

**Urban and Community Forestry
in the Northeast**

Urban and Community Forestry in the Northeast

Second Edition

Edited by

John E. Kuser

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To Dick West and Kim Ching, two of my early forestry mentors

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Foreword

During the latter part of 2004, Helen Buitenkamp of Springer Publishing emailed me that the first edition of *Handbook of Urban and Community Forestry in the Northeast* is the best volume in its field and inquired whether we'd be interested in compiling a second edition; I replied that we certainly would, and started working on it immediately. We have revised 14 out of 26 chapters in the first edition, and added two new authors. Many things in urban forestry have changed a great deal, while others have not changed at all. Henry Gerhold has written an entirely new Chapter 1 based on a book that he and his graduate student Stacy Franks have written entitled "Our Heritage of Community Trees." Dave Nowak has included the most up-to-date information on the environmental effects of trees in Chapter 2, and Peter Fengler and Tom Smiley have done the same with the diagnosis and treatment of hazard trees in Chapter 17. All told, we have revised or replaced 16 chapters of the original 26; we've kept 10 chapters as originally written, and substituted two entirely new chapters, 1 and 14, respectively.

With the emergence of urban and community forestry as the fastest growing part of our profession in the last several years, the need for a book such as this inevitably developed. The Society of American Foresters' urban forestry working group counts over 40 universities now offering courses in this subject, and the number is growing.

For the last several years, I have coordinated a Continuing Education urban forestry course at Rutgers University for non-matriculated students. Registrants have included arborists, engineers, shade tree commissioners, landscape architects, city foresters, environmental commissioners, park superintendents, and others whose jobs involve care and management of trees. The course was started by Bob Tate in 1980 around a core of managerial subjects such as inventories, budgets, and public relations. After Bob left in 1984 to join Asplundh and later to start his own prosperous business in California, the course languished after it exhausted the local market for those subjects. Bob is now the President of the International Society of Arboriculture.

I revived Bob's course in 1992, adding technical subjects such as tree selection (my own field), planting, pruning, soils, insects, and diseases. Because it is almost impossible for one person to be an expert in all these areas, each lecture was delivered by a practitioner of that particular field. An important part of the course was feedback: each year, registrants were asked what subjects they thought would be meaningful additions to the curriculum for other members of their organizations planning

to attend during the following year. Based on this feedback, new topics and speakers were added, occasionally some were dropped, and thus the current menu of urban forestry topics developed.

During this same time, I also taught an undergraduate course in urban forestry; in looking for a text that covered most of the same topics, as did the Continuing Education course, I could not find one. The only answer was to create one.

What we provide here is a basic framework of information that can be enlarged upon by the reader with respect to any particular specialty. For this reason, reference lists are included at the end of each chapter. City foresters, shade tree commissioners, landscape architects, and others who deal with planning and managing tree populations are required to make decisions that rest on the expertise accumulated in fields as diverse as law, finance, soils, engineering, silviculture, entomology, pathology, plant physiology, and public relations. They must be part scientist, part businessman, part landscape architect, and part politician. All of us involved in urban forestry have our own specialties that we know best and usually two or three others at which we are reasonably competent; this book is designed to help us learn the basics of the parts of urban forestry with which we are least familiar and to provide references for us and our students to use in order to broaden our knowledge as needed.

I broached the idea for this book to our dean, our state forester, and several others, including Harry Wiant, then president-elect of the Society of American Foresters. I offered it as an alternative to one or two very interesting research projects. The answers were unanimous: do the book because it is greatly needed. So here it is. You may notice that our chapter authors do not all agree about everything: tall versus short trees, exactly how to plant a tree, and so forth. But they are all good at what they do, and they verify the old saying that there are more ways than one to skin a cat. Urban Forestry is still young and growing, and as it matures the best ideas will spread.

John E. Kuser

Acknowledgements

Thanks to all our chapter authors, who have taught me much about many parts of urban/community forestry. Special thanks to Jason C. Grabosky, my successor, who has greatly exceeded my achievements in Urban Forestry; Christine Allen for her talented and indefatigable efforts; Eleanor Kuser, for her patience when I bring home piles of paperwork and do not talk much; Jim Consolloy, who knows almost everything about planting and growing trees; Bill Comery, who built Paramus into New Jersey's showcase Tree City and takes time to show it to our urban forestry classes; Les Alpaugh, New Jersey's State Forester, who backed our urban forestry project early on when some were still asking "*urban forestry—what's that?*"; Helen Buitenkamp, who read the first edition and emailed me that it was so good that it was worth a second edition (and not surprisingly, I agreed!), Dave Shaw and Henry Gerhold, who helped us find some of the experts who became chapter authors; and Christine Tizzano who helped Christine Allen with some of the preparation of the chapter revisions.

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Origins of Urban Forestry

Henry D. Gerhold

1. Introduction

Trees beautify our towns and cities and enrich our lives in various ways. Most of us admire and enjoy these trees that we encounter everyday, but we largely take them for granted. Yet the heritage of landscape trees in our communities has a fascinating history, one that can deepen our appreciation of the trees and the people who take care of them.

A look back at how urban forestry got started can stimulate an appreciation of our heritage of landscape trees, and thus instill an ethic that fully recognizes their value. The intriguing history of city trees, tree care practices, and community tree programs may inspire us and challenge us to improve public support for urban forestry programs, and thereby contribute to the strategy for keeping urban forests healthy. If people can be challenged to take a fresh, long-term look at trees in their own communities, they may be inspired to persuade community leaders to build a better tree program.

A series of developments in landscape design spanning over 300 years in Europe eventually culminated in what we now consider commonplace—street trees. Primitive pruning, fertilizing, and pest control practices were described in English publications in 1597 and 1662; much later they were improved through research and practical experience in Europe and America.

But it was in America that the urban forestry concept first took root even before the term urban forestry was coined and later developed into a national movement. For example, in 1792 citizens of Philadelphia petitioned to have public trees planted, in recognition of their healthful effects. In 1896, this city hired its first professional arborist with the title Chief Forester—possibly the first urban forester? Other early examples of urban forestry have been documented in Georgia, California, Massachusetts, New York, Michigan, and other places.

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Only recently, experts have fully understood many benefits of landscape trees (Chapter 2), and how communities can care for them and keep them healthy in stressful urban environments. This field of knowledge, now known as *urban forestry* in North America and in other parts of the world, has gradually emerged mainly from the disciplines of arboriculture, landscape architecture, and forestry, and includes subjects such as horticulture, soil science, plant pathology, entomology, and social sciences.

Before delving into the origins and development of urban forestry, let us consider what urban forests are and why landscape trees are important to people.

1.1. What Is an Urban Forest?

The very idea of an *urban forest* at first seemed strange, even contradictory, when this term was invented. But it has become accepted and even commonplace. *Community forest* and *city green* are related terms with similar meanings. All three refer to the trees, lower vegetation, open green spaces, and associated wildlife within a municipality or adjacent to it.

The term “urban forestry” was coined in 1965 by Prof. Erik Jorgensen at the University of Toronto. This unusual juxtaposition of “urban” and “forestry” arose in searching for an appropriate title of a graduate student’s thesis. Jorgensen gave this scholarly definition of urban forestry: “a specialized branch of forestry (that) has as its objective the cultivation and management of trees for their present and potential contributions to the physiological, sociological, and economic well-being of urban society.” Furthermore, he believed urban forestry does not deal only “with the city trees or with single tree management, but rather with the tree management in the entire area influenced by the urban population.” It was in the United States that urban forestry first took root and developed into a national movement.

In traditional forestry, trees are managed for timber harvests and to provide other goods and services. But in urban forestry trees are cultivated mainly for their aesthetic and environmental qualities, to be “harvested” only when they die or become hazardous. A traditional type of forest set aside for the good of a community sometimes is referred to as a “community forest” and may be considered a part of the larger urban forest that also includes trees within the town. A community forest at Zurich, Switzerland, has provided timber, firewood, recreation, and watershed protection since 853 AD; the oldest community forest in America was established in 1640 at Newington, New Hampshire.

“Community forestry” sometimes is used as a synonym for urban forestry. That is because residents of towns and hamlets usually consider themselves rural, not urban. They think that urban forestry does not apply to them even though it is meant to be inclusive of all municipalities, regardless of size.

1.2. Values of Urban Forests

A well-managed urban forest has numerous advantages, ranging from aesthetic, economic, and health benefits of various kinds to favorable social and psychological influences. Some of these were recognized long ago. For example, a 1700 ordinance in Philadelphia directed that every owner of a house “should plant one or more trees

before the door that the town may be well-shaded from the violence of the sun ... and thereby be rendered more healthy.” In 1792, the citizens of Philadelphia petitioned the mayor to plant trees in the public squares because “it is an established fact that trees and vegetation ... contribute to ... the increased salubrity of the air.” The New York City Commissioner of Health recommended in 1872 that street trees be planted to mitigate the intense heat and thereby diminish the death rate among children.

Recent studies have quantified other kinds of benefits: property values increased by landscaping, energy saved in heating and air conditioning of buildings due to the proper placement of trees, pollutants removed and carbon stored by urban forests, and even improvements in human health. Amazingly, hospitalized people recover faster when trees are in view.

Furthermore, urban forests that are aesthetically pleasing attract people and businesses to communities. Studies indicate that people have an innate desire to be close to the natural environment, and the urban forest can make this connection for people. Urban forests offer places for social gatherings and can lead to a greater sense of community pride. The urban forest plays three main social roles according to H. W. Lawrence: (i) a natural element in a humanized landscape, (ii) an aesthetic object in designed compositions, and (iii) an object expressing attributes of power, such as ownership and accessibility.

The values and purposes that people see in urban trees have changed over the centuries. Already in the 19th century, a psychologist recorded his ideas about dendro-psychoses, proposing that through natural selection in prehistoric times humans had become genetically predisposed to regard trees as indicators of elements that favored survival (i.e., necessities such as food, water, and security). More recently, the biophilia theory has been developed, which maintains that human preferences have been shaped over millennia through gene-environmental coevolution.

Attitudes of people and trends in landscape architecture have been shaped by events, such as the growth in populations, the Renaissance, the Industrial Revolution, the democratization of governments, the installation of utility wires and sewer systems, and the paving of streets and sidewalks. Cultural traditions of various ethnic groups also have affected views of trees in urban landscapes. For example, a Canadian study found that in Toronto people from the British background were most eager to have shade trees, Italian and Portuguese neighborhoods preferred fruit trees and vegetable gardens, and the Chinese least wanted trees on their properties. These kinds of influences may be related to historical developments in the design of urban landscapes.

2. Design of Urban Landscapes

Various ancient civilizations incorporated trees into their landscapes, but little is known about how that happened. Because these trees were transplanted and served specific purposes it follows that the plantings were designed, even long before there were professional landscape architects. The Hanging Gardens of Babylon during the 6th century BC have been cited as the first intentional use of vegetation in an urban setting. But even earlier, royal gardens in Egypt during 1400–1362 BC had rows of