



Strengthening Community Forestry and Urban Tree Management for Multiple Benefits

A Position of the Society of American Foresters

Initially adopted by the Society on April 24, 1990, revised and adopted December 8, 1997, November 11, 2002, November 14, 2008, December 7, 2013 and December 8, 2018. This position statement will expire in 2023, unless, after subsequent review, it is further extended by the SAF Board of Directors.

Purpose

The purpose of this position statement is to raise awareness and support shared understanding of the value and impact of community forests and urban trees and their management for a full scope of environmental, economic, and social benefits in the United States.

Scope

Urban and community forests and trees include publicly- and privately-owned trees within an urban or community area, including individual trees along streets and in backyards, and natural areas.

Position

The Society of American Foresters (SAF) believes actions and practices that strengthen and improve urban and community forests and trees are vital to social, economic, and environmental well-being. As the population has become increasingly urbanized, urban and community forests are critical to human health, air quality, energy consumption, water quality, invasive species, fire protection, recreation, and others. SAF believes:

- (1) sustained investment in urban and community forests are necessary to achieve these purposes;
- (2) urban forests present unique and challenging conditions to forest management;
- (3) successful urban forest management requires broad community involvement and technical expertise; and
- (4) the maintenance of urban tree cover has significant societal and landscape-scale environmental benefits.

SAF strongly supports activities and funding that promote establishment, maintenance, and sustainability of urban forest ecosystems for all communities. SAF supports integrating the science and art of urban and community forestry into broader land-use planning systems. SAF believes that the sustainable management and use of urban and community forest resources, including the ecological maintenance of the associated green infrastructure, requires an enabling policy and regulatory framework, forward-looking research and investment programs, public education, and institutional strengthening of government and private sector investments and partnerships.

Issue

Urban and community forests are a significant resource nationally and are likely to increase in significance in the coming decades (USDA Forest Service 2012). Urban growth in the United States affects forest management, environmental quality, and human well-being. As urbanization increases, so does the value of urban forests in providing ecosystem services such as mitigating storm water runoff and heat islands and contributing to the character, quality of life, and economic and social infrastructure of our communities. Urban forests face a myriad of management challenges. What happens in populated areas has a profound impact on urban ecosystems as well as extended exurban landscapes. Community development can cause changes to wildlife habitat, and the management of wildfire, invasive species, recreation, and watersheds. What happens in the broader landscape also affects urban communities, for example wildfire and insect and disease outbreaks move across boundaries and water quality impacts occur across shared watersheds. Many urban and community forestry programs face challenges in addressing these conditions, meeting societal demands for a healthy forest, and in finding sustained support and long-term commitments for effective management. Many threats, such as the risks for the introduction and spread of invasive species and wildfire in the urban interface, will require increasing levels of management and expertise. Sustained support for financial and technical assistance programs is urgently needed to maintain healthy, productive urban and community forests.

Background

Urban and community forests include publicly- and privately-owned trees within an urban or community area, including individual trees along streets and in backyards, and natural areas (Nowak et al. 2001). Urban and community forestry is the integrated management of those natural resources that improve the quality of life for all urban and community dwellers. This includes the art, science, and technology of managing trees and associated resources as an integral part of urban ecosystems for environmental, social, economic, and aesthetic benefits.

The urban forest covers a large and expanding area. Recent estimates are that the urban areas of the United States have about 5.5 billion trees, including street trees, private yards, and parks in large cities and small towns (Nowak and Greenfield 2018a); with metropolitan areas included the number reaches 74 billion trees (Dwyer et al. 2000). Urban land in the United States increased from 2.6 percent of total land area in 2000 to 3.0 percent in 2010 and is forecast to expand to 8.6% by 2060 (Nowak and Greenfield 2018a). Approximately 84 percent of the U.S population lives in urban areas (USCB 2011). Substantial population growth outside urban areas also continues to extend urban influences, particularly in places with considerable scenic and recreational value (McGranahan 1999). In a national study of both urban and broader urban/community areas, 23 states had statistically significant declines in tree cover between 2009 and 2014 (Nowak and Greenfield 2018b). Urban and community forest sustainability is varied and complex. As urban areas expand, forestland may be converted, fragmented, or incorporated into urbanized landscapes, which may result in a loss of native species and biodiversity, increased risk of wildfires in the urban interface, unmanaged outdoor recreation, and pest and insect infestations (Chavez 2005, Nowak et al. 2005, Nowak and Walton 2005). The following sections provide additional background about the benefits of and threats to urban and community forests.

Environmental Benefits

Ecological functions persist in urban and developed environments (Pickett et al 2011). Urban and community forests often serve as the first line of defense against heat, climate variability, and storm water management to protect water quality. Maintaining urban tree canopy cover can enhance associated ecosystem goods and services through increased forest health and vigor, and through reduced water erosion, stormwater runoff and flooding, damage from hurricanes and coastal storms, and potential sources of water pollution. Green

infrastructure, including the management of the urban tree canopy, may be implemented as a means to manage runoff entering stormwater drainage systems. In contrast to traditional grey infrastructure, such as stormwater drains, green infrastructure mimics natural, pre-development landscapes and their ability to capture, retain, and reuse water on-site. Trees are able to capture precipitation and store it within their leaves and branches, and depending on the given size and species of a tree, it can effectively store 100 gallons of water or more before it reaches saturation (MacPherson, 2010). Tree foliage also works as a natural air filter of particulate matter and pollutants such as ozone, nitrogen oxides, ammonia and sulfur dioxides, having a significant effect on smog and urban air quality. Nationally, urban trees are estimated to remove 822,000 tons of pollutants annually (e.g., particulates) and store about 919 million tons of carbon with a gross carbon sequestration rate of 37 million tons per year¹ (Nowak and Greenfield 2018a). Given the high value of urban trees, substantial efforts are warranted to improve maintenance and retention of mature urban trees. Life spans of trees in urbanized areas are often less than 30 years, so the decades that it takes for newly planted trees to become large enough to make desired contributions is a formidable obstacle (Roman and Scatena 2011).

Economic Services

Maintaining urban tree cover provides many economic benefits. Trees around homes and buildings provide summer shade and winter wind protection that aids in reducing energy costs. Studies have shown a 1-2°F decrease in temperature for every 10 percent increase in tree cover (Akbari et al. 2001). Homes sheltered from the wind benefit from winter heat savings and reduced energy consumption.² The annual benefits derived from U.S. urban forests due to air pollution removal, carbon sequestration, and lowered building energy use and consequent altered power plant emissions are estimated at \$18.3 billion (Nowak and Greenfield 2018a). Urban and community forests provide an increasingly important source of tree trimmings and storm recovery used in renewable energy production (MacFarlane 2009). Approximately 32 million tons are generated annually, with nearly 21 million tons of this amount recovered (USDOE 2011). Trees in communities also provide other forest products and associated employment opportunities. Based upon current urban tree removal and replacement rates, it is estimated that the equivalent of 1.8 to 3.5 billion board feet of lumber could be produced annually from urban trees in the U.S. (Sherrill 2018). Urban trees can provide many useful products including lumber and bio-energy while also helping to conserve landfill space and generate economic opportunities (Bratkovich 2008). Also significant are the economic values provided by urban and community forests including increased property values (Irwin 2002, Sander 2010) and increased tourism and visitor spending (Wolf 2003).

Social Dimensions

Urban and community forests can provide many social benefits, including positive impacts to human health and improved public safety. Accessible open space can help reduce chronic fatigue and associated trees and vegetation enhance neighborhood beauty and sense of well-being (Kuo 2003, Wolf 2003). Research indicates that as tree canopy increases, the incidence of violent crime decreases in urban centers (Troy et al. 2012). Nearly forty years of scientific study provide findings that urban forests can improve human mental and physical health, improve academic performance where school settings and classrooms integrate trees and forest views, and increase social cohesion (University of Washington 2016). While urban forests provide an array of social benefits to people living and working in cities and visiting them, these benefits are often unevenly distributed. Uneven distribution of tree-related benefits frequently correlates with socioeconomic status, race, and ethnicity, and education level, as open space and urban tree cover are frequently less common in lower income neighborhoods (Hanson 2016, Grove 2018). Management of urban forests requires creative thinking, broad community involvement, and expanded technical expertise. A wide range of community

¹ Assuming a carbon emission rate of 20 tons per person per year in the United States (EPA 2007 estimate), urban trees provide sequestration services equivalent to 1.8 million Americans.

² For more information on winter heat savings, see: McPherson et al. 1994. For more information on reduced electricity and avoided emissions of pollutants, see: Nowak et al. 2017.

groups, from small to large and with a diversity of interests, often comes together in urban forestry efforts (Westphal 2014). Urban and community forest programs represent an opportunity to engage a variety of citizens, elected officials, and developers in dialogue about the value and function of urban environments (Thompson et al. 2005).

Factors Limiting Urban and Community Forestry Programs

Urban forests face a myriad of management challenges. Substantial and sustained financial investment is required to address annual needs related to such diverse operations as storm damage repair, debris removal, tree planting, detection and protection from pests and pathogens, and developing fire adapted communities. Yet, in the face of increasing demands, urban and community forestry program funding has generally decreased or been threatened with substantial reductions. The availability of professional staff and expertise are essential for making timely planning decisions. Long-term planning, appropriate tree species selection, acceptable care and management practices, and sustained local budgets allow municipalities and communities to avoid the current mode of crisis management (Hauer and Johnson 2008, Hauer and Peterson 2016).

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