

City of Somerville Parks & Open Space (POS) & Urban Forestry (UF) Divisions
STAFF RECOMMENDATIONS REGARDING A NATIVE SPECIES ORDINANCE

City of Somerville

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Definitions:

“Native Plant: A plant that is a part of the balance of nature that has developed over hundreds or thousands of years in a particular region or ecosystem. Note: The word native should always be used with a geographic qualifier (that is, native to New England [for example]). Only plants found in this country before European settlement are considered to be native to the United States.”¹

“Non-Native Plant: A plant introduced with human help (intentionally or accidentally) to a new place or new type of habitat where it was not previously found. Note: Not all non-native plants are invasive. In fact, when many non-native plants are introduced to new places, they cannot reproduce or spread readily without continued human help (for example, many ornamental plants).”¹

“Invasive Plant: A plant that is both non-native and able to establish on many sites, grow quickly, and spread to the point of disrupting plant communities or ecosystems. Note: From the Presidential Executive Order 13112 (February 1999): 'An invasive species is defined as a species that is 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health.' In contrast to item 2) of the Executive Order, which includes plants invasive in agricultural settings, the Connecticut Invasive Plant Working Group lists non-native plants as invasive only if they invade minimally managed (natural) areas.”¹

Adapted (sometimes called “native compatible”) plants: “Adapted plants are those that were not originally part of the natural ecosystem but have evolved to a point where the physical conditions such as soil, climate and geology are conducive for healthy growth.”² “Adapted plants are not native and not invasive, but are able to thrive in the local climate and soil conditions.”³

¹ Native, Invasive, and Other Plant-Related Definitions. Retrieved from:

https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ct/technical/ecoscience/invasive/?cid=nrcs142p2_011124

² Native and Adapted Plants (2011). Retrieved from:

<http://greenmanual.rutgers.edu/newcommercial/strategies/nativeplants.pdf>

³ Use Native and Adapted Plants (2019). Retrieved from: <http://landscapeforlife.org/plants/use-native-and-adapted-plants/>

Context

When discussing native plants, it is important to add appropriate qualifiers. Plants can be native to a continent, country, region, state, or habitat (e.g., coastal or alpine plant communities). Regardless of their classification, there are many benefits to using native plants. Native species are uniquely adapted to environments that mimic pre-contact conditions. When planted in appropriate locations, native species generally use fewer resources and contribute to an efficient and balanced ecosystem. When the conditions are right, native species may be able to grow easily once established, but when conditions are not right they are often outcompeted by invasive species. One of the most important benefits of native species is that they create habitat for native birds, pollinators, and wildlife. In this way, native species are proven to increase and protect biodiversity.

Somerville's Parks & Open Space and Urban Forestry (POS & UF) departments are tasked with balancing multiple objectives and challenges to create parks, plazas and streetscapes that provide a natural relief and unique vitality for our 80,000 residents in our four square miles. We have had a successful record of using many native species in appropriate locations in both our parks and streets and of creating landscapes that perform many ecological and sociological functions.

Urban Planning Precedent

Fortunately, there is a growing awareness and recognition by urban landscape planners and the general public of the importance of native species. Some cities and towns in the Midwest have changed their nuisance and weed ordinances to allow more “naturalized” landscapes to replace resource-consuming lawns.⁴ Additionally, some municipalities have proposed ordinances which require a percentage of plant palettes to be native species. For example, cities and towns in Florida have set required percentages of native species ranging from 30% in the City of Miami to 75% in the Florida Keys town of Islamorada (population 6,645).⁵ Closer to Somerville, New York City passed Local Law No. 11 in 2013 to “require greater native biodiversity and limit the use of invasive species in public landscapes.”⁶ The spirit of this law is achieved by requiring the City to revise its design manual using a *Native Species Planting Guide for New York City* which, in an effort to encourage the planting of natives, “contains detailed information for the tolerances, preferences, and value of over 430 native species”.⁷ While the New York City planting guide prohibits the use of invasive species, it does not prohibit the use of non-natives as a substitution to natives in appropriate locations. This is an important feature of the guide that takes into

⁴ Native Landscaping Ordinances (2013). Retrieved from: <http://www.marc.org/Environment/Air-Quality/pdf/NativeLandscapingOrdinances-4pg-June2013.aspx>

⁵ Model Native Plant Landscape Ordinance Handbook (2007). Retrieved from: http://www.fnps.org/assets/userfiles/files/model_landscape_ord_final_022407.pdf

⁶ Local Laws of the City of New York for the Year 2013 (2013). Retrieved from: <https://urbangreencouncil.org/sites/default/files/a15U000000MKOfIAO1388005466.pdf>

⁷ Native Species Planting Guide for New York City, 2nd Edition (2014). Retrieved from: <https://www.nycgovparks.org/pagefiles/73/nrg-native-species-planting-guide-121213.pdf>

consideration specific site factors and expert knowledge in determining the most suitable species to plant for any given location. In the section entitled “How to Use This Guide”, it importantly states that the plant lists “... provide suggestions for planting, and represent a near complete list of desirable or approved species. Specific site characteristics, the input of professionals, and other factors, will, as appropriate, dictate planting decisions. This information will be updated regularly, but it cannot substitute for the creative, innovative, careful, and conscious choices made by New York City’s landscape architects, horticulturists, foresters, and other professionals.”⁷ Like New York, most cities encourage the use of natives but do not prohibit or dictate which plants to be used.

Urban Context

While many cities have acted to encourage native plantings, it is important to recognize that very few cities have restricted plantings to ONLY native plantings. There are many reasons why:

1. Simply characterizing a plant as “native” does not assure survivability or appropriateness in an urban environment. Cities are unique environments that no longer reflect the untouched conditions that favor all native plants. Because of human intervention, the characteristics of cities—in everything from temperature, soil structure and conditions, air pollutants, salt use, and maintenance regimes—bear little resemblance to the environments in which native species evolved, and these urban conditions create many challenges for trees and plants. Although some native species of trees, shrubs, perennials and ground covers can thrive in an urban environment, many of them cannot. Under certain circumstances such as sidewalk tree wells, difficult median strips, compact spaces, areas containing poor soils and/or extreme microclimates, and areas with little or no maintenance, only the strongest of plants can survive. In many difficult urban sites native species are not able to survive, and in others they may only be able to survive with continuous maintenance such as regular watering and weeding. Because of the reduced survivability and increased maintenance needs of native species in these difficult urban areas, limiting the planting palette to only native species would result in fewer plants being planted in the city.
2. As the climate changes, so too are urban environments and plant zones. Urban centers are already recognized to be 1.8–5.4°F warmer than surrounding areas⁸, a phenomenon described as the *urban heat island effect*. With climate change, we can expect even warmer temperatures and heat waves, more extreme precipitation events and precipitation-based flooding, as well as sea level rise and storm surges⁹. As the City plans for climate change, it is important not only to consider native plants, but also plants that are more tolerant of heat, salt and drought. As we face hotter temperatures and more severe weather events, we need to be able to choose from the hardiest of plants for difficult sites.

⁸ Heat Island Effect (2018). Retrieved from: <https://www.epa.gov/heat-islands>

⁹ City of Somerville Climate Change Vulnerability Assessment (2017). Retrieved from:

https://www.somervillema.gov/sites/default/files/6-13-2017_Somerville%20CCVA%20Final%20Report.pdf

Moreover, climate change will result in a shift in the suitability of certain species to our region. An important part of climate change adaptation is to consider how species planted now will perform in the future. Plant species evolve under specific climatic conditions, and based on their evolutionary history, each species has a range of conditions in which they can survive and thrive. The change in local climatic conditions with climate change is expected to occur faster than plants can naturally disperse or evolve. Species that cannot move or evolve fast enough are susceptible to die-off and even extinction. Already, the 2012 USDA Plant Hardiness Zone Map Shows that “[t]he zones in this most recent edition of the map have shifted slightly since the 1990 version. Most areas are now categorized as one 5-degree F half-zone higher.”¹⁰ Thus the ability of certain New England native species to tolerate the climatic conditions in our region is changing, and it is likely that this shift will continue as the climate continues to change. Although some plant species in New England are surviving at the edge of the climatic conditions that they can tolerate, they may be perfectly suited to future climatic conditions. To help reduce the impact of climate change on species extinctions as well as helping to ensure long-term plant success, foresters, managers, and ecologists should consider utilizing assisted species migration or assisted range expansion, thereby planting species currently classified as non-native and which are currently at the edge of their climatic tolerance zones¹¹.

3. Plants provide a variety of ecosystem service benefits to the people and wildlife of an area. Ecosystem service benefits are defined as “a wide range of conditions and processes through which natural ecosystems, and the species that are part of them, help sustain and fulfill human life”¹². Although the ecosystem service benefits that plants provide varies by species and plant size, all plants, including non-native species, provide essential ecosystem services benefits such as improving air quality, increasing storm water infiltration, and sequestering carbon, as well as providing aesthetic and spiritual values. Many plants also provide food sources for urban wildlife and generalist pollinators. Maintaining a diversity of plantings is essential for maximizing ecosystem service benefits and ensuring the long-term health of our parks and urban forest. Maximizing diversity is also essential for reducing the risk of catastrophic loss due to specialist diseases or pests that attack specific species or genera, such as Dutch Elm Disease and Emerald Ash Borer.

To maximize plant diversity it is important that we plant non-native species in addition to native species. We can look to our Urban Forestry Program for reasoning. A general rule of thumb in urban forestry is the “10-20-30 rule”¹³, namely, that no species comprises more

¹⁰ The USDA Plant Hardiness Zone Map – Changes in the 2012 Edition (2014). Retrieved from: <https://ag.umass.edu/home-lawn-garden/fact-sheets/usda-plant-hardiness-zone-map-changes-in-2012-edition>

¹¹ Tracking climate change and assisted migration for native plants (2015). Retrieved from: <https://www.fs.fed.us/rmrs/science-spotlights/tracking-climate-change-and-assisted-migration-native-plants>

¹² Ecosystem Services: Benefits Supplied to Human Societies by Natural Ecosystems (1997). Retrieved from: <https://www.esa.org/esa/wp-content/uploads/2013/03/issue2.pdf>

¹³ Is the 10-20-30 Rule for Tree Diversity Adequate? (2013). Retrieved from: <http://www.deepproot.com/blog/blog-entries/is-the-10-20-30-rule-for-tree-diversity-adequate>

than 10% of the urban forest, no genus comprises more than 20%, and no family comprises more than 30%. Although some birds, pollinators, and other wildlife species that require native species for food or habitat would benefit from planting native species, limiting our plant palette to *only* native species would have the net effect of decreasing diversity of plants in the city. For example, of the 29 small trees (15-30' tall) that are native to New England, only 12 of them are tolerant of urban conditions, and only 6 are tolerant of urban condition *and* have a form amenable to planting in sidewalks¹⁴. Similarly, of the 30 medium sized trees native to New England, only 7 are tolerant of urban conditions, and only 4 are actually feasible to plant under most conditions in Somerville (ex., appropriate form for planting on sidewalks and not susceptible to Emerald Ash Borer). Of the 31 large trees native to New England, only 9 are tolerant of urban conditions and feasible to plant under most local conditions.

When considering species diversity, it is also important to note that the Parks and Open Space/ Urban Forestry team never plants invasive species. These species are prohibited in the “Massachusetts prohibited plants list”¹⁵ and we do not allow them in our projects.

4. There are additional factors to consider for municipal projects. First, native plants are not always as readily available in regional nurseries as non-native species. Although this isn't necessarily a condition that the POS & UF professionals support, and it does not always align with planting goals, it is the reality of the industry at the moment. Even when native species are available, they may not be available in large enough sizes to plant in certain locations (for example trees that are too small cannot be planted in streetscapes as they would likely be destroyed by pedestrians and/or vandals). Second, 311 receives calls from residents complaining that some of the City's more naturalistic plantings look overgrown or unkempt, and other calls where residents complain that naturalized plantings bring rats. While neither of these complaints is founded, it is important to acknowledge that the aesthetic of a native garden is not something everyone likes or understands. Third, not all native species are desirable in all types of environments¹⁶. In particular, opportunistic native species can be problematic in highly disturbed urban areas. These types of species can have invasive-like tendencies and can spread and grow so quickly as to choke out other, desirable species.

¹⁴ University of Connecticut Plant Database (2015). Retrieved from: <http://hort.uconn.edu/search.php>

¹⁵ Massachusetts Prohibited Plant List (2017). Retrieved from: <http://www.mass.gov/eea/agencies/agr/farm-products/plants/massachusetts-prohibited-plant-list.html>

¹⁶ Moving Beyond the Natives/Exotics Debate (2012). Retrieved from: http://www.urbanhabitats.org/v07n01/nativesdebate_full.html

The goals of POS and UF divisions in regards to public plantings are:

1. Our first priority is to assure the safety of residents. This is particularly applicable to trees in all contexts, and also applies to site lines in parks as they relate to traffic and to crime.
2. Choosing appropriate plants for each site. This decision is based on balancing a number of factors, as described below.
 - a. Choosing appropriate plants for the physical conditions of the site. The soil conditions, light availability, proximity to infrastructure, and other microclimatic factors of a site all affect the suitability of the location for a given species. For each site it is essential to choose species with the appropriate environmental preferences and tolerances.
 - b. Choosing appropriate plants for the community needs. Designs for parks and streetscapes are developed through inclusive community processes. In addition to responding to the users, park designs include plants that are chosen to provide appropriate environmental service benefits for a given place. Planting trees along busy roads that not only tolerate air pollution, but also are best suited to clean the air, or selecting plants for stormwater retention in a rain garden or roof garden are examples.
 - c. Choosing appropriate plants that can survive given the maintenance resources we have. Municipal maintenance resources are limited. Selecting plants with high maintenance needs that the City cannot commit to is financially and functionally irresponsible.
 - d. Choosing plants that will not succumb to known invasive insects/ pests in the region. To this end we do not plant Elm trees that are susceptible to Dutch Elm Disease, and we do not plant Ash trees, which are susceptible to Emerald Ash Borer. We also aim to plant a diversity of species throughout the city to minimize the impact of any potential future pests.
 - e. Planting for climate change. We need to select plants that survive in the types of changes we are undergoing as the climate changes.
3. Maximizing diversity of species that can grow in this region.

Conclusion

While we always encourage the selection of native plants and prohibit the use of invasive plants, a plant's origins should not be the determining factor for selecting suitable plant material. The most important factor is choosing the right plant for the right place. Nativity is one of many considerations in our broader sustainability goals, but we recommend against an ordinance that would limit all plantings to natives only. We point to the challenges of urban conditions and management of urban plantings, the need to plan for climate change, and the desire to achieve a balanced approach to plant diversity and survivability.

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