestry was added to the mission of the USFS in 1972. The following year, the Commonwealth of Pennsylvania appointed the first state urban forester in the nation (Kuser, 2007). Today, the federal America the Beautiful programme, enacted as part of the 1990 Farm Bill, continues to provide annual funding for urban forestry across the country (Kuser, 2007).) The recent signing of the Infrastructure and Jobs Act by President Joe Biden included a Healthy Streets programme, featuring nearly $500 million USD for natural infrastructure (i.e. trees) aimed at improving flood and stormwater resilience (Daley, 2021).

The formation of urban forestry NGOs

Concomitant with legislative acts and regulatory guidance passed by various levels of government, urban forestry non-governmental organisations (NGOs) have also emerged across the U.S. in support of urban trees. Though urban forestry NGOs have gained prominence, they are rarely described in the scientific literature, and searches of major databases revealed that no broad-based, formal, systematic investigation of urban forestry NGOs has taken place. In some instances, it is believed that these organisations arose out of the need to address chronic urban forestry-related problems that ensued as a result of a community's ageing and declining tree population (Harper, Huff, Bloniarz, DeStefano, & Nicolson, 2018); in other situations, they were established to address an acute loss of urban tree canopy cover due to a severe storm event or a rapidly invading pest of importance (Harper, 2017; Elton, Weil, & Harper, 2020). Some urban forestry NGOs formed in the recent past, while others originated during the Progressive Era of the late 19th century, which saw a blooming of citizen conservation groups across the U.S. (Foster, 2001).

Inspired by J. Sterling Morton's enthusiasm for trees, the first Arbor Day was celebrated in Nebraska on 10 April 1872 (Jonnes, 2016). It is estimated that more than one million trees were planted in the state on that day. Enthusiasm spread across the U.S. and at present, Arbor Day is celebrated in all 50 states (Arbor Day, 2021). Founded in 1972, the Arbor Day Foundation is the largest organisation of its kind dedicated to planting trees. With a mission of inspiring people to plant, nurture, and celebrate trees, the Arbor Day Foundation has more than one million members who have helped plant more than 350 million trees in neighbourhoods, cities, and forests throughout the world (Arbor Day, 2021). The Arbor Day Foundation is dedicated to restoring forests, improving UTCC %, and inspiring future generations of tree planters. They support urban forest

stewardship with a variety of programmes, including the selling of carbon credits through tree plantings, the well-known Tree City USA programme that sets minimum urban forest standards for communities, and their Tree Campus K-12 programme that works to inspire future generations through experiences with trees (Arbor Day Foundation, 2021).

In 1976, Trees New York was founded by concerned residents in response to significant funding cuts in forestry and tree-related services. Throughout its history, the organisation has been actively planting trees, conducting stewardship and maintenance activities, and leading educational programmes that have trained over 20,000 New Yorkers about the importance of urban forest stewardship (Trees New York, ND). Casey Trees, a Washington D.C.-based organisation, was established in 2002 in response to a Washington Post article that chronicled that city's urban forest decline. Casey Trees is dedicated to restoring, enhancing, and protecting the UTCC % of the nation's capital. They have established a goal of achieving 40% canopy cover in the district by the year 2032. Casey Trees works towards that objective by planting trees, inventorying city trees, educating residents about the value of urban forests, and advocating for green, tree-friendly development (Casey Trees, 2021).

In Massachusetts, the urban forestry NGO Speak for the Trees works to improve Boston's urban forest. Focusing on low-middle income (LMI) neighbourhoods as well as neighbourhoods with low UTCC %, they develop and co-create community projects, plant trees, partner with like-minded organisations, and advocate for modern, thoughtful municipal tree policies (Speak for the Trees, 2021). In 2009, the Worcester Tree Initiative (WTI) was organised by local leaders in response to the public outcry from the loss of UTCC % due to the infestation of Asian Long-horned Beetle (*Anaplophora glabripennis*) (ALB). When the infestation was identified, the Massachusetts Department of Conservation & Recreation (DCR) instituted a quarantine covering 66 square miles that included the City of Worcester and surrounding communities, intending to restrict the movement of infested wood and to contain ALB (Elton et al., 2020). WTI's original mission was to educate citizens about ALB and the proper planting of trees. It also aimed to provide residents with low or no-cost trees and to ensure that every tree removed due to ALB was replaced with a new planting. Funding for WTI was generated through donations from individual citizens and businesses, and state and federal grants. Having reached its replanting goal of 30,000 urban trees, WTI continues many of its original programmes and has also commenced several new initiatives, including the instruction of young adults about urban forestry and the administration of a volunteer street tree pruning programme (Elton et al., 2020).

On 1 June 2011, an EF3 tornado touched down in the City of Springfield, Massachusetts. As a result of this event, 7,500 urban trees were damaged or destroyed (Banacos, Ekster, Dellicarpini, & Lyons, 2012). That same month the local NGO, ReGreen Springfield, formed in response to the urban tree-related damage inflicted by the tornado. At present, ReGreen Springfield works to continuously improve the community through advocacy, tree planting, and environmental education. They emphasise equity and urban forest practices by working directly with LMI populations and environmental justice neighbourhoods throughout the city (Regreen Springfield, 2021).

Though urban forestry NGOs have indeed gained prominence across the American landscape, little is formally known about their organisational structure, programming

efforts, and funding. Substantial knowledge gaps persist regarding the origins of many of these organisations, or even how many formal urban forestry NGOs are presently active across the U.S. The nature of working in an urban environment demands cooperation and collaboration; nevertheless, there is a dearth of information related to the nature of the relationships between urban forestry NGOs and key community partners, including municipal foresters/Tree Wardens, agencies, the business community, and other local organisations.

Our broad goal is to establish baseline information relative to urban forestry NGOs regarding their 1) formal origin stories, 2) organisation and structure, 3) funding arrangements, 4) programming activities, 5) relationships with collaborators, 6) citizen participants and volunteers. This research will help inform future research and practice that can be employed by communities interested in establishing their own urban forest NGO, or by existing urban forest NGOs interested in expanding or improving their organisational operations.

Methods

Survey design

An electronic survey was composed and disseminated to urban forest non-governmental organisations throughout the temperate forest region of the United States using Qualtrics (Qualtrics, Provo, UT). The state of Florida was exempted from this survey due to its location in the subtropical forest region. Survey questions were designed following methods outlined by Dillman, Smyth, and Christian (2014). Thirty-two questions were written with the primary objective of better understanding the characteristics of existing urban forestry NGOs. The secondary objective of the survey was to collect information that could be used by communities interested in establishing their own urban forestry NGO and for existing urban forestry NGOs that may be interested in improving, focusing, or expanding current practices. Questions were separated into categories titled "origin", "organisational structure", "funding", "partnerships", and "programming". The survey was piloted with subject-matter experts that included state urban forestry coordinators and academic specialists in urban forestry.

Six questions asked participants to report their organisation's origin, including the year the organisation was founded, the mission statement, and motivation for founding. Fourteen questions asked participants to report the organisational structure of their organisation, including their geographic focus, types of marketing, operational guidance (i.e. annual plan of work, budget) being utilised, their non-profit status, details regarding their paid staff, and participation by volunteers. Three questions asked participants to report the funding of their organisation, including annual budgets and funding sources. Four questions asked participants to report the partnerships of their organisation, including the importance of stakeholders as partners/ collaborators, quality of relationships with local, state, and federal agencies and officials. Six questions asked participants to report the programming of their organisation, including the types of programmes. Where and whom their programmes focus on and the means to evaluate. What programmes the organisation utilises to stay up to date on urban forestry practices and research, who is participating, and where programmes focus within their community.

Most questions (8) were closed nominal. The question types of partially closed nominal and open-ended, each accounted for seven (7) of the survey questions. There were six (6) closed ordinal questions and four (4) partially closed nominal questions. Eleven (11) questions were partially closed, either nominal or ordinal, due to "Other, describe:" as an answer option. The unipolar, ordinal scale stem "Very___," "Moderately," Slightly___," and "Not___," was used for five (5) questions. "Excellent," "Good," "Fair," and "Poor" were used as responses to three (3) other questions.

Survey distribution

Surveys were sent to NGOs in the following 30 states: Alabama, Arkansas, Connecticut, Delaware, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin. Organisations were selected in four ways: (1) state urban forestry coordinators were contacted and asked to provide a statewide list of local urban forestry NGOs, (2) a list of urban forestry NGOs was derived from the Arbor Day Foundation's Alliance for Community Trees programme, (3) a municipality's name paired with Internet keyword search terms that included "volunteer, tree" to identify if an NGO was present in that community, and (4) NGO representatives that completed the survey were asked to provide contact information for other organisations they thought would be suitable research participants.

The survey was initially disseminated on 27 January 2021, using methods outlined by Dillman et al. (2014) to the identified point of contact in each urban forestry NGO. It included three messages: (1) an introductory email sent 27 January outlining the research and objectives, featuring a link to the actual survey, (2) an email reminder sent two weeks later (9 February), to non-respondents, (3) a final email reminder sent four weeks after the first distribution (23 February), indicating that the survey deadline had been extended by an additional week. During this first round of data collection, contact information from additional NGOs was obtained from participants through snowball sampling (Sexton, Miller, & Dietsch, 2011). The second sequence of survey dissemination occurred on 9 March, to seventeen new contacts. In like manner, two reminder emails were sent to non-respondents at 2-week and 4-week intervals (22 March and 13 April), respectively.

Results

One hundred and sixty urban forestry NGOs from thirty states across the temperate eastern United States were invited to participate in this research. Eighty-one organisations responded from 27 states (a 50.6% organisational response rate that represented 90% of the states contacted). Responses were evenly dispersed regionally across the temperate forest area. Twenty-two (27%) responses were from the Mid-Atlantic, 21 (25%) from the Southeast, and 19 (23%) each from New England and the Midwest (Figure 1). Individual states with the most responses included Massachusetts (14), North Carolina (7), and Virginia (10).

Figure 1. Distribution of study participants by region.

Origin

Urban forestry NGOs that participated in this research were established between 1827 and 2019, with most of the organisations being established after 1990 (see Figure 2).

Over 90% of urban forestry NGOs have a mission statement. The organisations' mission statements were descriptively coded (Saldana, 2021), and emergent themes included "planting", "community", "advocate", "education", "protect", "preserve", and "equitable".

Nearly a quarter (24%) of urban forestry NGOs indicated that they formed to enhance limited municipal resources. Eighteen percent of organisations were formed to improve UTCC %. Acute events or emergencies (i.e. weather, invasive pest) were attributed to 8% of organisations being formed. Interest in neighbourhood improvement inspired the genesis of 6% of organisations; climate change mitigation was the catalyst for the formation of 5% of NGOs. Preserving historic trees motivated the formation of 4% of urban forestry NGOs; tree planting and receiving state and federal funds represented the inspiration behind the formation of 3% of the organisations.

In response to being queried about how engaged were "stakeholders with the formation of your urban forestry NGO?", the following were noted as being "very" to

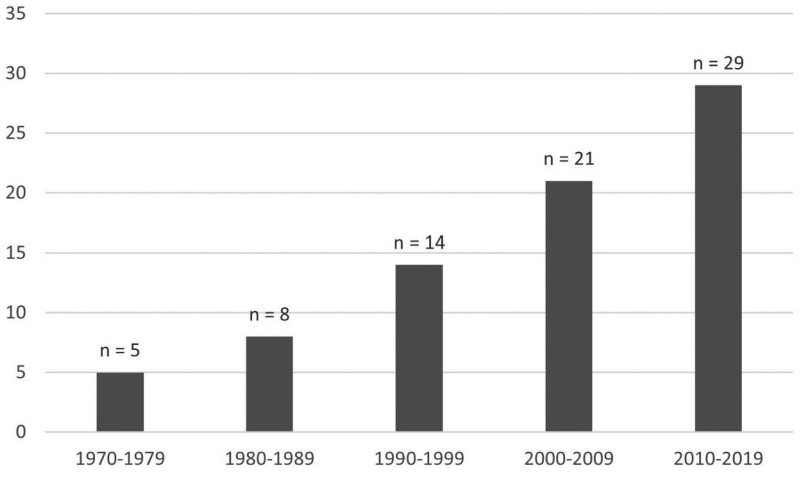

Figure 2. Establishment of urban forestry non-governmental organisations.

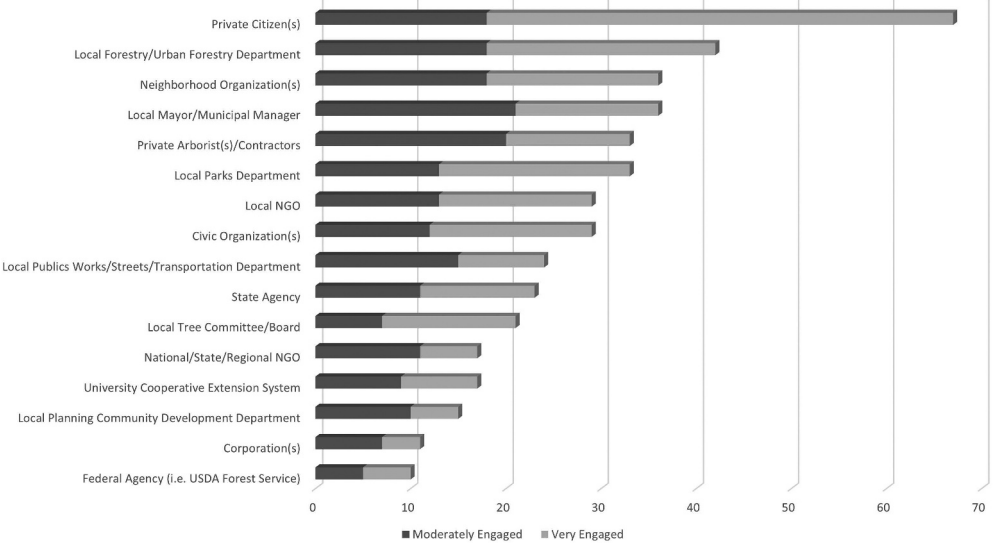

Figure 3. Importance of stakeholder groups and the formation of urban forest NGOs.

"moderately" engaged: a resounding 90% (67) identified private citizens, nearly 60% (42) reported local forestry/urban forestry departments, 50% (36) reported neighbourhood organisations and the local mayor/municipal manager, 40% (29–33) of organisations reported local parks departments, private arborists/contractors, and civic organisations, and more than 30% (24) of respondents identified local public works/streets/transportation departments (see Figure 3).

Fourteen percent of respondents found that federal agencies (i.e. USDA Forest Service) were "very" to "moderately" engaged in their formation, a fifth (22%) were "very" to "moderately" engaged with the University Cooperative extension system, and 31% of organisations were "very" to "moderately" engaged with a state agency.

Organisational structure

Over two-thirds (70%) of urban forestry NGOs emphasise local issues and work in a local jurisdiction; 85% of NGOs were determined to be registered non-profits. More than half (54%) of urban forestry NGOs feature paid staff, ranging from 1 to 70 individuals per organisation, with an average of more than nine employees. Over one-third (35%) of urban forestry NGOs identified having an International Society of Arboriculture (ISA) certified arborist on staff.

When asked, "What sort of operational guidance (i.e. annual plan of work, budget) does your organisation have?" a quarter (25%) of organisations responded that they draft an annual budget; 23% of NGOs take direction from a board of directors, 19% of respondents indicated that they have an annual plan of work, and 14% have strategic plans. A local forestry division, the local government, and state agencies were reported as providing another source of operational guidance.

Funding

Thirty percent of organisations have an annual budget that is less than $50,000. Participants responded that annual budgets greater than $100,000 account for 40% of urban forestry NGOs. More than 20% of organisations have budgets greater than $500,000 annually.

When asked, "How important are the following to funding?", 71% of urban forestry NGOs responded that private citizens were "very" or "moderately" important; more than 50% reported private foundations, state agencies, and corporations to be "very" or "moderately" important. Forty-four percent of participants identified local mayoral/municipal manager budgets and local forestry departments as "very" or "moderately" important. Surprisingly, more than 55% of organisations consider federal agencies (i.e. USDA Forest Service) "not important" to funding (see Figure 4).

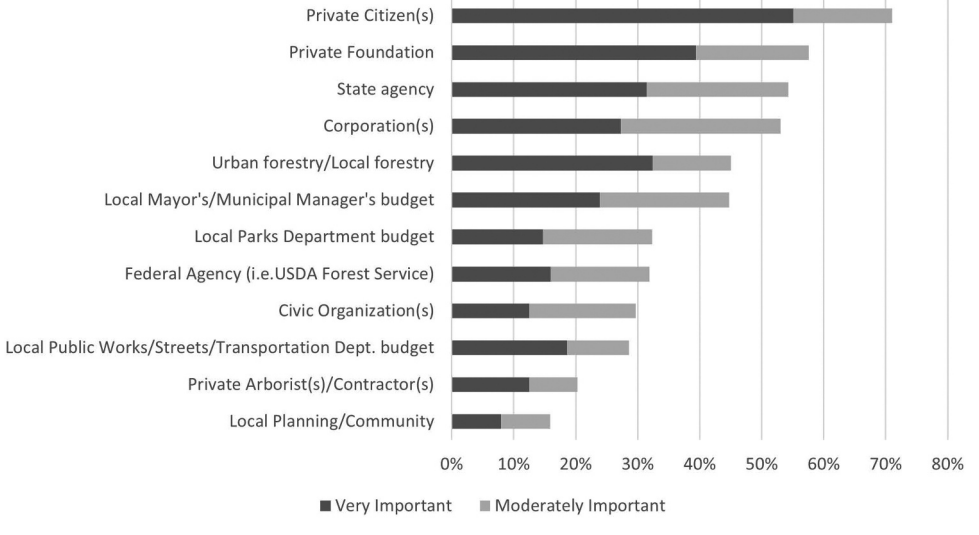

Figure 4. Importance of funding relative to urban forest NGOs.

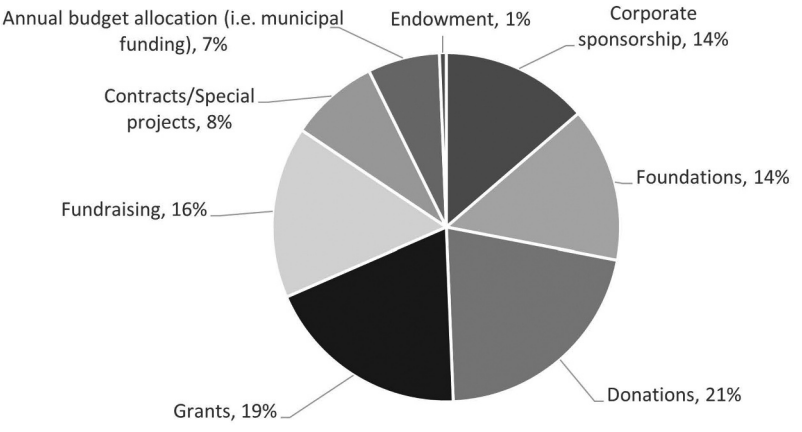

Figure 5. Urban forest NGO funding sources.

When categorising funds that participants receive, 20% identified donations. Grants and fundraising follow with 19% and 15%, respectively. Less than 6% of organisations identified receiving any sort of municipal funding (see Figure 5).

Programming

Responses indicated that nearly 80% of NGOs have helped develop, shape, or implement policy in their communities. Descriptions that were provided were descriptively coded into themes (Saldana, 2021). Twenty-seven organisations have established or improved "tree policies & ordinances", and seven have helped develop, shape, and implement "urban forest master plans" in their respective community. Five NGOs indicated that they provided leadership relative to the founding or furthering of "tree commissions" that have been involved in conducting inventories or establishing local initiatives like an "adopt a tree" programme.

More than 40% of respondents indicated that they are routinely pruning trees and teaching adult classes, and that 30% are teaching youth classes. The vast majority of respondents (86%) indicated that their organisation routinely engages in planting trees. More than 70% are routinely participating in public events (e.g. Arbor Day, Earth Day, farmer's markets and local tree giveaways).

When conducting a programme that aligns with their mission, NGOs typically focus efforts locally, within the community relative to residential neighbourhoods (25%), street trees (24%), city parks (22%), environmental justice areas (19%), and commercial areas (10%). Almost 60% of organisations formally evaluate programmes or initiatives using benchmarks from previous years (i.e. # of trees planted, the survival rate of trees planted, # of volunteers, # of hours volunteered, the communities canopy cover).

More than 20% of organisations use social media to market and engage the public. Fourteen percent of organisations utilise newsletters and press releases. Around 10% of organisations market themselves to neighbourhood associations as well as at community events.

Participants in urban forestry NGO programmes are comprised of individual residents (26%), students from local schools (17%), neighbourhood associations (17%), corporate volunteer groups (15%), and other non-profits (15%).

Urban forestry NGOs are endeavouring to stay up to date on urban forestry practices and research by attending webinars (22%), conferences (21%), and workshops (20%), as well as through programmes produced by their state extension/land grant university (17%). They read scientific articles (17%) and look to larger organisations like the Arbor Day programme and the Alliance for Community Trees, for guidance. Local municipal arborists and local ISA-certified arborists are also resources that NGO volunteers use to stay updated.

Partnerships

When asked to rate the importance of the following stakeholders as partners and collaborators, a resounding 90% (73) of organisations rated private citizens to be "very" or "moderately" important. Eighty-three percent (62) of participants consider their local/municipal departments to be "very" or "moderately" engaged as partners and collaborators. Around 50% (36–39) of organisations find their state agencies, the Arbor Day Foundation, corporations/private businesses, and civic organisations to be "very" or "moderately" engaged. Private arborists were identified by 38% (27) of urban forestry NGOs as having "very" to "moderate" importance as partners and collaborators.

Most (76%) urban forestry NGOs have "excellent" or "good" interactions with their local tree warden/municipal forester, their local municipal officials (61%) (i.e. mayor's office, select board, councillors), and their state urban and community forestry programme (74%).

Volunteers

Nearly all (99%) respondents indicated that they utilise volunteers. Numbers of volunteers range from 1 to more than 11,000 per organisation, with a median of 100 and an average of 796. The number of hours volunteered at each organisation ranges from 30 hours to 35,000 hours. On average, volunteers contribute 3,282 hours to their urban forestry NGO. Thirty six percent of organisations provide formal training for their volunteers. Twenty percent of organisations recruit volunteers through social media and word of mouth while 19% recruit at public events (e.g. Arbor Day, Earth Day).

Discussion

Urban forestry NGOs are present in communities across the temperate forests of the United States, with each decade showing an increase in the formation of these organisations. Over eighty percent (83%, $N = 64$) of respondents were established after President George H. W. Bush's America the Beautiful programme was enacted in the 1990 Farm Bill. America the Beautiful increased federal funding for urban forestry to $21 million per year. The USDA Forest Service then created the Urban and Community Forestry Assistance programme; in 2019, this programme provided grants and technical assistance to 775 communities across all 50 States, the District of Columbia, U.S.

Territories, and affiliated Pacific Island Nations (U.S. Department of Agriculture, Forest Service, 2021). The 2000s showed a 50% increase in the number of urban forestry NGOs established (21), compared to the previous decade (14). While proliferation of NGOs in association with federal funding for urban forestry has been apparent, a majority of respondents (55%) indicated that they do not consider federal agencies like the US Forest Service of direct importance to funding or operational activities. This disconnect is rather troubling since $32 million USD were provided by the federal government in 2019 through the US Forest Service for disbursement to state agencies that then funded local urban forestry efforts within their own jurisdiction (USDA, 2021). Federal-level engagement and education efforts should be directed to local NGOs so that stakeholders and citizens may continue to lobby for federal support for urban forestry.

A critical motivating factor for the formation of the lion's share (42%) of urban forestry NGOs was to both extend limited municipal resources and to improve local UTCC %. Since the proliferation of UTCC % is largely predicated on the successful growth and maturation of newly-installed trees, as well as the protection of existing populations of urban trees, urban forestry NGOs may play a critical role bridging the gap between local resource shortfalls and the duties required to maintain and foster tree survival and maturation (Boyce, 2010), in the difficult urban environment (Jutras, Prasher, & Mehuys, 2010).

Many of the urban forest NGOs indicated that they operate as grassroots organisations without substantial operational guidance from other established professional organisations. Over 70% of respondents indicated that their NGO did not have a budget, 80% did not have an annual plan of work, 85% did not have a strategic plan, and 75% did not have direction from a board of directors. Only 8% of organisations looked to a state agency or local forestry division for operational guidance. Respondents indicated that they did not seem to be taking advantage of avenues of information available about urban forestry and arboriculture, with only a fifth of organisations indicating that they attend conferences, workshops, webinars, or other state extension/land grant university programmes.

The decentralised nature inherent in the formation of a community-based NGO may foster a more informal operational structure, reinforced by the need to reactively address a broad spectrum of timely issues of local concern (Green & Haines, 2016). Guiding bodies like state and local agencies, land-grant universities, and established NGOs of prominence should be prepared to provide education, training, and mentorship relative to budgeting, strategic planning, and professional and organisational development. And though 70% of respondents indicated that their urban forest NGO emphasised operations and activities at the local level, urban forestry NGOs may find it beneficial to seek broader partnership opportunities, such as with state agencies that leverage federal funding to support urban forestry initiatives.

Nearly 80% of respondents indicated that their NGO has helped to develop, shape, or implement local urban forestry-related policy in their community. This has often specifically related to local ordinances and bylaws, and an urban forest master plan. NGOs may require more structure and consistency relative to professional and organisational development, and this is especially true in relation to policy-formation (Harper et al., 2018); thus, concerted efforts should be made to ensure that staff and volunteers associated with NGOs that are involved in policy formation receive pertinent training and guidance. Education and lobbying by local NGOs may prove to be a viable avenue

for the enactment of local legislation that could impact a community's urban forestry-related practices for generations to come. Additionally, since only 20% of urban forestry NGO respondents indicated that they recruit volunteers through social media, additional training might also include methodologies pertaining to the use of online platforms.

Of all the factors impacting the success and viability of an urban forestry NGO, the most consequential may be the private citizen. According to respondents, private citizens were "very" or "moderately" engaged in the formation of 90% of urban forestry NGOs. Urban forestry NGOs themselves (90%) consider private citizens to be "very" or "moderately" important partners/collaborators. Private citizens may give generously of their financial resources and more than 70% of urban forestry NGOs identified private citizens as being a "very" or "moderately" important funding source. Private citizens may also give generously of their time. Nearly all (99%) urban forestry NGOs responded that they utilise volunteers. Volunteer hours ranged annually from 30 to 35,000 hours per organisation. On average, volunteers were found to contribute more than 3,000 hours to their urban forestry NGO. Hauer and Peterson (2016) determined that Americans volunteered almost 1.5 million hours annually on activities relating to municipal trees. That equates to almost 5% of the total time required to care for urban forests, an estimated value of $35 million USD (Hauer & Peterson, 2016). Volunteer duties within urban forestry NGOs may range widely and include working booths at public events (e.g. Arbor Day, Earth Day, etc.), coordinating and participating in tree plantings, and tree giveaways. Volunteers may also conduct and participate in fundraising events, data collection initiatives (e.g. urban forest inventory; urban tree risk assessment), as well as tree-related maintenance activities like pruning or watering campaigns. Volunteers may also liaise with other critical stakeholders including nursery professionals to select plant material for installation (Elton, Harper, Bullard, Griffith, & Weil, 2022). From school children to community decision-makers, volunteers may also play critical roles on behalf of an NGO, as they work to educate others about the benefits of trees. Volunteer support is crucial to the health of an urban forest, and NGOs are a critical venue for that support (Elton et al., 2022).

Over two-thirds (70%) of urban forest NGOs indicated that their area of operation is local, and the vast majority (83%) (n = 62) of survey participants indicated that their local/municipal departments are "very" or "moderately" engaged as partners and collaborators. Thus, the importance of establishing good local working relationships cannot be overstated. Fortunately, most respondents indicated that they have "excellent" or "good" interactions with local entities. This finding is consistent with other studies that explored the relationships between successful urban foresters/tree wardens and local organisations (Harper, Bloniarz, DeStefano, & Nicolson, 2017), and the relationship between urban tree committee members and local stakeholders (Harper et al., 2018).

Conclusions

Though records indicate that select urban forestry NGOs appeared in the early 1800s in the U.S., most organisations formed in earnest after 1990, with the idea that they would generally extend limited municipal resources and enhance their community's UTCC (%). Though urban forestry NGOs vary considerably in terms of size, composition, and even function they are loosely united by a broad set of shared values that may be expressed in their respective mission statements. They frequently employ a select number of

individuals – typically a staff of at least 9 – and on many occasions include the expertise of a certified arborist among their employees. These organisations often rely on a top-down policy framework of funding and support that commences with the federal government and its agencies – predominantly the USDA Forest Service – and extends to their respective state agency and then to local departments and collaborators. They also rely on the bottom-up energy and interest that starts with the individual: the private citizen who has the vision and passion to start a local urban forestry NGO, or to dedicate financial resources and/or time volunteering in a substantial capacity for an existing urban forestry NGO. Urban forestry NGOs also obtain and leverage resources through private donations and other funding sources.

Members of these organisations routinely find themselves involved with a number of activities related to their community's trees that range from the formation of local policy (e.g. a tree ordinance), to outreach and education, to maintenance practices that frequently include the planting and pruning of trees. Successful NGOs have the capacity to further the management of local municipal trees by successfully interacting with a wide range of local agencies and decision-makers, as well as other citizen-based groups. In fact, nearly all respondents indicated that private citizens and volunteers were a critically important constituent, collaborator and resource.

Employees and volunteers associated with urban forestry NGOs would be well-served to receive professional and organisational development training from prominent state agencies, land-grant universities, and other more-established entities. Training content may range from budgetary and organisational operations, to policy, to the use of social media to help spread the word about collaborative urban forest management.

At present, urban forestry NGOs have progressed to a position of more prominence and influence than at any other point in U.S. history. As urban centres continue to grow in size, scope, and population, the influence – and need – for urban forestry NGOs will undoubtedly become even more essential into the 21st century and beyond.

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