

Maintaining the Urban Forest Everyone's Responsibility

By Kit P. Jory Sr., ISA Municipal Specialist

Why is it that people love trees until there is one planted in their front yard? Between the root conflicts, tree litter, limb failures, maintenance requirements, water demands, and other potential problems, trees seem to pose a significant



Tree Lined Street. James Street Clayton, NY. 2013



James Street after trees removed for development. 2018

One of the negative effects of progress is development-driven urban canopy decline. Google Maps.

inconvenience to many individuals. Obviously, this is a broad and overly inclusive statement that doesn't apply to everyone. However, as most City Arborists, Urban Foresters, Consulting Arborists, or Certified Tree Workers may have experienced, many of their interactions regarding private property owners and trees involve dealing with someone that is being unmanageably inconvenienced, overburdened, or in some cases flat out terrified by a tree.

This opinion piece addresses the challenges industry professionals and administrators face in communicating and convincing people in their communities, primarily property owners, of the value in planting, maintaining, and preserving the trees of the urban forest. As most tree professionals will agree, opinions regarding the subjects discussed here are highly subjective based on individual experiences in their local urban forest. In no way is this article intended to turn opinions formed based on these experiences into statements of fact. This article will summarize the benefits and value of the urban forest, affirm the importance of the services that are needed to improve, maintain, and grow the tree canopy, and discuss who is responsible for providing those services. If successful, the reader will gain an understanding of the different challenges facing communities and identify an efficient path forward to increase the care, protection, and oversight of urban forest management. Given the political, administrative, and public relation issues that surround this very sensitive and high-profile issue, the path forward may be challenging, but as President Theodore Roosevelt coined, "Nothing in the world is worth having or worth doing unless it means effort, pain, or difficulty..." Hopefully, this article is interpreted as a call to action that encourages deliberate thought, discussion, and even debate about the underlying topics of tree responsibility, services, funding, protection, and oversight.

What is so important that is driving the subject of Urban Forest Management to the forefront of current political, social, and financial discussions? Without providing a complete course on environmental impact, mitigation, and sustainability, the answer is simple: greenhouse gasses are increasing, global temperatures are rising, and

urbanization and industrialization are replacing more and more greenspaces and clean air with hardscape and pollutants. The urban forests that were established in communities at the turn of the century as landscaped areas, mostly for beautification appeal, are actually key weapons in the fight to mitigate greenhouse gasses. Unfortunately, this asset and the connected resources are being maintained poorly and, as a result are declining and reaching the end of their lifecycle. Adding to this, increasing development and urbanization of rural areas causes surface damage, topography changes, and a mostly negative environmental impact. All of these require a substantial increase in mitigation efforts to offset the new buildings and infrastructure being built.

As the world struggles to further analyze, understand, and identify ways to adapt to global climate change, there are many formulas that estimate the benefits that trees provide in reducing greenhouse gasses. Every state in the U.S.A. has policies that inform some type of plan to mitigate climate change, and all these plans have some component proposing that one of the key strategies in reducing harmful greenhouse gas emissions is to increase urban tree canopies. While not every state ties these policies to greenhouse gas emissions, nor do they all have formal Climate Action Plans, 23 states plus the District of Columbia have adopted Climate Action Plans that specifically address greenhouse gas emissions (C2ES 2019). In addition to combatting climate change, there are many other benefits that trees provide in the form of increased property values, reduced storm water runoff, and social benefits such as crime reduction. An essential metric that determines these benefits is the size and condition of the urban tree canopy. According to the San Francisco Urban Forest Plan (2014), San Francisco's Urban Forest consists of approximately 669,000 trees with an approximate capital value of \$1.7 billion USD, provides annual environmental benefits of approximately \$9.4 million USD, and accounts for an estimated \$98.2 million USD annual increase in property values. Yet convincing the general public that benefits are only fully realized when proper planning, planting, and long-term maintenance is followed has presented itself as a challenge in most communities.

Many factors limit the ability to maximize the environmental benefits that urban forests could be providing. Two of the biggest factors in this process are proper tree selection and regular urban forest maintenance activities. Proper tree choice and placement in the future will result in reversing the current trend of growing tree maintenance demands for preventing premature failure or loss of trees that are not in the most suitable and ideal planting location. Adhering to the industry standard of putting the 'Right Tree in the Right Place' results in increased benefits, efficiency, and long-term preservation of trees within the urban forest. Following these basic guidelines will result in a more resilient urban forest and increased

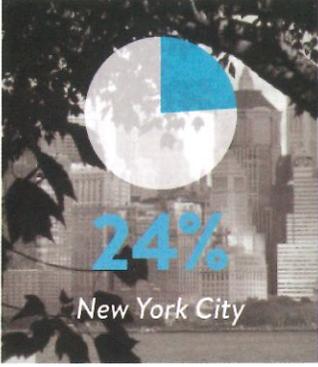
WHY A PLAN?



13.7%
San Francisco



21%
Los Angeles



24%
New York City



30%
Portland

SMALL & SHRINKING TREE CANOPY

San Francisco has one of the smallest tree canopies of any major U.S. city and it's actually shrinking. New street tree plantings are not keeping pace with tree removals and mortality. Tens of thousands of potential street tree planting spaces remain empty.

Small and Shrinking Tree Canopy. San Francisco Urban Forest Plan. Image courtesy of San Francisco Planning Department (2014).

tree canopy growth with minimal negative impact on hardscapes, structures, and city infrastructure. According to McPherson et al. (2016), "California surveys identified several troubling trends: increased planting of small, short-lived species due to lack of space for street trees; declining species diversity; average city tree budget has declined in real dollars from about \$3 per capita in 1988 to \$2 in 2003; higher percentages of programs report

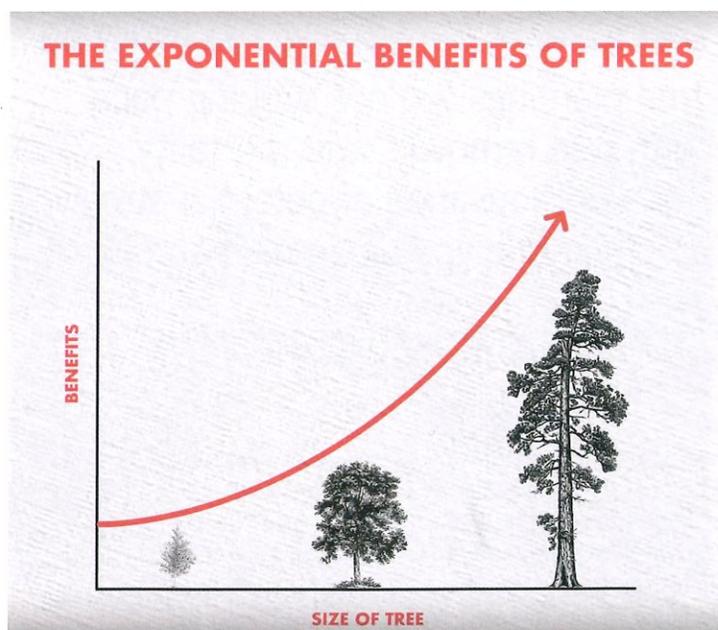
removing more trees than they plant (18% in 1988–22% in 2003); and a reduction in the average number of trees per km street length, from 65.6 in 1988 to 64.3 in 1993 (105.5–103.5/mile).”

These trends represent a broader problem of urbanization requiring more oversight. While some agencies have passed ordinances to include the entire urban forest, most agencies restrict jurisdiction only to trees on public property, parks, and street trees. Street trees are commonly defined as trees planted and growing within public street right-of-way. These planting locations are typically found to be in planting strips, road verges, along sidewalks, in private landscaped areas, yards, or backup lots adjacent to structures. According to Dandy (2010), “people interact with street trees (gaining value from them and being impacted by them) in ways that can be different from how people interact with trees located elsewhere. All this means that street trees in urban areas are thus worthy of considerable attention from policy, practice, and research.” Although private trees are commonly found to make up most of the trees located within urban forests, the lack of access to and authority over these trees makes inventorying and evaluating them difficult. Because of the lack of data, quantifying all the metrics needed to make conclusions on their impact is limited to top-down canopy assessments that are conducted over time using satellite imagery. This is challenging the ability to accurately model whether urban forests are growing, static, or declining, leading to a more general and delayed projection of the current condition and benefits of street trees. As such, the processes currently in place are entirely too reactive instead of being proactive.

The other major consideration that is responsible for failing to capture maximum environmental benefits is the lack of regular maintenance, preservation, and replanting of lost trees. Convincing the public of “The Exponential Benefits of Trees” is vital to getting them to buy-in to maintenance (London Tree Officers Association 2019). Urban forest efforts need to focus substantial resources to the process of educating the public on proper tree maintenance practices. Regular tree maintenance activities can decrease overall operational costs in the form of reduced requests for service, fewer emergencies due to tree failures and hazards, and decreased liability for damage to personal property or even death.

Who is responsible for maintaining the urban forest? This question is meant to be the primary focus for this article. According to the Food and Agriculture Organization (FAO), “urban forest management incurs significant costs—such as for planting, maintenance, and infrastructure repair (e.g., broken sidewalks and sewer pipes). Yet an assessment in five cities in the United States of America (McPherson et al. 2005) showed that the benefits of urban trees outweighed the costs by ratios of between 1.37 and 3.09. Costs included in the analysis were: tree planting and maintenance, including pruning and the removal and disposal of damaged trees; infrastructure damage; inspection; litter clean-up; and trip-and-fall damage claims” (FAO 2016). As previously noted, urban forest budgets were reduced by approximately 30% between 1988 and 2003. Budget reductions correlate to reduced benefits. Stewardship means, paraphrasing the Virginia Department of Forestry, “taking ownership over your tree, your land, your plan, and your legacy!” There is an abundance of data that proves a significant high return on investment for urban forests despite the lack of research identifying where the funds should come from and who should maintain the urban forest. Many challenges have been identified, and yet despite all the research, scholarly articles, and intellectual thought that has been exhausted on explaining all the benefits and values they provide, there is almost no supporting evidence to inform us who should be responsible for stewardship of the urban forest.

The lack of understanding of how truly intertwined people and trees are within the urban forest is troublesome. When considering the many documented benefits of trees, whether we are talking about the thousands of species of birds, animals, and insects that inhabit trees, or storm water capture, shade, clean air, and financial benefits, people are mostly shortsighted about how important their relationship with trees is. Unfortunately, when balancing the benefits of this relationship against the pain in the pocket book caused by necessary tree maintenance, the value of the tree tends to drop sharply. For many reasons, and especially due to the lack of leadership and



The Exponential Benefits of Trees. Image courtesy of Halifax Regional Municipality.

outreach within individual communities, people lack the obligation to tree preservation in the same context that they would, let's say, to water conservation. In this comparison, some may argue that despite years of cautious advice and warnings from government agencies, water conservation education and efforts went ignored. It wasn't until water agencies began the broader shift from flat-fee billing for water use to metered billing that most people began conserving use. Perhaps it will take the same manner of financial accountability and fee driven services to attract attention and bring about change for tree conservation.

There is limited research available that takes different data-inputs and measures, compares, or evaluates these metrics to inform the "who" component in urban forest stewardship. Should trees of the urban forest be protected and managed by government agencies under a management plan that dictates when, how, and for what purpose trees are to be maintained? Or, should all trees in the community, except for trees located specifically on publicly owned properties, be treated as privately owned trees with the maintenance responsibility being left to the property owners? What roles would agencies have in this process? Many of the arguments from the general public for urban forest maintenance services being provided by government agencies involve caring for a tree that was either planted or required by the local agency, at times many years ago. These arguments surrounding who and how urban forest management services should be funded are generally separated into two oppositional arguments: 1) government agencies should have stewardship and financial responsibility for maintaining the urban forest, and 2) property owners should have stewardship and financial responsibility for maintaining of the urban forest.

Agencies that have historically provided all stewardship responsibilities for urban forests are facing more and more challenges in providing these services. When questioning responsibility for stewardship, consider accepting the theory that what was done in the past should not dictate what is done in the future. For years, many government agencies have shouldered the responsibility of urban forest management, only to be regularly challenged with reducing services during every economic downturn. This results in unstable and unmanageable urban forestry programs that cannot maintain the demand for the preservation, maintenance, and replanting activities required to grow the urban tree canopy. Most tree-related complaints that come into agencies argue that this should be a service provided through general tax revenue funds. That being a common theme, what should the mechanism be for prioritizing this service given the ever-increasing demand on agencies to focus funding elsewhere? Despite the challenges agencies face providing these services and the almost certainty that operational budgets for these services will continue to rise, many of the general public insist that this should be a governmental service that is funded from existing tax revenue.

For those that make this argument, I propose the following questions: where should the tax revenue come from to fund these services? Should it come from reductions in budgets that fund other services such as police, fire, parks, etc.? Even by redirecting these funds in a growing economy, the risk of having to eliminate this service in the event of another recession would be a looming threat. It can be viewed as poor decision-making or even fiscal mismanagement for an agency to make these capital investments only to eliminate them if the economy were to experience future recessions. While some local agencies have been as successful as San Francisco in diverting general fund dollars into these service funds, other communities have refused such measures. Because of this, general fund revenue diversion is not a long-term viable solution. For many communities, continuing to provide these services can only be accomplished by identifying new and dedicated funding methods. Some agencies have allocated funding for urban forestry tied to green waste, recycling, sustainability fees, garbage fees, sales taxes, and additional taxes on gas, transportation, and tolls. Many agencies have passed tree maintenance and protection ordinances, emergency response fee recovery, or accident response fees, where the agency can charge fees and recover costs for any service that the city needs to provide as a public service. This has also been applied to situations where the property owner fails to maintain trees when properly notified, and the agency subsequently completes the maintenance on their behalf. Because the public is generally uninformed on how all these governmental financing processes work, it isn't uncommon for them to be surprised at how something that appears to be as simple as planting some trees and then providing water and maintenance every few years can become burdened with such convoluted and complicated challenges. Even after explaining the obstacles and barriers that agency administrators must navigate, many citizens are stilled confused about why the solutions for these issues are so elusive.

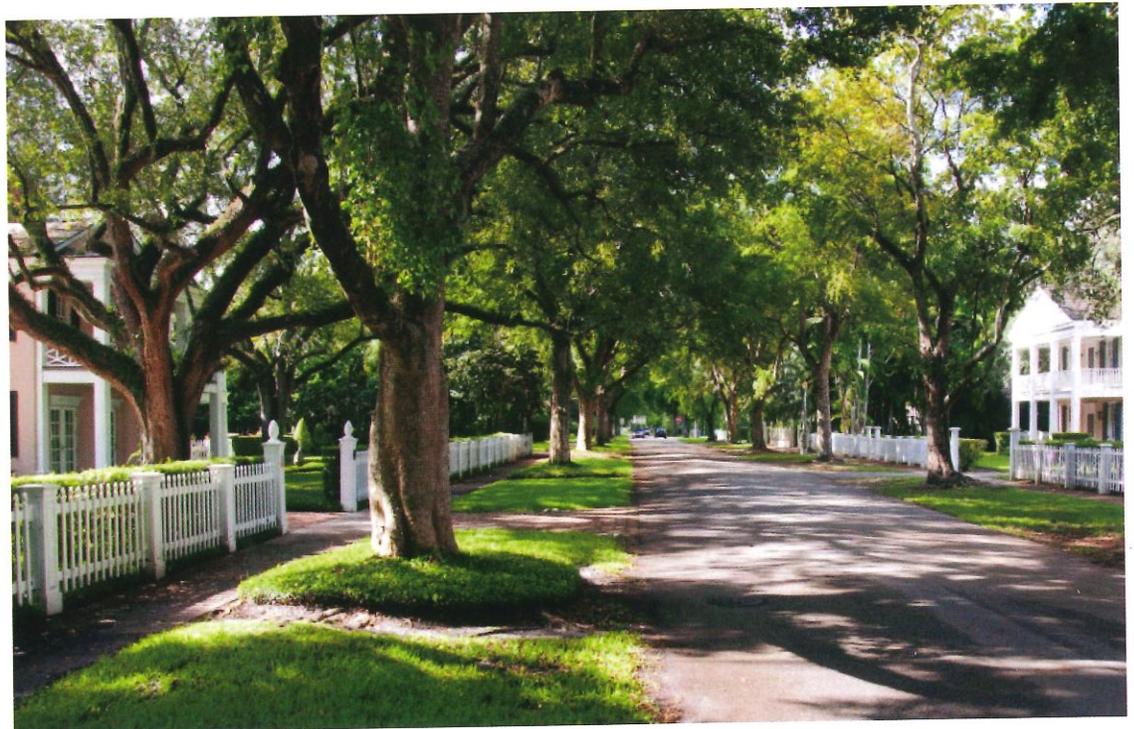
Property owners are the biggest beneficiaries of the trees on their property and in their neighborhoods, yet despite the incredible financial and environmental benefits property owners receive, they are increasingly choosing to remove large shade trees and plant smaller and smaller trees or forego tree planting altogether. As stated above, the oppositional argument for agency-provided tree stewardship and financial responsibility is that maintenance of the urban forest should be directly shouldered by property owners. In recent years, some agencies that have historically provided tree maintenance and preservation services for street trees have eliminated these activities from their core-services. This has led to a shift in maintenance responsibilities from local agencies to property owners, resulting in the neglect of maintenance preservation. The general observation for the decrease in tree canopy is the lack of understanding by property owners

of the need to provide regular maintenance services. In some cases, even where the property owner understands how this maintenance can preserve and extend the life of the tree, extending the long-term benefits that these trees provide, they tend to be blinded by the short-sightedness of the costs involved. Transferring stewardship of the urban forest raises many questions about engagement, education, guidance, support, sufficiency, maintenance, ordinances, enforcement, and consequences. These questions challenge whether agency managers and political representatives are being passive or active in fulfilling their obligations to manage the business of daily government operations balanced with the task of developing and implementing policy that provides a long-term vision.

Until property owners accept the realization that they are benefiting the most from a healthy and vibrant urban forest, getting them to bear the responsibility for maintaining it will be challenging. Research has shown that due to negative past experiences in the relationship between property owners, street trees, and agencies, property owners are rejecting the planting and maintaining of street trees (University of Vermont 2019). Evidence suggests that in areas where tree stewardship has been turned over to the public, there was an increase in tree mortality rates. In Sacramento County, California, new trees planted by the community and property owners with little to no guidance or oversight experienced a mortality rate over 50% (Aames 2010). In some areas, turning over tree stewardship has resulted in the

deterioration of the urban forest and loss of tree canopy due to neglect. In San Francisco, where the city turned over stewardship to the citizens in 2011, the decline in mature tree canopy and refusal of property owners to preserve and maintain trees forced a general ballot measure that passed by 79%, which diverted \$19 million annually from general fund monies to create an operational budget for the City to take back stewardship of the urban forest (Fracassa 2017). If these results are representative of what would happen to most urban forests as a result of transferring stewardship from public entities to private hands, then we can begin to get a picture of what the result would be if property owners were to assume these responsibilities without having well-defined and enforced ordinances in place to set maintenance expectations and requirements.

When considering the ability of property owners to bear the cost of tree maintenance, another concern that needs to be addressed is the social inequality and injustice that plagues many cities and towns throughout the country. How are the property owners of poverty stricken, low-income, and disadvantaged communities going to maintain the urban tree canopy with no available resources? How are disadvantaged communities, whose resources are mainly utilized for public safety services, expected to afford the capital investment in growing and maintaining an urban forest? While some financial resources exist, specifically for tree planting in disadvantaged communities, these programs fail to provide



Street Trees in Affluent Neighborhood in Kansas City. Photograph by Victor Dover, source CNU Public Square.

long-term funding for tree care, which results in the long-term maintenance for these trees being unfunded and unsustainable. Investing in tree planting in these areas without making funding available for long-term maintenance is a poor strategy to bring disadvantaged areas into balance with the rest of the community. To address the problem of social injustice as it pertains to urban forests, the general public cannot be expected find and implement solutions on their own. Some communities, challenged by decreasing public funds for maintenance and lack of participation by property owners, have relied on nonprofit community groups and organizations to fill the void in stewardship. While these organizations can be an invaluable tool to the long-term sustainability of the urban forest, their activities can be minimally impactful when they lack guidance or are not part of a larger management plan. According to Christine Carmichael (University of Vermont 2019), even well-intended nonprofit group efforts can be minimally effective, as they “often focus on narrow outcomes—such as the number of trees planted per year—without also prioritizing deeper community engagement due to limited resources, watchful donors, and poor guidance.” These are complicated problems, and the answer to these problems must come from leadership, community involvement, public officials, and a combined application of all community resources.

Envision a path forward for urban forest management that involves finding common ground, where the political, administrative, and public level of expectation can be managed with a balanced solution. What obligation do members of the community have in doing more than what is constitutionally or legally required of them? The answer comes when people realize that doing the minimum of what is required, such as paying taxes, obeying the law, and being a contributing member to the community, is not enough if you want to live in an advanced society where the real benefits come not from the privileges we are afforded by law, but in the abundant life that exists through the social contract with other people of that community. Part of this social contract is understanding that every resident should be willing to be inconvenienced in order for the entire group to benefit. Each property owner’s tree is providing benefits to the whole. What is lacking is the understanding that people are intimately attached to all the trees in their environment, and where the attachment is realized, it is often observed as a love-hate relationship. The dynamic that is often overlooked is that this attachment should be relational, not unlike their attachment to their community, neighbors, friends, or family. Communicating this message to the public and convincing them that their investment in the urban forest extends beyond property, sales, and enterprise taxes is a challenging task.

The fundamental plan that creates specific, quantifiable, and enforceable standards in all activities that affect the urban tree canopy is the Urban Forest Management



Street Trees in Disadvantaged Community in Baltimore. Photograph courtesy of Baltimore Tree Trust.

Plan (UFMP). This document is a long-term, 40- to 50-year plan that is meant to inform all decisions regarding the urban forest. It confirms and formalizes authority of tree management, memorializes the priority placed on trees, identifies the urban forest as an essential pillar of infrastructure and as a capitol asset, may identify protected landmark or heritage trees, and defines policy, protection and management of trees within its Area of Influence. Funding for establishment, administration, and updating the UFMP needs to be dedicated, specific, and not open to downward revision in the event of a challenging economic environment. Identifying funding opportunities will require an informed and interactive community process, as well as public input to define and prioritize the urban forest, identifying who, what, when, where, why, and how the community will implement, administer, and enforce the management plan. There are many variations of the UFMP.

Some successful examples of urban forest management strategies can be found in the City of New Westminster’s



New Westminster Urban Forest Management Strategy. Image courtesy of Diamond Head Consulting.

plan (New Westminster, BC, Canada). Here we see a common theme to “prevent further loss and increase urban forest canopy” (New Westminster 2015). Using the Urban Forest Management Plan Toolkit (2019) as a guide, the first step involves the Work Plan, or what’s considered preplanning efforts. This includes identifying a timeline for the project, a checklist of information to gather, and assigning tasks for gathering and analyzing information. Once complete, this data is balanced with public input obtained using surveys and town hall meetings. The resulting information will inform the community’s next steps in the urban forest planning process. Once the Work Plan is complete, the management plan components should include:

1. A public outreach process: what does the community expect?
2. Creating a vision statement: what do you want?
3. Conducting an inventory and assessment: what do you have?
4. An action plan: who will act and when?
5. A monitoring plan: how will you know when you are achieving the goals or when adjustments need to be made to the plan?
6. An ongoing engagement process: how will community expectations be managed?
7. Funding: how will management and administration of the plan be financially supported? And;
8. Creating an enforcement structure: what actions will the plan recommend ensuring compliance?

The vital role that agencies need to undertake is leading the way to act as a facilitator of this process. Some City Arborists and Urban Foresters may even need to

become people-tree therapists, learning to successfully communicate the broad scope, purpose, and fine details of the plan while managing the expectations of the community. This includes starting to communicate the fundamental message that urban forest management responsibilities cannot continue to be borne solely by government agencies. It is up to the residents of the community to take the torch in these sensitive subjects and inform governing bodies of what they expect in the form of leadership and action. Some agencies already appear to be adjusting urban forest management practices to include a shared stewardship with the public, while others are using funding methods such as development, mitigation, and service response fees in order to fund the continued urban forest operations. While public initiatives to dedicate public funds to urban forest maintenance worked for a large municipality like San Francisco, not all cities, counties, and towns could withstand this type of general fund reallocation. Whether or not any of these methods is signaling a fundamental shift in the broader management philosophy remains to be seen, and the question of ‘who’ remains to be answered.

Responsibility for driving urban forest management as a priority falls on everyone. Public agencies do not have the resources to bear all responsibility for the costs of the needed maintenance activities of the urban forest, and unfortunately, even when informed of all the benefits that trees provide, property owners have proven unwilling to assume these responsibilities and on average will take actions that result in negative long-term consequences.

The framework that provides the greatest chance for successfully meeting the current and future needs of urban



Poets Walk, Central Park. Photograph courtesy of subherwal. <https://www.flickr.com/photos/subherwal>.

forest management is a structure that includes a partnership between the community and local agency. The public would be responsible for preserving, maintaining, and growing the urban forest, while the agency would provide guidance, oversight and enforcement. This will mean intense and interactive public outreach, establishing long-term policies, providing guidance and oversight to property owners for planting, maintenance, and preservation; and, when needed, maintaining an enforcement arm that ensures strict adherence to the Urban Forest Management Plan. The concept of property owners, developers, community groups, homeowners' associations, property managers, nonprofits, businesses, industrial operators, urban forestry alliances, and local agencies all working together to meet the ever-increasing needs of urban forest preservation and growth is promising. As citizens, we have local agencies, elected officials, and appointed managers to lead us; let's empower them to lead. With this support, local agencies can facilitate Urban Forest Management as a top priority, just as important as infrastructure and transportation, budgeting, economic development, or even public safety. The philosophy of communal living, citizenship, and social justice is a highly debatable topic in today's political environment. Regardless of political, social, cultural, religious, or any other element of societal living, the environment provides the resources for our survival, and we must try and preserve and replace these resources for future generations.

The obstacles raised in this article can be inordinate and complicated when considered as a whole. Even the individual parts can be daunting, challenging, and at times seem insurmountable; however, throughout the history of human life it has been proven that the combined efforts of a group of people are always more

impactful than the individual efforts of its parts. Every one of us is responsible for what happens to our urban forest next.

Literature Cited

- Aames, J. 2010. Tree Stewardship Education and Urban Forest Management in Sacramento County, California. <<https://pdfs.semanticscholar.org/2d44/a140595f94743c016d5ed4773231338f2b05.pdf>>
- C2ES. 2019. State Climate Policy Maps. Center for Climate and Energy Solutions. <<https://www.c2es.org/content/state-climate-policy>>
- Dandy, N. 2010. The social and cultural values, and governance, of street trees. Climate Change & Street Trees Project: Social Research Report. The Research Agency of the Forestry Commission. <https://www.forestresearch.gov.uk/documents/763/CCST_Social_Report_March2010.pdf>
- FAO. 2016. Guidelines on Urban and Peri-urban Forestry. Food and Agriculture Organization of the United Nations (FAO). <<http://www.fao.org/3/a-i6210e.pdf>>
- Fracassa, D. 2017. San Francisco takes back its trees, to the relief of property owners. *San Francisco Chronicle*. <<https://www.sfchronicle.com/bayarea/article/San-Francisco-takes-back-its-trees-to-the-relief-11260192.php>>
- London Tree Officers Association. 2019. The Exponential Benefits of Trees. <<https://www.ltoa.org.uk/news/389-the-exponential-benefits-of-trees>>
- McPherson, G., N. Van Doorn, and J. De Goode. 2016. Structure, function, and value of street trees in California, USA. *Urban Forestry & Urban Greening* 17: 104-115.
- New Westminster Parks, Culture & Recreation. 2015. Urban Forest Management Strategy. <<https://www>>

newwestcity.ca/database/files/library/Urban_forest_management_strategy_FINALreduced_size.pdf>
San Francisco Urban Forest Plan. 2014. <https://default.sfplanning.org/plans-and-programs/planning-for-the-city/urban-forest-plan/Urban_Forest_Plan_Final-092314WEB.pdf>
University of Vermont. 2019. Why people reject city trees: Study explains why thousands of Detroit residents rejected city's tree planting efforts. *ScienceDaily*. <<https://www.sciencedaily.com/releases/2019/01/190107142109.htm>>

Urban Forest Management Plan Toolkit. 2019. <<https://ufmptoolkit.net>>

Kit P. Jory Sr. is an ISA Municipal Specialist, Certified Arborist®, Qualified Tree Risk Assessor, and has a Mastery in Phytophthora from Oregon State University. He lives in Modesto, California and is currently finishing his Masters degree in Public Administration and working on developing Urban Forest Management Planning with mitigation methods and projections for the 22nd century.

BOOK REVIEW

Dirr, M.A., and K.S. Warren. 2019. *The Tree Book: Superior Selections for Landscapes, Streetscapes, and Gardens*. Portland: Timber Press. ISBN: 978-1-60469-714-8.

The new reference by Michael Dirr and Keith Warren is exactly what you would expect from two expert plantsmen. It is a tome with over 2400 entries, filled with useful information and pictures of species and cultivars. Michael Dirr, who many consider the expert in tree identification with encyclopedic tree knowledge, has teamed up with Keith Warren, who for 40 years at the J. Frank Schmidt & Son nursery in Oregon has selected some of the most successful cultivars in the trade. Perhaps due to this collaboration, *The Tree Book* includes not only descriptions of selections, but also interesting histories of crosses, relatives, and plant availability.

Covering over 900 pages, this book contains a remarkable number of tree descriptions. There are 46 pages devoted to the oaks alone, and there are 24 pages of crabapple cultivar entries. For a complicated genus like *Malus* with so many varied cultivars (red, white, pink, weeping, full-sized, dwarf), Dirr and Warren break them down into both flower color and growth habit, which is very useful in identification and their application in the landscape.

Comparing this book to other references in my library, the obvious first choice is Michael Dirr's *Manual of Landscape Plants*, which, while more comprehensive in culture and details, lacks the practical images found in *The Tree Book*. While this new book has less information on propagation and culture, it includes notes on the tree's native range, soil adaptability, and hardiness. Whereas the *Manual* delves into taxonomic details, *The Tree Book* has a focus on the tree in the landscape and where it may fit in landscape design.

Another comparison is the Royal Horticultural Society's *Encyclopedia of Garden Plants*, which is packed with short notes on over 15,000 plants of all types. While Dirr and Warren's book covers trees only, it is much more up-to-date on cultivars and has the very helpful addition of great images of many of the trees covered. *The Tree Book* has an emphasis on form and function, very useful when choosing a plant for a specific application.

This book is a comprehensive reference of trees for most areas of the U.S.A. If there is a weakness in it, it might be in the coverage of trees for the dry Southwest (where I happen to practice). For example, the *Platanus* genus covers London plane, American sycamore, and even Arizona sycamore, but doesn't include Mexican sycamore, a very common tree in the area.

Nonetheless, *The Tree Book* sets the standard for a comprehensive and helpful book for identification and application of tree selections. It is a fascinating read for any tree lover, but if your work includes reviewing planting plans, making recommendations for species and cultivars for design, or if you work in public gardening or nursery production, I believe you would find this a very useful book.

Patrick Brewer, Austin, Texas

