

# Bristol Public Tree Inventory Report



*Prepared for the Town of Bristol by the Vermont Urban & Community Forestry Program and the University of Vermont Land Stewardship Program  
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## **Acknowledgements**

This report was developed by four students from the Land Stewardship (LANDS) Field Semester program and subsequently edited and supplemented by Vermont Urban & Community Forestry Program (VT UCF) staff based on field work conducted for the Town of Bristol, Vermont during the fall of 2014. We would like to thank the members of the Bristol Conservation Commission for providing direction and context, particularly Randy Durand and Dave Rosen, the main contacts for the project. We would also like to thank the Bristol Historical Society for hosting the inventory team for lunch, Darla Senecal for her hospitality and support, and Therese Kirby for sharing key information about the Town of Bristol's engagement with its trees. Finally, we would like to thank the Town of Bristol for allowing the LANDS Field Semester students to camp at Eagle Park for the duration of the inventory data collection component of this project.

## **About the Vermont Urban & Community Forestry Program**

The field of forestry management is not confined to the natural areas and forests of Vermont, but extends to the urban and rural spaces where trees play important roles. The trees in public parks, along roadsides, on town greens, and in municipal forests compose our urban and community forests and merit careful stewardship. The Vermont Urban & Community Forestry Program (VT UCF) is a collaborative effort between the Vermont Department of Forests, Parks, & Recreation, the University of Vermont (UVM) Extension, and the USDA Forest Service. The program provides technical and financial assistance as well as educational programs and resources for the management of trees and forests in and around Vermont communities. The mission of VT UCF is *to lead citizens, businesses, and governments in understanding the value of urban and community forests and promote civic responsibility for and participation in the stewardship of these resources for this and future generations.* Since 1991, the program has been guided by a small staff and a twenty-member advisory council. The council meets quarterly to share information and advise the program; its members come from various professional associations, non-profits, educational institutions, tree boards, regional officials, and state agencies.

The trees in our communities offer a wide variety of environmental, social, and economic benefits to the surrounding community, including, but not limited to stormwater control, carbon dioxide (CO<sub>2</sub>) sequestration, and aesthetic value. VT UCF seeks to maximize these benefits by working with state and municipal officials and dedicated volunteers to steward the urban forest's ecological integrity and diversity. VT UCF's programming and support reaches 100 Vermont communities annually. More information about VT UCF and its programming can be found at [www.vtcommunityforestry.org](http://www.vtcommunityforestry.org).

### **About LANDS**

LANDS is an innovative college conservation corps established in 2007 through a partnership between the University of Vermont's Rubenstein School of Environment and Natural Resources (RSENR) and the Student Conservation Association (SCA). Through a summer internship program and a fall field semester, LANDS students work as a crew to provide valuable field and planning support to land management agencies throughout Vermont. At the same time, they learn how to solve complex environmental problems, strengthen their understanding of ecology and conservation, and develop professional skills that prepare them for successful careers.

LANDS students enter the program with college-level educational backgrounds in environmental fields, enabling them to tackle advanced projects not usually associated with conservation corps. Students further prepare for their work through intensive training provided by natural resources professionals and University faculty. Projects focus on natural resource inventory and assessment, monitoring, management planning, GIS mapping, hands-on conservation activities, public presentations, and community engagement.

LANDS provides affordable services and high-quality products for municipalities, land trusts, state agencies, national forests and parks, and volunteer-managed conservation organizations. The program also benefits Vermonters by collaborating with the University and local

communities, and enabling partnering organizations to share their missions and increase their visibility among the next generation of conservation leaders. Since its inception in 2007, 84 LANDS students have conducted 102 projects and service activities for 33 conservation partners. LANDS provides much-needed support to conservation organizations in Vermont while creating a knowledgeable, highly skilled cohort of professionals poised to become the future stewards of our land and resources.



**Students in the fall 2014 LANDS Field Semester inventoried public trees in Bristol, Middlebury, and Vergennes. From the far left, Shannon Scarbrough, James Pospishil, Grant Troester, and Julienna Brooks made up the Bristol inventory team.**

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## Executive Summary

The goal of the public tree inventory was to *document the location, size, species composition, and condition of trees planted within the public right-of-way (ROW) and on town-owned land within the downtown and most populated neighborhoods of the Town of Bristol*. This information provides residents and decisions-makers with a better understanding of the composition, health, and benefits of Bristol's urban forest and will allow the Bristol Conservation Commission (BCC) to plan for future tree planting and maintenance using a map-based tree inventory system.

This project was initiated in the spring of 2014, was coordinated with the members of the BCC, and was approved by the Bristol Selectboard. LANDS students completed an inventory of **562 trees** located within the public ROW of **26 streets** and on **3 town-owned properties**, and identified **106 potential tree planting locations**. Staff from VT UCF provided technical assistance in data collection, tree species identification, and data analysis. This report was prepared in the fall of 2014 by LANDS interns and was subsequently edited and supplemented by VT UCF program staff. It presents the results of an inventory and provides a basic assessment of the trees and urban canopy cover in Bristol.

Local government, conservation agencies, and private landowners all play an important role in monitoring and maintaining urban forests. Urban trees provide a number of benefits to a community, including reducing storm water runoff, reducing air pollution, providing shade, sequestering carbon dioxide, enhancing property values, and improving the aesthetics of the community. The 562 public trees that were inventoried provide an estimated **\$65,365 in benefits annually** to the residents of Bristol. In addition to the public trees inventoried, an aerial tree canopy assessment was completed for the specific area inventoried, which indicated an existing canopy cover of 24.5% and an estimated long-term **stored CO<sub>2</sub> value of over \$174,000**.

## Summary of findings

### **Forest Diversity**

- Of the 562 public trees, there were 46 different species in 25 different genera identified.
- The top five most common tree genera represented are *Acer* (maple) at 48%, *Fraxinus* (ash) at 6%, and *Picea* (spruce), *Malus* (crabapple), and *Gleditsia* (honeylocust) at 5% each.
- *Acer* and *Fraxinus* species represent 54% percent of Bristol's public trees. Invasive tree pests currently threaten both of these genera: the Asian longhorned beetle (ALB) and the emerald ash borer (EAB), respectively.
- The top five most common species represented are *Acer saccharum* (sugar maple) at 21%, *Acer platanoides* (Norway maple) at 10%, *Acer rubrum* (red maple) at 6%, *Malus* sp. (crabapple) at 5%, and *Gleditsia triacanthos* (honeylocust) at 5%.

### **Forest structure**

- The majority of inventoried public trees (61%) have diameter at breast height (DBH) measurements of 6-18". 32% of inventoried public trees have a DBH within the 6-12" size class and 29% of the inventoried trees have DBH measurements in the 12-18" size class.
- The remaining 39% of inventoried trees were represented in the following size categories: 0-3" (8%), 3-6" (9%), 18-24" (11%), 24-30" (7%), 30-36" (2%), 36-42" (1%), and 42"+ (1%).

### **Forest Cover**

- There is estimated existing urban tree canopy (UTC) cover of 24.5% in the 0.58mi<sup>2</sup> inventory area. This includes public and private trees.
- Trees could potentially cover an additional 65.4% of the Bristol's land surface; these "possible UTC" areas include low-lying vegetation (47%) and impervious surfaces (18%) (e.g. parking lots, paved playgrounds, and the ROW).

- The remaining 10.1% of the Town's area is comprised of buildings, streets, and other permanent features that are generally unsuited for UTC improvement.

### **Forest health**

- An overwhelming majority (88% or 493) of Bristol's inventoried public trees was assessed as being in "Good" condition. Of the remaining trees, 9% (51) were considered to be in "Fair" condition, 2% (12) were considered to be in "Poor" condition, and 1% (6) were found to be "Dead".
- 44 public trees were flagged as in need of a future consultation by an arborist, town employee, or representative from the Bristol Conservation Commission.

### **Summary of recommendations**

We recommend that the Town of Bristol work on continuing to *increase the diversity* of tree species to ensure the long-term health of individual trees and Bristol's complete urban forest. Plant a variety of species instead of high-density stands of the same species whose close proximity may be conducive to the spreading of disease and pests. Plant native trees with high survivability rates, pollution tolerance, salt tolerance, and long life spans.

**Monitor** tree health, specifically for signs and symptoms of EAB, ALB, and other forest pests and diseases. Encourage citizens to learn to identify and report invasive pests.

**Maintain** tree health by ensuring that those who are caring for Bristol's public trees are trained in best tree care practices.

**Plan** for the arrival of EAB by developing a community invasive pest preparedness and response plan.

**Establish** a routine systematic trimming cycle (multi-year) for all public trees to reduce future tree failures due to poor structure, minimize conflicts with people and infrastructure, improve lines of sight, reduce storm damage, and protect public safety.

**Develop** a comprehensive management and urban forest master plan based on this inventory report and build off the management plan created in conjunction with this document.

**Fill vacant spots** with native trees. Be sure to take into consideration obstructions such as proximity to power lines, impervious surface, pollution, and salt exposure when choosing species and planting space.

**Communicate** about the benefits of Bristol's public trees at local events, and encourage participation in VT UCF educational programming such as the *Stewardship of the Urban Landscape* course and the *Forest Pest First Detectors* trainings.

**Encourage** residents to plant trees on their private property to increase overall UTC cover.

**Consult** trees in need of consult and *remove* dead trees, which could endanger property and/or residents.

