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# Urban forestry in the 21st century: challenge and opportunity for today's arborist

Richard W. Harper

Department of Environmental Conservation, University of Massachusetts Amherst, Amherst, MA, USA

**KEYWORDS** Arborist; benefit; tree; urban forestry

## Context

When we open a textbook or attend a lecture about some aspect of the environment, we may learn about the important benefits that trees provide: their ability to sequester carbon or to intercept rainfall, or perhaps about their capacity to shade the sun's heat, or their presence as wildlife habitat. We may also encounter words like "biophilia" or "attention restoration theory" or "stress reduction theory" – terms that endeavour to explain the benefits of greenery and nature and our inextricable connection to the environment around us.

For many of us, our connection to trees and the environment can be traced to an early outdoor experience like enjoying a favourite city park – or escaping the city altogether. For others, it was perhaps camping in the woods or visiting a family cottage and for an even smaller number of individuals, this connection may have arisen out of growing up in a traditionally rural area being surrounded by the beauty and ruggedness of nature. Whatever our experience, our connection to trees and the surrounding environment can be an important part of understanding our contemporary context and in building familiarity with the current landscape that ultimately comprises part of our day-to-day experience.

With over 80% of the population of developed nations being located in urbanised settings, demand for the amenities and conveniences associated with life in more densely populated communities is clear. At the same time, broad interest in "urban green spaces" or "urban greenery" (i.e. urban trees, parks, conversation areas and greenspaces) continues its ascent (Eisenman et al., 2021). These realities present community leaders, urban managers, and decision-makers with the challenge of meeting the demands for convenience (i.e. up-to-date infrastructure, accessibility) for often burgeoning populations, which also have recreational expectations that include access to parks, trees, and landscapes.

## Who is an "arborist", what is "urban forestry"?

The professional central to the discussions about the needs of trees and the needs of community residents, often operates under a number of titles: city forester, tree warden, tree surgeon, urban forester or municipal arborist. First used by the Romans over 2,000 years ago, the term "arborist" – then known as an "arborator" –

**CONTACT** Richard W. Harper rharper@eco.umass.edu

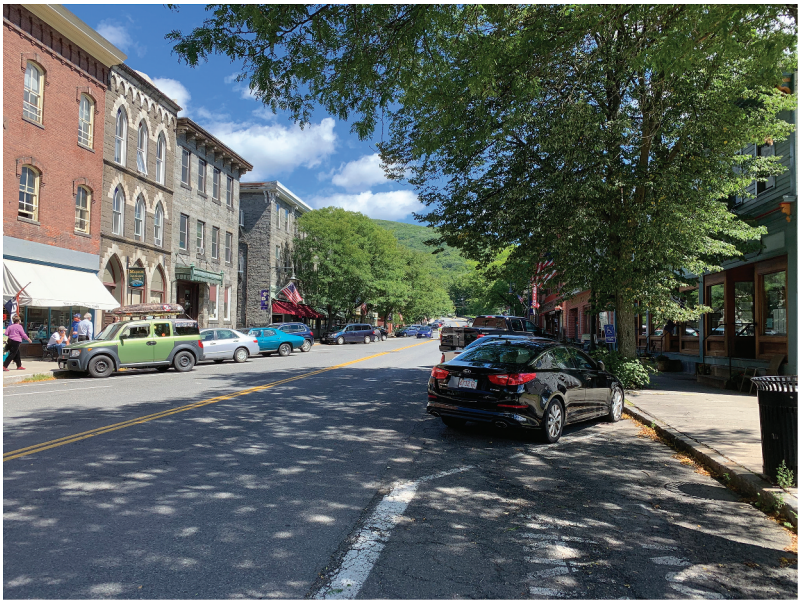

**Figure 1.** Trees offer important benefits (including shade) in the urban environment.

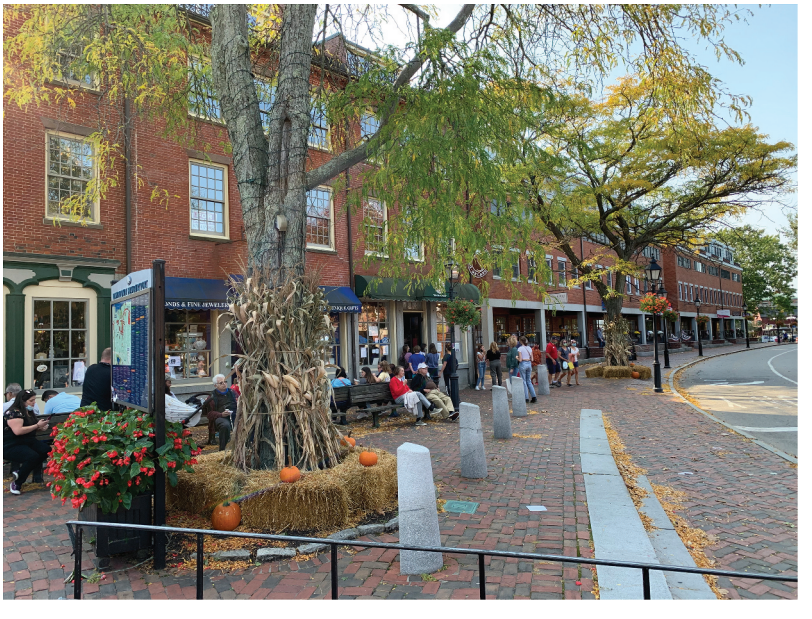

**Figure 2.** Urban trees face difficult growing conditions.

originally denoted the person responsible for planting, transplanting, pruning, and felling trees in more densely populated settings. As with today, even in ancient times, these duties were performed with a variety of intents, including to make space for the buildings and roads that comprised the public infrastructure (Campana, 1999).

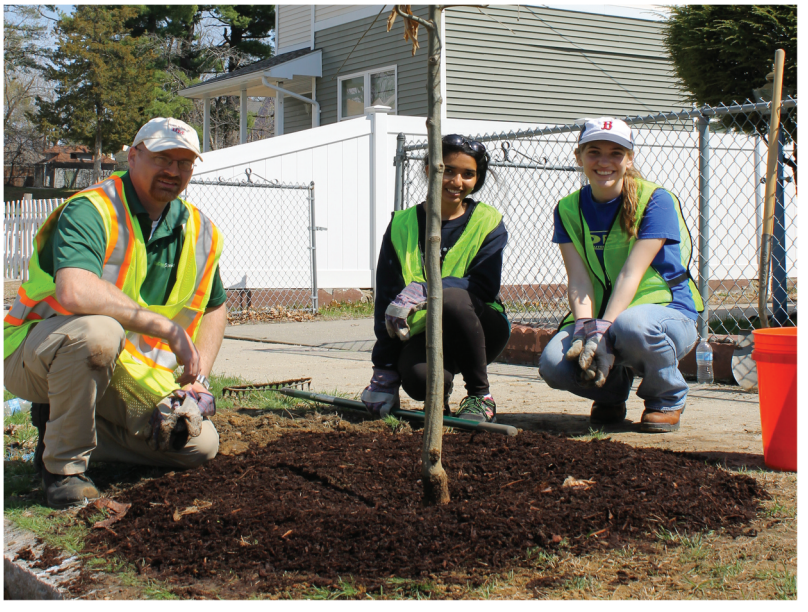

**Figure 3.** Students can be important tree planting partners.

Situated in an urban setting, professional arborists (here I use the term to widely include any of the aforementioned titles) are foundational to the greater community of urban forestry affiliates. Our understanding of the practice of urban forestry has evolved and changed over the years. In North America, early insights stem from the turn of the twentieth century, when Cambridge (Massachusetts, USA) Parks Superintendent G.R. Cook posited that urban forestry is "an art requiring special knowledge, cultivated taste, and a natural sympathy for plant life … " and that "Good taste demands … that but one variety of tree shall be planted upon a street … at uniform distances" (Cook, 1894). With the benefit of hindsight, we see now how pathogens and insects like Dutch elm disease (*Ophiostoma novo-ulmi*) and Asian longhorned beetle (*Anaplophora glabripennis*) exploited the widespread uniformity of urban planting practices to cause catastrophic urban tree loss. Fortunately, during the post WWII era (1960s-1970s), Canadian researcher and professor Dr Eric Jorgensen (University of Toronto) presented a more wholistic, modern definition of urban forestry that seemed to naturally shift our focus from establishing uniform landscapes, to more wholistic considerations:

> A specialized branch of forestry that has as its objectives the cultivation and management of trees for their present and potential contribution to the physiological, sociological and economic well-being of urban society. These contributions include the over-all ameliorating effect of trees on their environment, as well as their recreational and general amenity value. (Jorgensen, 1970)

Many present-day arborists look to this now >50-year-old definition as needing little in the way of updating or refining.

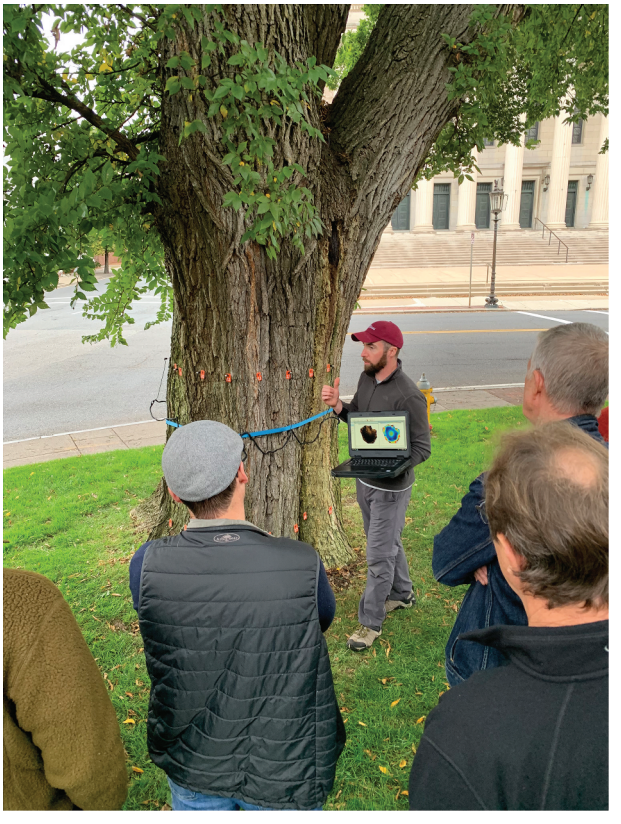

Figure 4. Arborists gather for field demonstration at a professional association meeting.

## Complexities and challenges

The urban forest landscape itself involves the merging of bio-physical, tactile elements that include grey infrastructure, urban soils, and trees with social components like decision-makers/managers, employees (generalists and technical specialists), and community residents. This network of complexity presents many opportunities for both collaboration and conflict. With little exception, social actors want attractive, clean, safe communities where streets, sidewalks and buildings are well maintained and accessible to all. To be properly constructed, the foundations of infrastructure must invariably be built on firm, immovable soil. The trees, plants and greenspaces that are a critical part of this community, however, require media permeable enough to facilitate water and gas exchange, as well as root penetration. This is but one small example of the many challenges – and paradoxes – that are before the broader urban forestry sector.

We've all heard adages about how the most valuable resource that's part of any production or service chain, is the human resource. And even with contemporary mechanisation and computerisation, from design to delivery, the flourishing of any professional sector has ultimately depended upon an available, effective labour force. Both the literature and widespread anecdotal evidence suggests that labour shortages

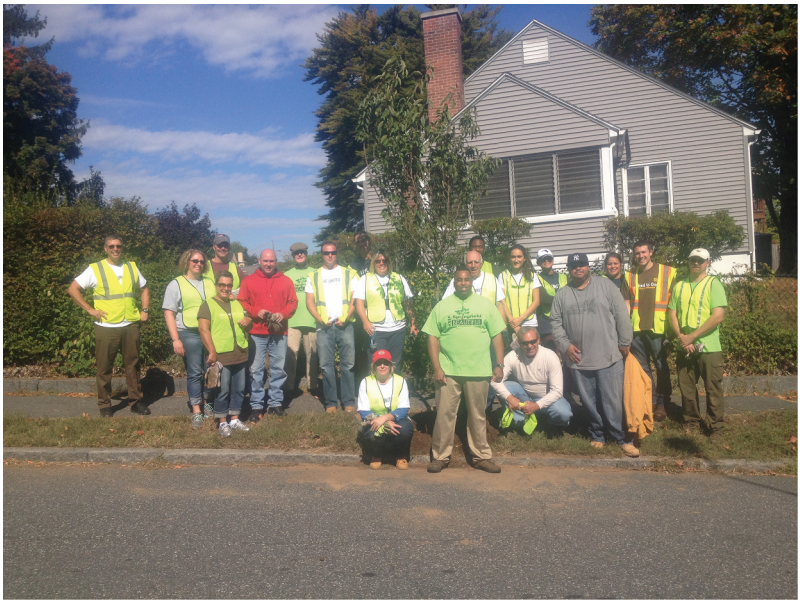

Figure 5. Arborists and private-sector partners gather after a community tree planting initiative.

in the urban forestry sector have persisted for many years. Research has also shown us that these shortages are likely to continue – if not increase – and that disruptions like the COVID-19 pandemic only furthered competition and exacerbated difficulties associated with staffing shortages (Harper & Lass, 2024). Reasons for these systemic challenges no doubt vary, but this appears to be part of a larger trend that includes a shrinking labour force, an increased emphasis on personal satisfaction and investment over entering the workforce, and a move away from positions that involve a substantial service component – especially a profession that routinely encounters the level of risk associated with the care of trees.

In that vein, an unseen and under-appreciated component of the professional arborist is the level of responsibility that these individuals shoulder when it comes to the safety of themselves, their employees, and community residents. In the US, average annual fatality rate per 100,000 full-time equivalent (FTE) workers is just under 4 (3.4–-3.8), but in the tree care world that number climbs to over 110! The statistics for general non-fatal injuries for tree workers 239 per 10,000 FTEs, compared to the general number of 89 (Ball, 2023). Arborists are subjected to a wide range of administrative and regulatory requirements designed to keep their well-being – and that of those around them – at the forefront. As such, the need for specialised equipment, training, and investment is continuous, as is the need to proactively anticipate risk and plan accordingly. These responsibilities and realities may "loom large" to the next generation of professionals as they explore career options.

Costs continue to rise. And whether running a business or overseeing a municipal staff, these increases impact the arborist and those around them. As municipal budgets continue to stretch, less funds become available for the maintenance and care of existing urban green spaces – let alone the establishment of new parks and landscapes, and the planting of more

trees (Warren et al., 2023). For arborists who run a business with tight profit margins, price for fuel and equipment cut into increases in employee compensation and benefits. Wage increases that don't keep pace with inflation may cause employees to begin searching elsewhere for larger firms that offer a stronger salary or more competitive benefits.

## Moving forward

As with any other profession, the current challenges that the urban forestry sector contends with didn't arise overnight. And to address systemic, sector-wide challenges there needs to be a plan.

Arborists are practically minded individuals who care deeply for the environment and about solving problems practically – this inclination towards pragmatism shouldn't overshadow the reality that we are more broadly, stewards of our communities and ambassadors for trees. As such, arborists can feel reassured by a shared interest about trees with other residents, from students to seniors. Being willing to make ourselves available to student populations and local school-based programmes offers the potential to reach the next generation when they are most likely to receive the message of the good news of trees. Programmes in the US like Project Learning Tree, 4-H, and Future Farmers of American (Young Farmers in the UK) are often in need of knowledgeable volunteers willing to work with younger audiences and may provide accessible venues for professional arborists to reach the next generation of community members – as well as future employees. Non-governmental organisations (NGOs) and faith-based groups that oversee community gardens and support wood banks are often looking for work-ready volunteers knowledgeable about the plant/tree world willing to engage in environmental stewardship in support of underserved audiences – these organisations may have individuals among their ranks that are potentially interested in part-time work with trees. Celebratory events like school tree plantings (often through the ArborDay Foundation in the US) and kids' climbing events continue to be great partnerships and sources of positive community engagement for arborists.

In my experience, one of the most beneficial ways that arborists can collectively impact the community around them is through a professional association. Arborists can work within the framework of a larger body to achieve a number of objectives, including to educate and inform policy-makers. Policies – and the affiliated regulations – influence operational costs in a variety of manners and establish the guidelines that impact a whole host of issues from the workplace to the natural environment. Associations provide opportunities for professional education so arborists can maintain certifications and licences. Continuing education presents arborists with opportunities to stay up-to-date about changes in technology and technique. Finally, associations provide venues to meet and network with colleagues, potential clients and friends. From a personal perspective, I can unequivocally say that the group of volunteers from the Board of Directors of our local association that I worked shoulder-to-shoulder with for many years, showed themselves to be true leaders committed both to learning and sharing information with others. On numerous occasions, these individuals would dedicate countless hours of service towards a chapter programme or event, and I saw potentially difficult conversations navigated with skill and mutual respect. More often though, I heard words of congratulations, collegiality and encouragement – both in public and perhaps more importantly, behind closed doors.

I've heard it said that "everyone who has ascended to a position of influence has ultimately been the recipient of help from someone in a position of influence". Perhaps, the most effective way an arborist can be a force for positive change on the individual level is to actively and intentionally serve as a mentor. Mentoring is a powerful way of connecting individually or in small groups, to use one's influence as a leader to teach arborists essential skills.

## Concluding remarks

I write this perspective from the context of someone who has over 25 years of academic experience in urban forestry – at present, as a mid-career faculty member and previously as a University Extension specialist – as well as someone who has also worked for over 5 years as a field arborist, forest technician, and member of a small-scale logging operation. It is my hope that by sharing my insights, opinions, and experiences, others will be encouraged to reflect upon their own backgrounds and current positions, as I believe that this understanding will help inform us – and our sector more broadly – to better meet the challenges of the twenty-first century.

In a time where our actions and words are on record, in a sector that sometimes struggles with its image (how many times have we heard an "arborist" described as someone in an unmarked pickup, using a chainsaw and ladder), our conduct as professionals is always under a microscope. For those of us well established in our career, experience working with trees has taught us some valuable lessons that we may have to offer to those around us. Let's remember that we may not only have something to offer the next generation of tree care specialists but that we can continually learn from one another – not just to be better tree people but to be better people.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Notes on contributor

Richard W. Harper, PhD., is an Extension Professor of Urban & Community Forestry in the Department of Environmental Conservation. He teaches courses and administers an applied integrated research and extension programme in urban forestry. Note: Photos courtesy of the author, except #3 and #5, courtesy of Dr David Bloniarz.

## ORCID

Richard W. Harper http://orcid.org/0000-0002-9522-4562

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