

RHODE ISLAND Urban and Community Forest Plan



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Program activities are supported by state appropriations and federal grants. Funding for production of this urban and community forest resources plan was provided principally by a grant from the U.S. Forest Service provided through the R.I. Department of Environmental Management and the R.I. Tree Council. State of Rhode Island general appropriations to the Statewide Planning Program provided additional support. The contents of the plan reflect the views of the Statewide Planning Program, which is responsible for the accuracy of the facts and data presented herein. The contents do not necessarily reflect the views and policies of the U.S. Forest Service, nor does the mention of trade names or commercial products constitute endorsement or recommendation for use. This publication is based upon publicly-supported research and may not be copyrighted. It may be reprinted, in part or in full, with proper attribution of the source as follows:

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ABSTRACT

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ABSTRACT: Developed by the Rhode Island Statewide Planning Program, in cooperation with the R.I. Department of Environmental Management, Division of Forest Environment, and the R.I. Tree Council, *the Rhode Island Urban and Community Forest Plan* establishes a vision, goal, and policies and provides recommendations focused on the management of tree resources within the built environment. When construed and applied in conjunction with the State Forest Resources Management Plan (*Rhode Island Forest Resources Management Plan*, State Guide Plan Element 161, 1984) this guidance is intended to advance the effectiveness of local stewardship of the state's tree resources towards the twin goals of a healthy, sustainable economy *and* environment. As an element of the State Guide Plan, the Urban and Community Forest Plan sets forth goals and policies that must, under State law, be reflected in future updates of local comprehensive plans.

PREFACE

When Europeans arrived on the shores of present-day Rhode Island, they encountered a wilderness. Just back from the bayshore meadows, lush temperate forests teeming with wildlife stretched inland. Wild rivers cascaded through verdant valleys, tumbling across natural falls and ripples before meandering through thick marshes to bay estuaries. Towering giants--oaks, white pines, hickories, chestnuts--ruled supreme over a forest canopy that extended as far as the eye could see.

This place--a space in time as much as in geography--has vanished. All that remains of the original Rhode Island landscape are evocative Native American place-names whose translations conjure imaginations--hazy images at best--of places as they once existed in the distant past: Moshassuck--*place where the moose drink*; Pawtucket--*place of falling water*.

As is true of much of the American experience, the story of Rhode Island's success and growth through history has been intertwined with the beating back of its wilderness, and the invention of ingenious means to productively employ the resources embodied in its landscape. Successive waves of settlement, agricultural production, industrialization, urbanization, suburbanization and exurbanization have profoundly altered much of the state's original landscape and vegetation.

Today, as the twenty-first century approaches, the saga of human conquest of the Rhode Island landscape continues, albeit with a hard-learned appreciation of the vital human interest in, and necessity of, protecting its essential elements. The instruments and venues of alteration have changed. Although agriculture and silviculture continue to contribute to the state's economic product, we use decidedly less land for sustenance and forest products than in past eras, and second growth forests in the state's more rural areas have significantly recovered from their near cut-over conditions of the early 20th century, but, the drive to clear and consume land continues. Development pressures have shifted outward from the original focus of dense urban settlements along the upper Bay and rivers; as the century draws to a close, forested land in western and southern Rhode Island is increasingly seen as a choice setting for new residential growth.

Until quite recently, a plan for urban forestry could have been viewed as superfluous. Up until 30 or so years ago--one or two generations--the vast majority of Rhode Islanders lived tightly packed together in the major industrial cities of the state. The cities of Rhode Island's past, while gritty, were also green. Post cards and photos show turn of the century era factory compounds draped in ivy and clustered around green, tree-lined courtyards. Whether we view it as paternalism or civic-mindedness, many of Rhode Island's past captains of industry saw nurturing trees and greenery as part of their civic duty as leaders of the community. While cities such as Providence, Pawtucket, Central Falls, and Woonsocket were more densely settled in pre-World War II era than they are today, old streetscape photos and newsreels of this era seem to show our cities as more verdant than they are today. Rhode Islanders who have lived in the state for 35 or more years will attest that this image is probably less illusion than an indication of the "greenness" that has been lost, steadily if imperceptibly, in our cities.

Some arboreal giants that presided over their urban neighborhoods for generations were brought down by the hurricanes of '38 and '54. Legions of stately elm trees--branches intertwining cathedral-like high above the heads of passersby--graced the boulevards and avenues of most Rhode Island cities until the devastation of Dutch Elm disease in the 1950s and 1960s. Urban renewal, in vogue from the 1950s to the '70s, cleared away not only old buildings, but also the grand old trees that shaded them.

Countless chestnuts, oaks, beeches, and other yard trees were also cut by homeowners to yield space for off-street parking, garages, patios, pools, decks, and other manifestations of our rising affluence. Much the same happened around public and commercial structures as the greenery that originally surrounded them gave ground to expansion of buildings or parking. Street widening and utility projects caused further tree loss. While we have scant statistical evidence to demonstrate it—we apparently never thought enough of our urban trees to track such trends--our collective memories and some fading photos command the conclusion that Rhode Island's cities have become progressively less green over the last several generations.

Coincidentally, or perhaps not, as the trees were disappearing from our cities, so were the people. During this same period development surged outward from the state's urban centers into surrounding suburbs and small villages, also impacting upon community tree resources. Today, low-density residential development continues to proliferate in rural areas throughout the state. Trees continue to be cut and land cleared to accommodate fleeing urbanites seeking rural homesites in "rustic wooded settings," uncognizant of the fact that, *collectively*, the impact of their individual locational decisions risk extinguishing the very environmental features and rural charm that lured them there.

Together, over a few short decades, these closely intertwined trends---loss of trees in our cities, and the clearing of forest land for new development in suburban and rural areas---have left Rhode Island a significantly less green place.

Acknowledgements

Development of this plan was inspired by the Rhode Island Tree Council, a non-profit group dedicated to sustaining and improving Rhode Island's tree resources. The creation of the plan was supported by a grant to the Council from the U.S. Forest Service provided through the R.I. Department of Environmental Management's Division of Forest Environment. In late 1996, the Council proposed that the State Guide Plan include an element devoted to urban and community forestry, and worked with the Statewide Planning Program to develop a contract for writing the plan. John T. Campanini, Jr., Chairman, R.I. Tree Council; Guy Lefebvre, Executive Director, R.I. Tree Council; and Bruce Payton, RI DEM Urban Forestry Program Coordinator, all worked closely with the Statewide Planning Program staff in developing this plan.

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Adoption

This *Urban and Community Forest Plan for Rhode Island* was adopted as State Guide Plan Element 156 by the State Planning Council on May 13, 1999, following a public hearing conducted on May 3, 1999. Amendments to adopted State Guide Plan elements are made periodically to report progress, incorporate new data, revise policies, and update recommendations. All proposed amendments are reviewed by the State Planning Council in accordance with its adopted *Rules of Procedure*, and are presented for public comment at a public hearing prior to action by the Council.

Comments

Comments on this plan are welcomed. Contact George Johnson via email at gjohnson@doa.state.ri.us, by phone at (401) 222-6479 or write to the R.I. Statewide Planning Program, One Capitol Hill, Providence, RI 02908-5872.

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Part 1: Introduction

**Rhode Island is an urban state.
Rhode Island is a forested state.**

This seeming dichotomy is the starting point for this plan. In recent decades, as Rhode Island has become more urban, it also has grown less forested. Most striking visibly, if not statistically, has been the loss of trees in the cities, where, until a generation ago, most streets were graced with majestic, mature trees. Is the decline of urban forests inevitable? Or can greater harmony be achieved between the dynamic growth sought by Rhode Islanders, and the beauty and benefits afforded by treed environs? What can Rhode Islanders, working together, do to reconcile our development needs with protection and re-generation of our tree resources?

The Premise

Healthy and productive urban and community forests are important assets for Rhode Island and its citizens, assets that, like other aspects of community infrastructure, must be carefully managed.

Most broadly conceived, this plan concerns itself with the role of trees in the built environment. Its inspiration is a desire to help Rhode Islanders strike a proper balance between the engineered world we create and the wondrous forested realm that envelopes and infuses it with life.

An underlying assumption of this plan is that, with careful planning, quality design, proper management, and prudent investment, Rhode Island's urban and community forests can be maintained and improved without negatively impacting the economic growth and development the state needs. The plan seeks to point the state and its communities toward this objective by providing information and establishing policies.

Rhode Island is more urban than the nation as a whole—

- *86 percent of the state's population is defined as "urban" by the 1990 US Census.*
- *Nationally, 75 percent of the population is considered urban.*

The state's eight cities collectively occupy less than 12 percent of the state's land area, but are home to over 52 percent of its people.

Approximately 55% of Rhode Island's total land area is woodlands (including forested wetlands).

From 1970 to 1988, the state's forest, farmland, and wetlands acreage declined by 8 percent, while developed land uses grew by nearly 40 percent.

As development spilled out from the central cities-- Providence, Pawtucket, and Woonsocket--during the post-World War II years, it spread into undeveloped areas--forests and farmland--surrounding the established city limits. Among the consequences of growth over the last 40 years has been the clearing of extensive tracts of forested lands.

The Dilemma

Rhode Island's urban and community forests provide many values and benefits to our state and its people. But, like its other natural assets, Rhode Island's forests are under pressure from two directions. The dispersal of growth outward from traditional urban areas is spurring the clearing of forest tracts in rural areas of the state. The trend toward using more land per household or development---a characteristic of post-World War II development patterns---is increasing land consumption.

Indeed, although our population and economy have grown, more of the impact on the state's tree resources has come from changes in development patterns and trends in land usage. Rhode Island's development of the last 30 years consumed open space, much of it woodlands, at a rate far faster than past trends would have suggested was necessary, given the net growth of population and productive capacity.

Virtually every activity we engage in--be it living in a home, shopping in a store, working in an office or factory, or enjoying ourselves at a movie or restaurant--consumes more land than it used to. Even within older cities, the need for more room per unit of activity has been felt, with considerable impact upon the state's urban tree resources.

The Plan

The aim of this plan is to influence future decision-making to improve Rhode Island's urban and community forest resources. By providing information on the nature of the threats facing urban and community forests and by establishing goals, policies, and strategies for dealing with these issues, the plan seeks to stimulate a greater awareness among those who can influence the fate of Rhode Island's forest lands. The plan does not mandate any particular action, but rather seeks to foster recognition and offer options and tools.

Relationship to previous plans

This plan for urban and community forestry is an element of Rhode Island's **State Guide Plan**. It complements the **Rhode Island Forest Resources Management Plan**, adopted as State Guide Plan Element 161 in 1984. While principally focused on proper management of Rhode Island's rural forests, the *Forest Resources Management Plan's* goals, policies and recommendations are applicable statewide, and must be considered in concert with this plan's strategies. Appendix A summarizes the Forest Resources Management Plan.

As elements of the State Guide Plan, these plans collectively set forth goals and policies for all Rhode Island's forests that must, under State law, be reflected in future updates of local comprehensive plans. In turn, the statutory requirement that local land use decisions be consistent with approved comprehensive plans will effect greater recognition of the need for proper management and conservation of the state's forests.

Scope of the plan

As the state's urban and community forestry plan, the scope of this document is statewide. Its policies have broad applicability to forested areas currently or potentially affected by urban-type development in *all* Rhode Island communities, whether they are generally urban, suburban, or rural in character.

The policies and recommendations of this plan, focused on the management of tree resources within a built environment--when construed and applied in conjunction with the State Forest Resources Management Plan's (cited above) guidance for rural "*working*" forests—are intended to advance the effectiveness of local stewardship of the state's tree resources towards the twin goals of a healthy, sustainable economy *and* environment.

The goals and policies established by this plan will be reflected in future updates of comprehensive plans, and ultimately the zoning ordinances and land development regulations of communities throughout the state.

Insuring that the benefits and values of tree resources are fully considered and planned for in future development decisions is a proactive means for conserving and restoring Rhode Island's urban and community forests.

Although the terms “urban forestry” and “community forestry” are alternately used in the plan depending on context or emphasis; overall, the plan is concerned with advancing sound forestry management practices on a statewide basis, and promoting use of the best management tools and strategies appropriate for particular situations or contexts.

Organization of the plan

The plan is organized in six parts. Following this introduction, Part Two presents background information on the growth of urban forestry as a discipline. Recognizing that the vitality of Rhode Island's urban forests is largely affected by economic decisions, Part Three describes the myriad benefits and economic values that urban forest resources offer. Part Four surveys urban forest resources and programs currently in place in Rhode Island. Part Five identifies the key issues facing Rhode Island's urban forests. Policies established in Part Six seek to integrate consideration of forest resources within the plans, programs and projects of governments, businesses and private individuals that will shape Rhode Island's future landscape.





Part Two:

Urban and Community Forestry

Urban and community forestry addresses the management of tree resources within populated areas

The Cooperative Forestry Act of 1978 offers a statutory definition of urban and community forestry: "Urban Forestry means the planning, establishment, protection, and management of trees and associated plants, individually, in small groups, or under forest conditions within cities, their suburbs, and towns."¹ U.S.D.A Forest Service guidance amplifies this, defining the management of the urban forest as the "planning for and management of a community's forest resources to enhance the quality of life. The process integrates the economic, environmental, political, and social values of the community to develop a comprehensive management plan for the urban forest."²

A distinction in focus and scale is generally acknowledged to exist between *arboriculture*, which concerns itself with the "planting and care of trees and more peripherally ...with shrubs, woody vines, and ground cover plants," and urban forestry.³ While these closely allied fields both examine aspects of tree culture within human-altered environments, the focus of arborists is generally on care of an individual tree, or care of vegetation on an individual plot or parcel of land (which may or may not be located in an urban area). Urban forestry is concerned with enhancing the vegetation within an entire city or urbanized area. It has a macro-scale focus (metropolitan region) that is acted upon on the micro-scale (individual trees).

While they may care for individual trees or plots, the primary focus of urban foresters is broader in scope, encompassing management of the entire tree resource base or population of the built-up (urban) area(s) within their jurisdiction.

¹ Miller, Robert W. *Urban Forestry: planning and managing urban greenspaces*. 2nd Ed. 1997. p. 35.

² *Op. cit.* p. 31

³ *Op. cit.* p. 34

Urban forestry has increasingly emphasized the economic values of the urban forest as justification for investment and protection measures.

Similarly, urban and community forestry can be distinguished from conventional forestry, or *silviculture*, by its focus on areas where trees are typically a subordinate, as opposed to the predominant, landcover. The practice of traditional forest management often emphasizes the economic values (timber, pulp, etc.) of forest resources, while urban forestry is more interested in the environmental and aesthetic values of trees. However, this distinction has lessened as urban forestry practitioners have documented the economic values of the urban forest as justification for investment and protection measures. While the emphasis of urban forestry is often on protection of trees and re-generation of a urban area's depleted tree stock; conventional forest management stresses conservation integrating both planting and harvesting of trees in order to maximize the overall health and productivity of forests.

Community forestry in rural communities may draw upon both sound silvicultural practices and urban forestry principles to retain forests as productive components of a working landscape.

In urban states such as Rhode Island, where many communities contain a mix of rural forest lands and urban-type environments; it is neither possible nor desirable to define a line distinguishing conventional from urban forestry. Even the state's more rural communities include developed villages and forests impacted by residential development. Management of forests in such communities ideally draws upon the precepts of both urban forestry and sound silvicultural management, as appropriate, to retain productive forests as elements of a working landscape that contributes to both the economy and the character of the community.

From an original focus on trees in parks and on other public lands, the scope of urban forestry has broadened as the profession recognized the pivotal role of privately-owned tree resources in the overall health and productivity of any urban forest. Most definitions of urban forestry now encompass consideration of the entire tree stock--both public and private--within communities, with a recognition that different management approaches may be required for trees on private lands, as opposed to public lands.

The Urban Forestry Movement

While efforts to nurture trees within cities can be traced back to the dawn of urbanism, the birth of urban forestry as a distinct discipline is generally recognized as occurring in the 1960s. The 1962 President's Outdoor Recreation Resources Review Commission Report included urban forestry information. A 1965 White House Conference on National Beauty promoted tree planting as part of a national beautification effort. In 1967, the Citizens Committee on Recreation and Natural Beauty recommended to the President in its landmark report *A Proposed Program for Urban and Community Forestry* that an urban and community forestry program be created within the U.S. Forest Service to provide technical assistance, training, and research. A 1968 Bureau of Outdoor Recreation proposal also supported the concept of federal assistance for urban forestry education and training to communities.

This growing professional and public interest in urban tree resources culminated in passage of federal legislation in 1972. The Urban Cooperative Forest Management Act amended the Cooperative Forestry Assistance Act of 1950 to authorize the Forest Service to cooperate with the states in providing technical assistance for the "...establishment of trees and shrubs in urban areas, communities, and open spaces."

In 1978, this small beginning was expanded upon by the appropriation of \$3.5 million to fund an urban and community forest program. The federal commitment lagged in the 1980s, however, with funding appropriated for urban forestry programs declining to a low of \$1.5 million in 1984.

The 1990 Farm Bill reasserted the federal commitment to urban forestry. It expanded the authority of the Forest Service to work with states on urban forestry and created a 15 member Urban and Community Forestry Advisory Council. Funding for state programs increased to \$25 million by 1993. The America the Beautiful Act, also passed in 1990, aimed at planting and improving trees in cities and towns. Funding was provided for each state to create an urban forestry coordinator and establish state urban forestry advisory councils.

Federal involvement in urban forestry dates back to the 1972 Urban Cooperative Forest Management Act. Funding for state programs was authorized by the 1990 Farm Act.



In 1991, the Rhode Island Department of Environmental Management, Division of Forest Environment established Rhode Island's urban and community forestry program.

In 1991, the Rhode Island Department of Environmental Management, Division of Forest Environment established an urban and community forestry program and appointed a full-time urban and community forestry program coordinator.

Principles and Practices of Urban Forestry

Urban forestry programs vary with the communities that establish them. While no two programs are exactly alike, most successful programs include the following fundamentals:

- *Planning:* Planning is a fundamental component of successful urban forestry programs. Strategic planning is needed to establish the overall goals, design, and work plan of the urban forest program. Urban forestry concerns should also be reflected in a community's comprehensive plan, and in shorter-range implementation or area/site specific plans. Management plans should define the overall scope, methodology and responsibilities for enhancing and maintaining the urban forest.
- *Resource Inventory:* Often undertaken as part of the planning phase, a comprehensive assessment or inventory of the community's tree resources is a fundamental starting place for most programs. Inventories can employ highly elaborate methods, involving computers and aerial photography or satellite imagery, or they can rely on simpler techniques, such as a windshield survey of street trees. All inventories should provide basic data on the locations, numbers, types (species), and to the extent possible, condition of a community's trees. Inventories often focus initially on trees on the public estate (park and street trees); but increasingly, the availability of computer/remote sensing technologies are allowing communities to conduct comprehensive inventories of trees on both public and private lands.

Urban forestry programs typically include the following elements:

- Program Planning
- Tree Inventories
- Tree Planting
- Tree Maintenance
- Tree Preservation
- Public Education

- *Tree Planting:* Virtually all urban forestry programs include a planting component to help restore the diversity, density, and vitality of the urban forest and insure its sustainability. Programs may make available seedlings or nursery-grown tree stock to citizens groups or neighborhood associations for planting in public greenspaces, along streets, or, under certain conditions, on private properties. A local agency may assume responsibility for all aspects of the planting program, or operate partnership programs that seek donations or dedications of memorial trees from private individuals to help defray the costs of the planting program. Planting programs should be directed by the overall program plan which identifies available and culturally-suitable sites. Meeting specific needs for replacement of certain species, expanding the species and age diversity of the tree stock, and planting in tree-deficient areas of the community are additional considerations. Planting programs should avoid planting in unviable sites to insure that investments in tree resources will provide long-term benefits.
- *Tree Maintenance:* Maintaining the existing tree stock of the community is the most traditional component of urban forestry programs. Indeed, prior to the definition of urban forestry as a discipline, many communities had tree wardens or arborists assigned to maintain trees on public property. Utility companies often cooperate with these efforts or have their own programs. Well-designed maintenance components address the needs of the urban forest and on a systematic basis; encompassing watering newly-planted trees until they are established, correctional pruning the third year after planting, mulching, pruning for pedestrian, sign, and building clearance, hazard pruning, removals, and stump grinding.



- *Tree Conservation:* As the field of urban forestry has matured, its proponents have come to realize that without a proactive conservation component, urban forests face continued decline through tree loss to development pressures. Planting street trees to replace those lost to disease or age is not sufficient to stem the wholesale loss of trees on lands cleared for new development. A holistic approach requires that community programs examine tree loss attributable to land use conversion, and devise cooperative strategies for working with landowners and developers to mitigate tree losses through protection and replacement standards. Urban forest managers must be versed in the operation of zoning and related ordinances that control building and development in their communities to advocate effectively for tree protection measures. In suburban and rural communities, regulations supporting a sustainable forest industry may also support community forest conservation goals.
- *Education:* Most successful urban forestry programs recognize the need to develop public understanding of their program goals. Citizen awareness of the benefits provided by the urban forest translates into critical public support for protection measures, participation in volunteer activities such as tree planting and stewardship, and support for devoting public funds to urban forest program needs. To effect greater public recognition of the values of the urban forest, and support for their perpetuation, urban foresters must be knowledgeable about public educational techniques and skillful in media relations in order to succeed in getting the urban forestry message out and properly understood. Increasingly, the discipline recognizes its responsibility to reach out and educate the public concerning the necessity for investing in the urban forest, and in the proper procedures for managing and improving community forest resources.



Part Three:

Trees as Community Infrastructure--The Values of Urban Forests

Legends and myths stretching back to the dawn of civilization color human perceptions of forests.

Long viewed as a dark and wild place where danger lurks—in the form of marauding beasts and other menaces—forests have also been regarded by humans as inextinguishable sources of natural resources.

Perhaps owing to these biases, the record of American forest stewardship is not as good as it could have been. Being an agrarian, rather than a forest-dwelling people, the first permanent European settlers regarded the lush forests that stretched back from the coast as obstacles to their survival and progress. While they learned much about the forests from the native peoples who dwelled comfortably within them for thousands of years, the newcomers put this knowledge to use to exploit and dominate, rather than subsist and co-exist.

The forest edge, or frontier, came to be seen as a line that, quite literally, had to be repelled in advance of human expansion outward from the initial beachhead of coastal settlements. The "forest primeval" had to be cleared away before the primary, life-sustaining, business of farming could be undertaken. Later, settlers in the new land increasingly looked to forests for timber to build homes and ships, firewood for warmth, saps and resins for waterproofers and other chemicals, pulp for papermaking, and later other industrial products. Forests were seen less as sacred places to be sustained and conserved than as a providently provided boundless resource to be exploited and consumed.

European settlers on American shores regarded forests first as an impediment to progress, later as an endless, exploitable resource.

Benefits of trees in the urban environment include:

- **Reduction/detention of surface water runoff and reduction of flood risks**
- **Reduction of soil erosion and sedimentation of water bodies**
- **Absorption of water and air pollutants**
- **Provision of wildlife habitat and recreational opportunity**
- **Sequestration of atmospheric carbon—countering the greenhouse effect and global warming**
- **Enhancement of property values**
- **Micro-climate control and reduction of energy costs**
- **Abatement and buffering of noise**
- **Community aesthetics and links to the past--a “sense of place”**
- **Psychological and sociological impacts, including lessening of stress and reduction of crime**

Gradually, through costly and painful experience, Americans learned the folly underlying the view of forests as limitless. While renewable, forests depleted beyond their yield will not regenerate. Human activities can disrupt forest ecosystems to the point where they crash, or are so impaired that opportunistic pests or diseases can ravage the forest. Only after environmental tragedies, like the “dust bowl” of the 1930s, did the wisdom of Aldo Leopold and other conservationists come to be fully understood by the forest products industry and widely appreciated by the public.

Today, Americans have a better relationship with the continent’s forests, but new challenges, including the impacts of urbanization, require constant vigilance to maintain the balance between our utilitarian and ecological views of forest values.

Urban and Community Forest Values

Forests and trees---by their mere existence---provide a wealth of benefits to our urban society.

Because forest values were for so long measured only by the worth of the products that could be commercially extracted from them, generally only large contiguous stands of pole timber or vast tracts of pulp trees were regarded as possessing significant economic worth. Sadly, vestiges of the “frontier” view of trees may still linger: when they stand in the path of human use or development of the environment, trees are often seen as a ubiquitous, low-value commodity. The worth of community forests and urban trees continues to be neglected or undervalued in most private market transactions and development decisions.

This situation should no longer prevail in the face of the careful and systematic documentation of the myriad of values that trees provide to urban communities. Urban forestry researchers have documented a multitude of functions and benefits that trees afford society. The economic values of trees are reflected in enhanced property values, reduced energy costs, mitigated pollution costs, reduced flood damages, and other pure “dollars and cents” pay-backs.

Environmental Values

Trees form a “green infrastructure” for communities. They reduce both air and water pollution, capture “greenhouse gases,” and save energy by moderating climatic extremes.

Air pollution control

Since the earliest dense urban settlements, trees and greenspace have been thought of as the "lungs of the city"—providing a breathing space for urban masses, and the source of refreshing breezes to waft away the smoke and odors of urban commerce. In 1844, the New York City Board of Health recognized trees as “improvers of city air” and recommended their planting.¹

Recent research has shown the “*trees as lungs*” metaphor to be far more literal than figurative. Trees and their supporting soils strip pollutants from the passing air via physical and chemical processes, reducing such noxious pollutants as particulates, nitrogen oxides, carbon monoxide, ozone, sulfur dioxide and halogens (chlorine and fluorine).

Trees have been shown capable of stripping from 9 to 13 percent of total suspended particulates from air passing over their branches.² Based upon established values for pollutant absorption by trees, a 525-acre forested park in Chicago was estimated to provide air pollution reductions equivalent to traditional emissions controls costing \$136 per day.³ Regional analyses by *American Forests*, a private group, have estimated the value of air pollution attenuation by urban forests for four major metropolitan areas. Annual benefits ranged from \$8 million in Milwaukee, WI to over \$30 million in

Urban forests are today recognized as providing a myriad of values and benefits to communities.

Trees clear the air we breathe.

¹ Clouston, B. and Novell, A. “The tree and the city” in Clouston, B. and Stansfield, K. eds. Trees in Towns. Architectural Press. London. 1981.

² Dochinger, Leon. “Interception of airborne particles by tree plantings” Journal of Environmental Quality. 9 (2) 1980.: 265-268.

³ McPherson, E.G. “Environmental benefits and costs of the urban forest” in Rodell, P.D., (ed.) Proceedings of the Fifth National Urban Forest Conference, Los Angeles, Nov. 1991. Washington, DC American Forestry Association. PP 52-54.

Austin, TX.⁴ Forest pollution-cleansing effects may be optimized through maintenance of large tracts of stratified forest, or management of forested greenbelts of 150 meters (~500 feet) or more in width.⁵

Water pollution attenuation

As they do for the air, trees cleanse flowing waters of their pollution burden. Forested areas provide a pervious surface where surface runoff can infiltrate and be purified of contaminants via contact with soil micro-organisms. Trees and other natural vegetation also decrease the velocity of runoff, reducing the potential for soil erosion and resulting sedimentation of water bodies. In urban areas, runoff from storms collects contaminants--oils and grease from highways, pet waste, sand and salt from streets and construction sites. In rural areas, agricultural practices may contaminate surface runoff with animal wastes, sediment, and pesticides and herbicides. In both urban and agrarian settings, vegetated buffers--or *greenways*--of trees and other plants along watercourses can intercept and absorb contaminated surface runoff and remove pollutants before they reach water bodies.

Trees clean our waters



- ⁴ American Forests. The State of Our Urban Forests: Assessing Tree Cover and Developing Goals. (White paper) Washington, D.C. September 1997. P. 2.
- ⁵ Smith, W.H. "Urban Vegetation and Air Quality". Proceeding of the National Urban Forestry Conference. Syracuse, SUNY. 1978. Pp. 284-305.

Runoff control

Using trees to reduce or avoid runoff makes economic sense: an analysis of urban forests in Chicago estimated that each mature urban street tree prevents or absorbs 327 gallons of runoff per year, providing an estimated \$6.70 in annual savings (avoided costs for runoff control) per tree.⁶ A similar study of Salt Lake City's urban forest found that its trees reduced runoff by 17 percent or 11.3 million gallons, and, based upon a calculated cost of \$0.02 per gallon spent by municipalities to manage storm runoff and flooding, yielded an implied runoff-avoidance value of \$226,000 for each storm event.⁷ Other research has attributed 4 to 6 percent reductions in total runoff to the interception and evaporation of rainwater by urban tree canopies.⁸ *American Forests* estimates the aggregate value of stormwater management of the existing tree cover of the nation's cities to be \$400 billion annually, a figure that could be increased by \$100 billion annually through additional planting.⁹

Trees reduce runoff and floods*Climatic Benefits*

Trees are efficient natural "chemical factories" whose principal products are oxygen, which they release to the atmosphere, and carbon, which they strip from the air and store or "fix" in their woody roots, trunks, and branches. Atmospheric carbon---a by-product of the burning of fossil fuels---has steadily increased throughout the industrial age and has been associated with the global climatic warming trend known as the "greenhouse effect." By absorbing atmospheric carbon, trees help offset global warming, increasingly accepted by reputable scientific bodies as a threat to global climatic equilibrium and environmental sustainability. Estimates of the carbon sequestered by the nation's urban forests range to

Trees sequester atmospheric carbon, mitigating the "greenhouse effect" and global warming

⁶ McPherson, E.G., Nowak, D.E.J. and Rowntree, R.A. Chicago's Urban Forest Ecosystem: Results of the Chicago Urban Forest Climate Project. USDA. Northeast Forest Experiment Station. 1994. P. 130.

⁷ Henson, S. L. and Roundtree, R. A. "Influence of urban forest cover on radiation temperature and runoff in Salt Lake Basin, Utah" in Society of Amer. Foresters. Forester's Future: Leaders or Followers: Proceedings 1985 SAF National Conv. Pp.412-416.

⁸ Sanders, R.A. "Urban Vegetation Impacts on the Hydrology of Dayton, Ohio". *Urban Ecology*. 9:361-376. 1986.

⁹ American Forests. Op. Cit. P.3

800 million tons, having an economic value of \$22 billion (based upon a \$28/ton control cost).¹⁰

Energy Benefits

Trees save energy and reduce heating and cooling costs

Planted strategically, trees can reduce the energy and cost necessary for building heating and cooling. Trees shade buildings from summer sun and, through their natural evapo-transpiration processes, also directly cool the air adjoining buildings. Modeling by the U.S. Forest Service and Environmental Protection Agency indicates that well-positioned trees can shave between 10 and 50 percent from an average residence’s annual cooling costs. Trees sited to shelter buildings from winter winds can reduce energy needed for heating, although to a lesser degree than for cooling. A study done for the town of Frederick, MD by *American Forests* estimated the direct energy savings provided by the city’s existing tree resources at \$1 million per year. An additional \$5 million/year in potential direct and indirect savings were estimated if trees were more strategically planted.¹¹

Trees reduce the urban heat island



The presence of trees in cities also saves energy on a metropolitan-wide level by moderating the *urban heat island* effect. The retention (or planting) of trees in cities counters the heat generation, collection, and storage effects of roads, buildings, and other hard urban surfaces. Added to the auto exhausts, industry, and other heat sources of cities, the heat island effect can spike the outdoor temperatures of urbanized areas 5-9°F above the surrounding countryside. Researchers have estimated the energy *penalty*, or added cost, of the urban heat island at \$40,000 *per hour* in Washington DC to \$150,000 *per hour* in Los Angeles during summer months.¹² By shading structures and paved surfaces that collect and store energy from the sun and combustion processes, trees offset these impacts and costs.

¹⁰ Rowntree, R.A. and Nowak, D.J. "Quantifying the role of urban forests in removing atmospheric carbon dioxide". *Journal of Arboriculture*. 17 (10): 269-275. 1991.

¹¹ American Forests & National Assoc. of Homebuilders. *Building Greener Neighborhoods: Trees as part of the plan*. 1995. p. 9

¹² *Ibid.*

Noise Attenuation

Cities are increasingly noisy places. Traffic, aircraft, manufacturing processes, construction activities, heating and cooling systems, public events, and the tastes of some residents for enjoying music at maximum volume can all create noise levels disruptive to the “peace and quiet” of the community, and may even produce transient sound levels that are downright unhealthy.

Trees quell urban noise levels

While they cannot reduce the sources of noise pollution, trees can attenuate the intensity and transmission of noise through the environment. Trees reduce sound directly by reflection and absorption of its energy, and also mask objectionable sounds with the gentle rustling of branches and leaves in the wind. A 100-foot-wide tree buffer has been shown to be capable of reducing noise levels by 6 to 8 dBa.¹³ Natural vegetated buffers have also been shown to be effective as adjuncts to physical barriers constructed to reduce highway noise.¹⁴



Wildlife values

While recent concerns over the spread of rabies and the appearance of predator species such as coyotes in some locales may temper public enthusiasm, past studies have shown an appreciation among urban residents for the presence of birds and other wildlife in their day-to-day lives. A 1980 nationwide survey of wildlife-related recreation found that 55 percent of respondents interact with wildlife near their homes by watching, feeding, photographing, or painting them.¹⁵ Ninety percent of surveyed Seattle park-goers reported that the presence of wildlife enhanced their recreational experience of the park.¹⁶

Trees provide homes for birds and other wildlife in urban areas

13 Leonard, R.E. and Parr, S.B. “Trees as a sound barrier”. Journal of Forestry. 68: 282-283. 1970.

14 Cook, D.I., and Van Haverbeke, D.F. “Suburban noise control with plant materials and solid barriers” Proceedings: Conference on Metropolitan Physical Environment. U.S. Forest Service General Technical Report N-25: 229-233. 1977.

15 Shaw, W.W., Magnum, W.R., and Lyons, J.R. “Residential enjoyment of wildlife resources by Americans” Leisure Sciences. 7(3): 361-375 1985.

16 Dick, H.E. and Hendee, J.C. “Human responses to encounters with wildlife in urban parks”. Leisure Sciences. 8(1): 633-677. 1986.

The abundance and diversity of wildlife in urban areas depends, as it does everywhere, on the availability and quality of habitat—space used for obtaining food, breeding, and shelter. In general, a greater density and diversity of urban vegetation allows greater density and diversity of urban wildlife.

Cultural Values

An affinity for trees may be “hard-wired” into human DNA. Having lived among trees since our evolutionary predecessors descended from them, our species has profound psychological and historical connections to trees.

Social and Psychological Values

Trees soothe our souls

Since before the turn of the century, social reformers have championed the benefits of urban parks and natural areas, on the presumption that such areas offered a “communion with nature,” places for “spiritual renewal” and opportunities for play and sports activities to relieve the pressures, stress and tensions implicit in crowded urban environments. Frederick Law Olmsted saw the main purpose of New York City’s Central Park as providing “natural, verdant and sylvan scenery for the refreshment of town-strained men, women, and children.”¹⁷

Modern social researchers have begun to explore a possible psycho-physiological basis for these presumptions. The research, while limited and tentative, is still tantalizing in many respects. One study found that stressed subjects viewing slides of natural scenes reported reduced feelings of anger, fear, and sadness, and greater positive feelings, compared to those viewing scenes devoid of



¹⁷ Olmsted, F.L., Jr. and Kimball, T. (eds.) Frederick Law Olmsted. Landscape Architect 1822-1903. New York. 1970. P. 523.

greenery.¹⁸ A more intensive study using measures of pulse, skin conductance, and muscle tension found that subjects exposed to scenes dominated by trees had slower heartbeats, lower blood pressures, and more relaxed brainwaves, and recovered faster from stress than those exposed to urban scenes.¹⁹ A nine-year study of hospital surgical patients documented differential responses of those having natural views through their windows compared to similar patients whose windows looked out on brick walls: patients with a treed view had an average of 10 percent shorter recuperative stays and made fewer requests for pain relievers.²⁰

The capacity of trees and greenery to lessen stress and encourage positive social interaction may even extend to reducing aggressive and violent behaviors in cities. A limited study of residents of one public housing project in Chicago contrasted the reported social ties, personal relations, and means of dealing with conflicts with family members and neighbors of residents who lived in treed settings versus those that were devoid of trees. Researchers found that in buildings with trees, residents reported significantly better relations and stronger feelings of unity and cohesion with neighbors, and greater reliance upon more constructive, less violent means of dealing with conflict.²¹ Such captivating findings indicate that, far from being mere amenities, trees may play a role in addressing some of the most vexing social ills facing our urban society.

Trees may reduce aggressive and violent behavior in urban settings

¹⁸ Ulrich, R.S. "Visual landscapes and psychological well being: an ecological perspective". Landscape Research. 4:17-23. 1979.

¹⁹ Ulrich, R.S. "Natural versus urban scenes: Some psychophysiological effects." Environment and Behavior. 13(5): 523-556. 1981.

²⁰ Ulrich, R.S. "View through a window may influence recovery from surgery". Science. 224: 420-421. 1979.

²¹ Sullivan, W.C., and Kuo, F.E. "Trees, aggression, and violence in the home" Proceedings of the 7th National Urban Forest Conference. 1993.

***Trees Connect
Us Across Time***

Heritage Values

Phrases such as “putting down roots” and “solid as an oak” capture the power of trees as icons of stability, permanence, and place. Their stature and longevity allows trees to be powerful links across time and generations, evoking historic events or memorializing persons that have long departed. Individual trees or stands of trees in prominent locations may become landmarks, uniquely distinguishing a community, neighborhood, or place. On an individual level, planting a tree is a singular act of faith in the future. As we watch them grow in stature and grace as they age along with us, there is unique satisfaction in knowing that we have created a legacy benefiting members of the community who will follow us.

Aesthetic and Scenic Values

***Trees beautify
our communities***

Whether within natural or created landscapes, trees provide a variety of aesthetic and scenic benefits in the context of developed communities. Since the City Beautiful Movement in the late 19th century, the presence of greenspace---treed parks, boulevards, town commons, and urban plazas or squares---has been synonymous with a community’s sense of itself and civic pride. Tree-shaded streets convey a distinctive character and aesthetic to residential neighborhoods and to the quality of life of their residents. Similarly, trees and landscaping of private properties can significantly enhance the appearance of the built environment. Landscape architects and land planners who effectively employ trees in their site plans can visually frame and highlight prominent architectural features or landmark structures or, alternately, conceal or camouflage utilitarian, unaesthetic, or blighting influences.



Research has shown that the public appreciates the connection between trees and the beauty of their communities. A public survey done after Hurricane Hugo hit Charleston, SC in 1989 found that, despite widespread structural damage, the majority of residents reported tree damage as the single greatest loss sustained by the community. Similar sentiments

were reflected in surveys of survivors of Hurricanes Andrew (1992 Miami FL), and Frederic (1979 Mobile, AL).²²

Recreational Values

Be it a backyard treehouse, forested greenway trail, or manicured urban park, trees are fundamental to our enjoyment of the outdoors in urban areas. They shade us, offer venues for play, and greatly contribute to the recreational experience by bringing aesthetic, scenic, and natural qualities to the settings we select for outdoor leisure. People appreciate the value-added that trees bring to the recreational experience: a survey of park users in Chicago found a willingness to pay significantly more per visit for a mostly wooded recreational site versus a grassed, but sparsely-treed site.²³

Trees shape our experiences of fun outdoors



Economic Values

Urban and community forests produce real economic value. Trees have a real estate value, but this market or replacement price greatly undervalues the true worth of trees to the community.

Trees confer a wealth of values upon communities that retain and nurture them.

Property Value Enhancement

Economic values from urban and community forests may be realized directly from increased property values (and increased property taxes) resulting from attractively landscaped properties located on tree-lined streets or adjoining public greenspace. An economic statistical analysis of property values in suburban Middletown, R.I. found that significant increases in property values are generated by nearby open space. All things being equal, the analysis found higher average values associated with properties closer to preserved open space. Based

Trees enhance property values

²² Hull, R.B. IV. "How the public values trees". Journal of Arboriculture. 18 (2): 98-101. 1992.

²³ Dwyer, J.F. Schroeder, H.W., Louviere, J.J. and Anderson, D.H. "Urbanites willingness to pay for trees and forests in recreation areas". Journal of Arboriculture. 15 (10): 247-252 (1989)

Homes near parks and greenways sell for a premium

upon the influences on values, the study estimated the potential impacts of protection of new open space on the island. An increase of 12 percent over baseline was estimated for properties situated proximate to (within 400 meters [~1,300 ft.]) a large tract of open space (50 acre greenway).²⁴ Studies of Worcester, MA,²⁵ where homes adjoining a public park were found to sell at a \$2,675 premium over comparable homes 200 feet away from the park, and of greenbelts generally, which found home sales prices dropping \$4.20 for every foot further away from a greenbelt, also document tangible positive impacts on property values associated with proximity to greenspace.²⁶

A 1976 Connecticut study assessing the direct impact of trees on residential property values found that an average 6 percent of property value was attributable to the presence of tree cover on the property.²⁷ A 1983 study of values in a New York town attributed a \$9,500 differential in sales prices to the presence of trees.²⁸

Methodologies are also available for direct valuation of individual trees or collections of trees based upon their physical parameters (trunk size, condition, location, species) or replacement cost. In addition to use in establishing values for property appraisals or insurance claims, these methods may be used to estimate the value of an entire community's tree resources. The value of the Oakland, CA urban forest was set at \$385 million in 1993 using standard tree valuation methods.²⁹

²⁴ Johnston, R.J. The Economic Impact of Open Space on Aquidneck Island, Rhode Island. Technical Manuscript. Narragansett, RI Coastal Resources Center, University of Rhode Island. 1997.

²⁵ More, T.A., Stevens, T., and Allen, P.G. "The economics of urban parks" Parks and Recreation. 17:31-33 (1982)

²⁶ Corrill, M.M. and Cordell, H.K. "The effects of greenbelts on residential property values: Some findings on the political economy of open space". Land Economics 54 (2): 207-217 (1985).

²⁷ Morales, D., Boyce, B.N., and Favretti, R.J. "The contribution of trees to residential property value". ASA Valuation 23: 26-43. (1976).

²⁸ Morales, D.J., Micha, F.R., and Weber, R.L. "Two methods of valuating trees on residential sites". Journal of Aboriculture. 9 (1): 21-24 (1983).¹

²⁹ Nowak, D. J. "Compensatory value of an urban forest: An application of the tree-value formula". Journal of Aboriculture. 19 (3): 139-142. (1993).

Avoided Service Costs

Keeping private land in forests, as opposed to encouraging its development for housing, provides communities with another economic benefit: avoidance of the costs incurred with residential development. Communities, particularly rural towns, have traditionally considered residential growth to be an economically desirable future use for their undeveloped forest land. New homes, the common line of thought went, brought new residents, new tax revenues for municipal coffers, and possibly new jobs as residents spent money in the local economy. A number of recent studies have pointed out that this long-held presumption does not consider the impact of new residential development on municipal expenditures, which can be substantial.

A study by the Southern New England Forest Consortium, Inc. (SNEFCI) looked at municipal expenditures and tax revenues attributable to three categories of development (residential, commercial/industrial, and open space) in eleven communities in southern New England. It found that, on average, residential development cost municipalities \$1.14 in services for every dollar of tax it generated—a net loss. On the other hand, open space, including forested land, cost communities only \$0.42 in services for every dollar generated—a significant net gain. The contrast for the three rural Rhode Island communities included in the SNEFCI study was even more striking: a cost/revenue ratio of \$1.20 for residential and \$0.38 for open space. (Commercial/industrial land was found to provide substantial net gains for all municipalities studied).³⁰

In contrast with residential development, forest land demands little or no municipal services

For three rural Rhode Island communities, the expense/revenue ratio for open space was \$0.38; residential land cost \$1.20 in services for every \$1.00 returned in taxes.

³⁰ Southern New England Forest Consortium, Inc., and Commonwealth Research Group, Inc. Costs of Community Services in Southern New England. Chepachet, RI. 1995.

While this research should not be interpreted as encouraging rural communities to reject all new residential growth, its findings regarding the service cost benefits of forested open space land should be given serious consideration by rural communities as they plan for an optimal balance between open space and future growth.

The Bottom Line: Saving Trees Saves Us Money

With the advent of urban forestry, the net economic contribution of trees is coming to be better quantified and appreciated. Using computer-assisted methodologies, it is now possible to approximate the aggregate economic impact of tree resources on a community-wide, metropolitan, and even global basis.

Computer-assisted methodologies now make it possible to approximate the economic impact of tree resources on a community-wide, metropolitan area, and even global basis.

The net economic worth of environmental services provided by the world's forests is nearly \$5 trillion annually.

Most recently, a collaboration of researchers from around the globe developed an estimate of the economic contribution of the planet's natural systems. This study placed the net economic worth of the environmental services provided by the world's forest biome at U.S.\$4.7 trillion annually³¹.

On a metropolitan level, a comprehensive study modeled the projected costs and benefits of planting and maintaining 95,000 trees around the Chicago metropolitan area over a 30-year period. This research projected that the value of the air pollution attenuation, energy-saving, hydrologic, and other benefits provided by trees would exceed the costs to plant and maintain them by an average of nearly three-to-one. Investments in trees were estimated to yield an average net present value (benefits less costs) of \$402 per tree planted and to have an average payback period of between eight and nineteen years (depending on location, species, and discount rate assumption)³².

³¹ Costanza, R. et al, "The Value of the world's ecosystem services and natural capital". Nature. 5/15/97.

³² McPhearson, E.G., D. Nowak, and R.A. Rowntree (ed). Chicago's urban forest ecosystem: Results of the Chicago Urban Forest Climate Project.

Community forests, while offering many benefits, are not without costs. Planting and maintaining trees requires investment. Trees can produce negative impacts: uprooted sidewalks, disrupted utilities, leaf collection, and tree damages; and these effects all have costs that must be paid by the community and private landowners. While the costs of planting new trees and maintaining existing trees are tangible, requiring outlays by public and private entities; the benefits of trees are often diffuse and enjoyed as “public goods” by society at large.

Although the benefits and values conferred upon communities by trees may be imperfectly reflected in the marketplace, when the multitude of environmental, energy, climatic, socio-psychological, and aesthetic benefits of trees are properly enumerated---the conclusion is clear and compelling: *retaining and enhancing urban tree resources is clearly in the public interest, and investments made in planting and maintaining trees pay handsome returns for the community.*





Part Four:

Rhode Island’s Urban and Community Forest Resources and Programs

From the tree-lined streets and parks of its cities to the expansive private and public woodlands in its rural towns, Rhode Island is richly endowed with forests and tree resources.

Data indicating the extent and status of forest resources in Rhode Island come principally from statewide and regional interpretative surveys conducted by the R.I. Statewide Planning Program or the U.S. Forest Service. According to 1988 state land use surveys, slightly over one half of Rhode Island’s land remains forested.¹ This figure is down slightly from the 59 percent recorded in a similar survey done in 1970. Figure 4.1 graphically illustrates the statewide distribution of major forested areas in Rhode Island as identified in the most recent statewide land use survey (1988).

A recent U.S. Forest Service study put Rhode Island’s forest cover at 56 percent of total land area.² An earlier Forest Service survey, based upon 1985 photography, estimated the state’s forest cover at 404,800 acres, or 60 percent of total land area, of which 92 percent was classified as “timberland.”³ Just under 5 percent of the state’s area was classified as “non-commercial forest land”, of which 0.6 percent was classified as “urban” forest land.

RHODE ISLAND LAND USE

1970	
• Developed.....	21%
• Undeveloped	79%
▪ Forest	59%
1988	
• Developed.....	29%
• Undeveloped	71%
▪ Forest*	55%

(*1988 forest figure includes forested wetlands acreage from RIGIS data, as forests and wetlands were counted separately in 1988 land use survey)

Sources: RI Statewide Planning Program, Land Use Trends in Rhode Island 1961-1988, Technical Paper Number 146. Providence, RI. 1998 & RIGIS data

1 RI Statewide Planning Program, Land Use Trends in Rhode Island 1961-1988. Technical Paper Number 146. Providence, RI. 1998. & RIGIS Land Use and Wetlands Coverages (1988).
 2 Reimann, R., and Tillman, K. Photo interpretation for Fragmentation/ Proximity indicators in Southern New England. US Forest Service’s Northeast Forest Inventory and Analysis Project. USDA Forest Service, Northeastern Station Radnor, PA. 1998. P. 5.
 3 Dickson, D.R., and McAfee, C.L. Forest Statistics for Rhode Island---1972 and 1985. USDA Forest Service. NE Forest Experiment Station. Resource Bulletin NE-104. Broomall, PA. 1988.

Figure 4.1
Forest Land Use Statewide

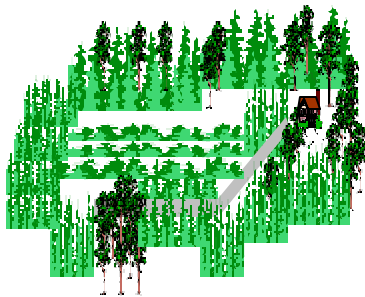
While useful at a statewide level to track the aggregate and distributional characteristics of forests, data at this scale are coarse; neither survey can adequately portray the intricacies of forest types and gradients present within individual communities. Neither study focused on urban forest resources, and both excluded significant tree resources on individual residential lots and streets throughout urbanized areas of the state.

The Community Forest as a Continuum

Geographically, community forests exist on a continuum, or gradient, ranging from large tract, working forests in rural areas, to fragmented forests in suburban areas, to residual pockets of forests in highly urbanized city environs.

Reflecting the degree of human alteration of the environment, major community forest categories or zones may be discerned in the landscape; each having differing implications for effective management:

Rural Forests—beyond the fringe of urban metropolitan areas, the rural landscape is a composite of large forested tracts, farmland, and isolated villages. Forest land is the predominant landcover, and forests are typically both ecologically healthy and commercially valuable. This is a “working landscape” where agricultural and silvicultural activities both support the local economy and help retain land as open space. Extensive tracts of privately-owned forest land exist in a number of Rhode Island’s rural communities, and provide many benefits at little cost to the community at large.



Rural working forests and farms lie beyond the metropolitan fringe



Developed uses form intermittent breaks in the forests of the suburban fringe

Suburban Fringe—typified by pockets of recent development interspersed throughout extensive stands of intact forest land. Woodlands remain the dominant landcover, but the infusion of development signals increased pressure on tree resources. Seen from above, developed areas exist as intermittent holes in the fabric of an otherwise dense forest canopy. Forests in such locales operate close to their optimal levels in absorbing pollutants, storing and metering runoff, and providing habitat for forest-dwelling species. In Rhode Island, the northern and western portion of South County, the western portions of Kent and Providence Counties, and the eastern-most portion of Newport County appear to fit the suburban fringe forest profile.

Suburbs—although dominated by lower-density development, sizable tracts of open forest remain in the suburban forest. Typically, residential, commercial, and industrial land uses surround isolated tracts or corridors, which development has “skipped over” because of watercourses, steep slopes, or other limitations. Tree canopy coverage in suburban areas exhibits many gaps, but is moderate overall, with trees planted or retained on large residential lots adding to tree density. As developed land uses increase, the holes in the forest canopy grow in size and number, the forest is broken into smaller patches, and its ecological values diminish. Large portions of Rhode Island, including much of the east and west bay, Providence County, Aquidneck Island, and eastern parts of South County seem to fit the suburban forest model.

City Residential—includes the older neighborhoods surrounding urban cores. Portions of Providence, Newport, Woonsocket, Cranston, Warwick, West Warwick, East Providence, North Providence, Pawtucket, Central Falls, and Cumberland appear to fit this profile in Rhode Island. Moderate to high-density housing—typically, apartments or tenements—is the dominant land use, and tree density is medium to low. Isolated dense stands of trees may be found in urban parks or along waterways, but, overall, the tree canopy is light, limited to yards and street trees. With fewer trees overall, the ability of the urban residential forest to perform ecological functions is impaired, but the value of clusters of trees in providing energy-saving micro-climatic effects continues to be significant for individual sites.

City Center or Urban Core—includes the commercial, industrial, and high-density residential development forming the traditional downtown or core of metropolitan regions. In areas such as the downtowns of Providence, Pawtucket, Central Falls, Newport, and Woonsocket, virtually all native vegetation is displaced by buildings and impervious surfaces. Street trees, planted in holes left in the pavement, and trees found in vest-pocket parks are often the only trees present in the urban core zone. Planting sites must be carefully selected and often re-engineered (soil enrichment, irrigation, etc.) to give trees planted a chance for survival. Still, tree vitality and life spans tend to be less than optimum due to the harsh environmental conditions. The scarcity of trees in urban core



Tree canopies of city residential zones are light; yard and street trees and isolated stands in parks comprise the forest



In the urban core street trees and vest-pocket parks constitute the forest canopy.

environs reduces but does not eliminate the benefits trees provide to residents.

The forest continuum model provides a lens for viewing the urban forest as an organic whole, but it should be noted that there is no sharp demarcation between zones, and the forests of individual communities can include aspects of more than one of the zones. Also, because it is an abstract, it does not represent all real-world situations. Some portions of Rhode Island, especially its island communities and areas where agricultural use remains viable, do not fit well in any of the model categories.

Another means of examining forest distribution as a continuum is to array Rhode Island communities by percentage of forest land cover. Figure 4.2 uses statistics from a 1988 statewide land use survey to array Rhode Island cities and towns along a continuum based upon the proportion of forested land (including forested wetlands) area to total land area .



Figure 4.2

Percentage of Forested Land by City and Town, Rhode Island 1988

Source: 1988 RIGIS Land use/land cover dataset. It must be noted that the forest cover statistics available in the Rhode Island survey are based on predominant land use type, and thus are **not** comparable to "canopy cover" statistics available for several other metropolitan areas in the country. Nevertheless, the data portrayed in Figure 4.2 do depict the general magnitude of forested land in Rhode Island communities.

Urban and Community Forestry Laws, Programs, and Institutions in Rhode Island

An important element of urban and community forestry resources in Rhode Island are the laws, programs, and institutions that the State, its communities, and private entities have created to manage physical forest assets.

Rhode Island Constitution

Article 1, §17 of the Rhode Island Constitution secures the right of the public to “the use and enjoyment of the natural resources of the state,” and directs the General Assembly to “provide for the conservation of the air, land, water, plant, animal, mineral and other natural resources of the state... and to adopt all means necessary and proper by law to protect the natural environment... .” Tree and forest resources clearly fall within the Constitutionally-directed protection of the natural resources of the state.

State Statutes

The Rhode Island General Assembly has enacted a number of statutes directly and indirectly governing the management of the state’s trees and forest resources. Elements establishing the legal framework for urban forestry in Rhode Island include:

Department of Environmental Management

R.I. General Laws § 42-17.1 et seq. establishes a state Department of Environmental Management and authorizes it to “supervise and control the protection, development, planning, and utilization of the natural resources of the state....including.... plants, trees.....”

Within the R.I.DEM, the Division of Forest Environment is assigned responsibility for forest management, including “assisting other agencies and local governments in urban programs relating to trees, forests, green belts, and environment.”

Pursuant to this responsibility, the Division operates the state's Urban and Community Forestry Program, providing technical assistance and grants to municipalities and private groups in support of urban and community forest protection and enhancement. In addition, the Division provides cooperative forest management, wildfire prevention and suppression, insect and disease control, and management of state-owned forests. The Division works closely with the U. S. Department of Agriculture's Forest Service, other units of DEM, municipalities, and private groups in pursuit of its forest management responsibilities.

Forested Wetlands

R.I. General Laws § 2-14-1 et seq., the Rhode Island Freshwater Wetlands Act, offers regulatory protection to approximately 75,000 acres of forest land that meet the statutory definition of a freshwater wetland. Alterations to wetland areas require permission from RI DEM's Director. In general, the Freshwater Wetlands Program seeks to avoid or minimize permanent changes that negatively impact wetland values. Activities may be permitted, permitted with stipulations, or denied, depending on their impacts upon the wildlife habitat, recreational, water supply, and other values of the wetland affected. Permit restrictions on cutting and clearing of vegetation, draining, watercourse alterations, and requirements for maintenance of vegetated buffers surrounding wetlands all help to protect the state's forest resources.

Municipal Tree Wardens

R.I. General Laws § 2-14-1 et seq., requires municipalities to appoint a tree warden and charges the appointed official with responsibility for the "care and control" of trees and shrubs within public land and rights-of-way controlled by the municipality, and of portions of private trees that extend into or over public roads or grounds. Tree wardens must be licensed arborists, are authorized to prune or remove hazardous trees at public expense, cooperate with the R.I.DEM in the suppression of pests and diseases, and propose regulations governing the care and preservation of suitable trees. Several municipalities have adopted tree ordinances that further detail the responsibilities of the local tree warden.

Criminal and Civil Penalties for Unlawful Cutting or Vandalism to Trees

R.I. General Laws § 11-44-2 et seq., prohibits persons from uprooting, cutting down, or otherwise injuring or damaging trees or underwood on land of another, without permission of the owner, and establishes a penalty of up to one year's imprisonment or a fine of (the lesser of) triple the monetary damage or \$1,000 plus compensation of triple damages to the wronged property owner. *R.I. General Laws § 34-20-1* creates liability for civil damages for the unauthorized cutting of trees or wood on the land of other persons.

Licensing of Arborists

R.I. General Laws § 2-19-1 et seq., establishes definitions, standards, examination, and licensing requirements for individuals and business entities engaging in the practices of "pruning, trimming, spraying or repairing fruit, shade and ornamental trees." The R.I.DEM is authorized to establish rules and regulations governing the practice of arborists.

Protection of Trees and Plants Generally; Replacement of Trees Removed on Public Land

R.I. General Laws § 2-15-8 et seq., requires that permits be obtained from the local tree warden, park commission, or state department having jurisdiction prior to the cutting or removal of any tree or shrub, or the burning of rubbish or debris on public lands. Any person, firm, or governmental entity that removes or substantially damages any tree on public land must replace the tree with substantially equivalent tree or trees, having the sum of the diameters equal to twice that of the tree removed or damaged. Public utility work in accordance with a properly approved trimming and replacement program is exempt from the requirement.

Right-of-Way Tree Planting

R.I. General Laws § 45-2-43 authorizes cities and towns to appropriate resources under the direction of the tree warden for planting shade trees upon (private) land adjoining a public right-of-way at a distance of up to 20 feet. This section allows municipalities the discretion to spend public funds to plant street trees on private land provided that the tree will function as a public tree by improving, protecting, shading, or beautifying the public way. This option allows municipalities to involve private landowners in the stewardship of what remain essentially street trees and gives flexibility to site new trees away from utility corridors, avoiding the need for severe pruning and improving their vitality and beauty. The City of Newport has utilized this authority in its tree planting and replacement programs and anticipates significant maintenance cost savings over the long term.



Right To Farm

R.I. General Laws § 2-23-1 et seq., finds that agricultural operations are valuable to the state's economy and general welfare and that they are being adversely affected by the random encroachment of urban land uses throughout rural areas of the state. The Act declares it to be policy of the state to promote an environment in which agricultural operations may be safeguarded against nuisance actions arising from conflicts between agricultural operations and urban land uses. The statute defines agricultural operations to include "forestry", and provides (generally) that no agricultural operation shall be found to be a public or private nuisance due to alleged objectionable odors, noise, dust, or use of agri-chemicals associated with generally-accepted agricultural practices. The Act further provides that no city or town may enforce any ordinance pertaining to the construction, location or maintenance of places for the keeping of animals, against any agricultural operation as defined in the Act.

Registration of Wood Cutting Operations

R.I. General Laws § 2-15-1 et seq., requires that any persons, firms, and corporations cutting standing or growing trees for commercial forest products must be registered as a woods operator with the R.I. Department of Environmental Management, and, further, such persons must file with the R.I.DEM a notice of intent to cut or saw at least five days prior to the cutting or sawing, and must utilize best management practices while harvesting trees.

State Guide Plan

R.I. General Laws Chapter 42-11 establishes a Statewide Planning Program, and requires the preparation and maintenance of a State Guide Plan for the physical, economic, and social development of the state. In addition to this Urban and Community Forestry Element, the State Guide Plan includes related elements that establish a policy framework for management of the state's forest resources: Forest Resources Management Plan (1984), Greenspace and Greenways Plan (1994), Outdoor Recreation Plan (1992), and State Land Use Policies and Plan (1989). Local comprehensive plans must be consistent with the State Guide Plan's policies.

Local Comprehensive Planning

R.I. General Laws Chapter 45-22.2 requires all municipalities to prepare, adopt, and periodically update local comprehensive plans providing a rational basis for decisions regarding the long term physical development of the municipality. A Natural Resources Element, which inventories and sets policies "for the protection and management of significant natural resources, including natural vegetation systems" is a required part of the comprehensive plan. Comprehensive plans must be based upon citizen input, must be internally consistent in their goals and policies, and must be consistent with the State Guide Plan. Local zoning decisions must be consistent with the approved local comprehensive plan's land use element.

Municipal Zoning Authority

R.I. General Laws § 45-24-27 et seq. requires, and establishes minimum standards for, all municipal governments to enact zoning ordinances. Ordinances are intended to regulate “the nature and the extent of the use of land for residential, commercial, industrial, recreational, agricultural, open space or other use....as the need for land for those purposes is determined by the city or town comprehensive plan.” A complete update of the state’s zoning enabling act was adopted in 1991. In addition to establishing permitted future uses of land that accord with adopted plans, the act authorizes communities to have “...requirements for: the density and intensity of use, ...landscaping, ...open space, ... and buffers, ...and, permitting, prohibiting , limiting, and restricting development in ...designated significant natural areas.” Municipalities may also adopt special provisions including incentive zoning, transfer of development rights, and regulation of “development adjacent to ...public greenspaces...or valuable natural resources.” As the principal governmental control over future usage of land, local zoning ordinances have great impact on Rhode Island’s forests.

Subdivision and Land Development Project Review

R.I. General Laws § 45-23-25 et seq., completely updated in 1992, requires all municipalities to develop and adopt regulations controlling the process of land subdivision and land development within their boundaries. Among the purposes of municipal subdivision/land development project review is “promoting the protection of the existing natural and built environment and the mitigation of all significant negative impacts of any proposed development” Municipalities are authorized to enact a master planning review process for approval of new development and subdivision projects and to adopt requirements for physical design, including: “...open space, landscaping,... and the relationship of proposed developments to natural and man-made features of the surrounding neighborhood.” Ordinances may also include public design and improvement standards for “landscaping, and ...soil and erosion control.” Standards for dedication of private land, or payment of

a fee in lieu thereof, in connection with new development are also authorized. Communities may utilize the powers and authorities conferred by the Land Development and Subdivision Review Act to require protection of existing tree resources and to specify requirements for replacement or new tree resources in connection with new development.

Municipal Tree Ordinances

Municipal governments have relied upon legal mechanisms to manage tree resources since at least 1807, when Detroit, MI adopted the first ordinance governing the planting of street trees. Tree ordinances have traditionally applied only to trees located on public land (in street rights-of-way or parks), authority over private trees being limited to trees endangering the public safety. Now, in some regions of the country, municipalities are adopting tree ordinances that extend public jurisdiction to trees and forests on private lands. They are requiring identification of significant tree resources in the development planning process, and protection or replacement of trees removed or destroyed by development on private lands.

Approximately 25 percent of Rhode Island communities have adopted a municipal tree ordinance. The communities having ordinances in place include:

- East Providence
- Middletown
- Newport
- North Providence
- Pawtucket
- Providence
- Tiverton
- Warwick

Several other communities are considering enactment of a tree ordinance.

These local tree ordinances are traditional in being focused only on trees on public property and hazardous private trees. These ordinances typically assert the municipality's jurisdiction over trees on public property, assign responsibility for their management to a public employee (typically a City Forester or Tree Warden), and establish procedures and requirements for alteration of public trees. Authority for pruning or removal of trees on private property that constitute public hazards is also generally bestowed upon the designated official.

The following highlights, from two municipal tree ordinances, are representative of other ordinances in effect:

Providence

- public trees are under the jurisdiction of the Board of Park Commissioners; the Board appoints a City Forester to enforce provisions of the ordinance.
- replacement of public trees removed, destroyed or severely damaged is required.
- prohibits more than 30 percent of trees from being cut, damaged, destroyed, or removed during redevelopment, razing, or renovating activities.
- authorizes the City Forester to formulate a Master Street Tree Plan, develop an inventory of existing trees, and to work with a Street Tree Advisory Committee, the Mary Elizabeth Sharpe Street Tree Fund, and private groups in furtherance of tree care and preservation.



Newport

- regulates the protection, maintenance, removal and planting of trees on public property, and in designated cases, on private property.
- establishes a Tree Commission, which, together with a Tree Warden, recommends regulations and prepares five-year and annual tree management and planting plans.
- Commission also serves as quasi-judicial board for deciding appeals of any order, requirement, or decision made by the tree warden.
- warden reviews all requests for planting, removal, pruning and/or trimming or cutting of trees in any public area.

- warden may cause or order to be removed or trimmed any tree on private grounds that is in unsafe condition so that it poses a threat to public or private property.
- warden issues permits for planting of trees on public property and may specify the species, location, size, and public safety requirements.
- requires protection of public trees during construction or excavation.
- replacement is required for all public, protected, or historic trees removed.
- at the discretion of the tree warden, municipal resources may be used to plant trees on private property up to 20 feet from a public right-of-way, provided they function as public trees and offer public benefits. Such trees become private property and must be maintained by the landowner.

Urban and Community Forest Programs

In addition to statutory provisions, a variety of programs enlist the resources of federal, state, local and private organizations, and private citizens in furtherance of protection and enhancement of Rhode Island's urban and community forests. The most significant of these efforts include:

U.S. Forest Service Urban and Community Forestry Programs

The 1990 Farm Bill granted expanded authority and provided resources for the U.S. Forest Service to work with states on urban and community forestry. A 15-member Urban and Community Forestry Advisory Council was established and \$25 million in annual funding authorized for community programs.

The Urban and Community Forestry Assistance Program offers technical assistance, education, and partnerships to communities and organizations.

The America the Beautiful Act, also passed in 1990, seeks to stimulate planting and improving trees in every rural area, town, and city across the country. Funding is provided for each state to create an urban forestry coordinator and to establish state urban forestry councils. Grants for tree planting programs are authorized.

Since 1992, Rhode Island has distributed over \$289,000 in America The Beautiful Program grants for local tree programs under the Forest Service's urban and community forestry programs. This amount was matched by \$566,000 in sponsor funds and resulted in approximately 2,800 trees being planted in communities throughout the state. In addition, the America The Beautiful Program provided \$139,000 in grants to support the organization and work of the R.I. Tree Council (and its predecessor groups) to promote and coordinate community forestry efforts statewide. Sixteen municipalities and nine state or local non-profit entities have participated in the Program since its inception.⁵

Related U.S. Forest Service Programs

In addition to its Urban and Community Forestry Programs, the U.S. Forest Service offers a number of other programs and grants which may support urban forestry objectives. These include:

The Forest Stewardship Program provides technical advice on forest resource management to rural forest landowners.

The Stewardship Incentive Program offers partnerships with rural landowners who follow a management plan on their forest land. Under the partnerships, the Forest Service pays a percentage of the costs for implementing an approved plan.

The Forest Legacy Program

The Forest Legacy Program helps private forest landowners, state and local governments preserve environmentally important forest lands by providing funds to state governments for the acquisition of land or conservation easements over the forested lands offered by willing sellers. Eligible lands must provide aesthetic, recreational, water quality protection, and habitat benefits and must be within identified Forest

5. America the Beautiful Grants Program Funding spreadsheet dated October 5, 1998, provided by Bruce Payton, Urban and Community Forestry Program Coordinator.

Legacy areas established as priorities by the State. Funding for the program by the Congress has been sporadic and less than authorized since the Program's creation in 1990.

Planning

In addition to providing state and local grants, the U. S. Forest Service has also taken a leadership role in region-wide planning for urban forestry resources. The Northeastern Area office of the Forest Service has developed and is implementing an Urban Forestry Five Year Plan 1995-1999, including objectives for awareness, outreach and environmental equity, partnerships, and comprehensive natural resource management.

Small Business Administration Tree Planting Program

From 1992 to 1995, the Small Business Administration offered grants for community-based tree planting and beautification projects administered through the R.I. Division of Forest Environment and the R.I. Urban and Community Forestry Council. In addition to beautifying communities, these grants were intended to bolster local economies by making public sector nursery and landscaping work available for firms hard-hit by an economic recession. A total of \$367,500 of SBA funding, matched by \$701,000 in other funding, resulted in over 3,300 trees being planted by 21 state, municipal and non-profit project sponsors throughout the state during this program.

R.I. Division of Forest Environment's Urban and Community Forestry Program

The Division (DFE) is authorized to cooperate with the U.S. Forest Service in distributing resources and providing expertise and assistance. In 1991, DFE established an urban and community forestry program and appointed a full-time urban and community forestry program coordinator. The program coordinator is charged with establishing a statewide urban and community forestry program

involving other federal and state agencies and the cities and towns, and with cooperating with private organizations in developing and implementing urban and community forestry programs and initiatives, including state and community Arbor Day programs, technical assistance to federal and state agencies, local communities, and non-profit organizations, administration and distribution of America the Beautiful grants to state agencies, cities and towns, and non-profit groups, and technology transfer of information on urban and community forestry issues.

The R.I. Tree Council

The Rhode Island Tree Council (formerly the R.I. Urban and Community Forestry Council) is a non-profit citizens group dedicated to sustaining, improving, and expanding Rhode Island tree resources. Established in 1991, the Council seeks to improve the public's appreciation and recognition of trees as vital components of the built infrastructure. The Tree Council cooperates closely with the Forest Service, R.I. Division of Forest Environment, municipal governments, and business interests as it seeks to develop strong partnerships for implementation of tree planting and stewardship efforts at the local level. It is constituted with Boards of Directors, Advisors, and Trustees, and standing committees of citizen-members working on state and local planning, local programs, education, and public awareness issues.

The Council's membership, activities, and impact have steadily increased since its formation. Among the programs the Council runs or has involvement in are: advising on the distribution of America the Beautiful grants to cities and towns, coordination and organization of annual Arbor Day planting programs around the state, assistance and advocacy for adoption of municipal tree preservation ordinances, implementation of a volunteer tree stewards education and public service program, organization of an annual conference, development of a research library, operation of a Notable Tree Program and annual publication of the Notable Trees of Rhode Island Calendar, and exhibits and informational booths at the annual R.I. Spring Flower and Garden Show and numerous other statewide and local meetings, exhibits, conferences, and workshops.

The Council is funded by grants from the U.S. Forest Service through the R.I. Division of Forest Environment, corporate support, membership dues, and fund-raising activities such as sales of its calendar. The Council's total revenues for 1997-98 are projected to exceed \$100,000.

R.I. Forest Conservators' Organization

A non-profit organization dedicated to the protection and wise use of Rhode Island's woodland resources, the Rhode Island Forest Conservators' Organization (R.I.FCO) works to promote the stewardship of Rhode Island's wooded lands and watersheds and better awareness of the role of a healthy forest in improving environmental conditions. It works with its members, many of whom own and manage significant forest lands, to provide information and educate the public on issues affecting Rhode Island's forests. In addition to forest landowners, R.I.FCO members include natural resource professionals, land trust and forest product industry representatives, and citizens concerned with forest conservation issues. Although the organization's focus is principally on conservation of rural "working" forests, its interests and objectives are generally supportive of urban forestry goals.

Examples of Community-based Programs

A number of Rhode Island municipal governments, allied with non-profit and citizens groups have undertaken significant community-based urban forestry programs. Examples of these include:

City of Providence Neighborhood Planting Program and Street Tree Endowments

Providence, Rhode Island's largest and most urbanized city, faces perhaps the most challenging urban forest management issues of any community in the state. The City is most fortunate, however, in

being the beneficiary of two philanthropic efforts devoted to the betterment of its tree resources.

Created through the cooperative efforts of the City government, the Rhode Island Foundation, and individual benefactors, two trusts have been endowed that provide a sustaining source of resources for street tree planting and maintenance efforts. The proceeds of the trusts are distributed through the Providence Neighborhood Planting Program, a non-profit organization that awards street tree planting grants to neighborhood groups on a semi-annual basis. These endowments greatly multiply the impact of investments made through annual public appropriations, and they offer an excellent model for emulation in other communities.

- *Mary Elizabeth Sharpe Street Tree Foundation*

Created in 1978 with a leadership gift from the Sharpe Family Foundation, this endowment supports the Providence Neighborhood Planting Program, a street tree planting partnership with the City government and over 300 groups of neighborhood residents. It has planted over 3,500 trees since 1989.

- *Helen Walker Raleigh Tree Care Trust*

In 1996, this trust was established as a companion to the Sharpe Street Tree Endowment. Its goal is to ensure adequate care for trees planted through the Providence Neighborhood Planting Program. Initiated with a gift from Mrs. Raleigh and matched with bond funding from the City, this fund will grow into a perpetual source of funding for pruning, fertilization, and weed control for the young trees of Providence.

City of Newport's Tree Program

Dedicated to protecting, maintaining, regenerating, and expanding the city's urban forest, Newport's urban forestry program was started in 1989 by the Newport Tree Society, a private group. With assistance from the R.I. Tree Council and DEM's Urban and Community Forestry Coordinator, the program was embraced by City government and has evolved into an effective public/private partnership.

Among the components and accomplishments of the City of Newport's program are:

- Adoption of a comprehensive Tree Preservation and Protection Ordinance
- Hiring of a full-time tree warden
- Increased investments in tree programs, currently averaging \$158,000 per year
- Appointment of a City Tree Commission
- Annual qualification as a "Tree City USA"
- Completion of a full inventory of street trees
- Establishment of a number of continuing tree planting programs, including the Street Tree Donor Program, Neighborhood Cooperative Tree Planting Program, Off-Street Tree Planting Program, and Bare Root Tree Planting Program
- Cooperation with private utilities to create a Tree Replacement Program and pruning clinics
- Regular tree maintenance, tree protection, and tree replacement, planning efforts

Other Rhode Island communities that have or have begun developing community-based urban forestry programs include East Providence, Glocester, Middletown, South Kingstown, Warwick, and Westerly.





Part Five

Urban and Community Forestry Issues

Rhode Island’s urban and community forests face a variety of challenges. Among the key issues are lack of knowledge of the value of trees, insufficient data on tree resources, little or no legal protection for tree resources, insufficient investment in tree resources, and lack of foresight and planning for protection of tree resources in concert with new development.

Rhode Island takes its urban and community forests for granted...

Perhaps because the state has over a billion of them, Rhode Islanders tend to take a relaxed attitude about trees.

To a large extent, our assumption concerning trees seems to be not drastically different from the “frontier” mentality of our ancestors: the abundance of trees makes their intrinsic value to us appear inconsequential. The reality is quite the opposite: as documented in Part Three, trees have real economic value; their worth as public goods in many instances far outstrips their market value for timber, pulp, or firewood. The public, while appreciating trees on an aesthetic level, may not realize the valuable benefits trees provide, until they are gone.

All Rhode Islanders pay real costs for forest land and trees cleared for development. The costs are not perceived as “real” because they do not appear as a line item in state and municipal budgets, or show up in any identifiable way on citizens’ tax bills. Still, we are all paying the price, in terms of higher costs to cool our homes and

The abundance of trees makes them appear inconsequential to us.

The public often does not realize the valuable benefits trees provide, until they are gone.

offices and to treat pollution, less attractive communities, fewer recreation choices, impacted wildlife, and a poorer quality environment overall.

The 28,000 acres of forest land lost in Rhode Island from 1970 to 1988 represent a real loss in the environmental net worth of the state.

Forest land use studies indicate that Rhode Island lost 28,000 acres of forest from 1970 to 1988. Based upon forest density surveys. This equates to a loss of over 83,000,000 trees, a significant decrease in Rhode Island's environmental net worth--the state's legacy of natural wealth.

We don't know enough about our urban and community forests...

The state of our knowledge of our urban and community forests is imperfect. For the most part, we do not map, analyze, and study our forests as intensively as many other assets.

Compared to the research and data bases maintained for other "community infrastructure" (schools, utility and communication lines, etc.), tracking the status of our "green" infrastructure---community forest resources---is rudimentary. Detailed statistics on urban forests are particularly hard to come by on the state level. Land use surveys are done sporadically by the state (1960, 1970, 1975, 1988); but these surveys, necessarily gross in scale and resolution, do not include urban forest trees and offer only the broadest statistics on rural forest lands. Rhode Island has not conducted a statewide canopy cover survey such as has been done for metropolitan regions in other areas of the country. Such studies (as distinguished from standard land use surveys) provide statistics on tree coverage and density from which calculations of the value of ecological functions and benefits provided by forested areas can be derived.

- 1 RI Statewide Planning Program, Land Use Trends in Rhode Island 1961-1988. Technical Paper Number 146. Providence, RI. 1998 & RIGIS Land Use and Wetlands Coverages (1988), and Dickson, D.R., and McAfee, C.L. Forest Statistics for Rhode Island---1972 and 1985. USDA Forest Service. NE Forest Experiment Station. Resource Bulletin NE-104. Broomall, PA. 1988.
- 2 Dickson, D.R., and McAfee, C.L. Forest Statistics for Rhode Island---1972 and 1985. USDA Forest Service. NE Forest Experiment Station. Resource Bulletin NE-104. Broomall, PA. 1988.

Federally sponsored forest surveys are also infrequently done (1972, 1985, 1999). These assess forest characteristics in more detail than standard land use studies, but focus mainly on large tracts of commercial forest.

At the local level, only five or six communities have completed basic inventories of their *public* trees (street trees and park trees). Although computer-aided programs are available that allow metropolitan areas to develop a comprehensive inventory of *public and private* trees and document the benefits provided by forest resources, neither the state nor any community (or group of communities) has undertaken this task in Rhode Island. Most cities and towns do not know how many trees they have, how healthy or sickly their forest is, and how many trees they gain or lose each year.

The net impact of this lack of data is that we do not have a good understanding of the status, condition and trends affecting our urban and community forests and cannot document the dollars and cents values of our trees. Without good data, communities are limited in undertaking systematic planning for tree resources and in adequately documenting the benefits that trees provide to the community as a rational legal basis for protecting trees threatened by development.

Not knowing enough about urban forests extends to the realm of public knowledge and utilization of technical information. Although there is a growing body of literature and educational materials available; there remains a keen need to deliver this information in a way that develops a broad public appreciation of the value and importance of urban forest resources and institutionalizes the proper technical expertise in the urban forest, community development, and public infrastructure communities regarding the health requirements of urban trees. Key urban forest education and information needs identified in a 1998 survey completed by over 200 urban forest managers from the Forest Service's northeast region (Maine to Minnesota) are listed in table 5.1.

Most communities have not conducted comprehensive tree inventories.



TABLE 5.1
URBAN FOREST HEALTH EDUCATION AND INFORMATION NEEDS

Major Issue	Specific Education and Information Needs Cited
Hazard tree evaluation and management	Evaluation and management techniques; practical "how-to" manual for municipal arborists; inventory systems; species-specific hazard tree evaluation data; liability issues; costs associated with hazard tree losses; role of hazard trees in natural disasters
Disease Management and Control	Updates on new and common diseases; common abiotic disorders; field diagnostic techniques; oak wilt; declines of maple, and juniper; ash yellows; Verticillium wilt; girdling root syndrome; root decay; biologically and environmentally-friendly control strategies
Tree Health Monitoring	Assessment techniques for large and small communities; develop "How To" brochure for non-professionals; guidelines on organizing a statewide program
Natural Disaster Planning & Mitigation	Legal responsibilities; detailed example of systems that work; regional planning strategies; organizing natural disaster response teams; timeline for post disaster activities; coordination of municipalities and utilities; sources of financial and technical assistance
Insect Management and Control	Updates on new and common insect pests; biological and environmentally-friendly control strategies; insecticides: timing and efficacy; insect biology and ecology; gypsy moth; woolly adelgid; Japanese beetle; borers and mites
Minimizing Construction Damage	Management guidelines to minimize tree damage during construction; proper installation of fencing; use of mulch to reduce soil compaction; how to maintain soil quality; impacts of grade changes; mitigating existing problems (soil compaction, grade changes, root damage); education of contractors and utility companies on the value of trees and proper tree management techniques during construction
Proper Site and Species Selection	General guidelines; species specific information on tree care maintenance needs; new varieties of plants; modification and improvement of urban planting sites
Proper Tree Pruning	Proper pruning techniques; pruning guidelines for young vs. mature trees; utility and street clearance issues
Proper Fertilization and Watering Techniques	Guidelines for young vs. mature trees: how to and when; site-specific recommendations: sandy vs. clay soils; trees in decline; soil testing and fertilization
Other	Street tree inventory systems with GPS/GIS; public education: inform city leaders and policy makers on the values of trees and urban forest health issues; urban forestry publication listing; fund-raising techniques

3 [Urban Forest Health Assessment Survey: Results and Recommendations](#). U.S. Forest Service/Northeastern Area State and Private Forestry. St. Paul, MN. January, 1998. P. 12.

We don't plan comprehensively for urban and community forests...

This plan is the first statewide plan addressing forestry from the urban and community perspective.

Because we do not accord tree resources their value as community assets, our efforts to plan systematically for their management and enhancement are also limited.

There are few imperatives or incentives for communities to plan for their forest resources. Apart from the mandates to plan for public trees found in a few municipal tree ordinances, communities face minimal requirements and find little guidance on planning for their forest resources. This plan, the first statewide plan in Rhode Island focused on urban and community forestry, attempts to encourage more attention to planning for community forests. Its policies, together with those of the Forest Resources Management element of the State Guide Plan must be reflected in future updates of local comprehensive plans.

State standards for local comprehensive plans do not give a high profile to planning for community tree resources.

The state's local planning enabling legislation, completely updated in 1988, did not speak to planning for community forests. Although it required community plans to include a "natural resources element" inventoring and setting policies for significant natural resources, including "natural vegetation systems," the broad legislation did not specifically mention planning for community or urban forests. The handbook developed by the state to guide communities in preparing their first plans under this law did not give a high profile to planning for tree resources, either as a natural resource or as community infrastructure.

Many community comprehensive plans do not address tree preservation or maintenance on a community-wide basis.

Without the benefit of a state policy framework for urban and community forests, lacking detailed data on forest status and trends, and absent specific guidance on how to plan for their tree resources, it is not surprising that the priority accorded to urban and community forests in the comprehensive plans completed by communities in the early 1990s tended to be modest. Most local plans did not map or inventory their forest resources in any detail; some included only broad goals for protecting forest

resources. Only a few plans outlined a progressive agenda for protection and enhancement of community tree resources.

When it comes to site development planning, the lack of detailed state or local policies leaves the development community unassisted (and unfettered) by guidance on the public's objectives for tree resources. This means that trees are often the last resource thought about in site planning (if they are thought about at all).

Because trees are not accorded the same or similar protection by law as other natural resources, (see below) they are given less stature in land development decisions. Developers build know that wetlands, water supplies, and coastal features are protected by law and regulation; so, when planning sites, they locate roads and new buildings to minimize impact upon these resources. Developers also avoid impacts upon historic and archaeological resources, farmland, and rare species habitats because they know that state and local policies encourage the protection of such areas, and the approval process will be smoother if their plans avoid these areas. Forest resources, falling outside all of these protected categories, often cover much of a site's area but are given less consideration in site planning.

Because the definition of land development projects and subdivisions in state law does not include land clearance, land may be clear-cut and topsoil stripped or left to wash away long before a local permit for a development project is ever sought. Unless landowners recognize their self-interest in adhering to best management practices, or unless other local ordinances (e.g., soil erosion and sediment control ordinance, or tree conservation ordinance) require conservation practices; the development review process may be limited to approving the layout of roads and/or buildings on what has already been made a barren site. Although a site might have been a productive forest a few months or years ago, by the time a development project is before a local board for approval, there may be no trees left to protect. In this situation, the local planning board, and the

Development site planning and design too often ignores tree resources.

Although trees often constitute the bulk of a development site, protection of tree resources is generally given little consideration in site planning.

Trees and soil may be stripped from a site months or years before a permit is sought for a development project, limiting options and adding to the expense for making the ultimate development of a barren site environmentally sound and aesthetically pleasing.

developer of the land have only limited, expensive options for making the ultimate development of such a site environmentally sound and aesthetically pleasing.

Our laws don't adequately protect urban and community tree resources from development...



The ordinances of most Rhode Island communities offer limited recognition of the public interest in private tree resources affected by development.

Tree resources lack the level of legal protection accorded other important natural resources.

Perhaps it is because trees appear so ubiquitous that the public interest in trees is reflected less in state and local law than other natural resources. Under state law, trees on private lands are considered private property. Although they may be providing significant benefits to the community, there is only limited legal recognition of the public's interest in the continued enjoyment of such benefits.⁴ State statutes set penalties for cutting trees without permission of the landowner and for destruction of woodlands by arson, but erect no significant obstacles to rightful owners of trees desiring to remove trees from their property.⁵ State law requires that commercial cutting operations on tracts of five acres be registered with DEM and adhere to best management practices.⁶

Similarly, trees on private lands are generally not protected by local ordinances from cutting or clearing. Only about half of Rhode Island municipalities have requirements relative to tree resources in their subdivision or zoning ordinances. Most of these requirements address planting of new trees during development, with the number of trees planted generally left to the discretion of the planning board. Some ordinances require the planting of trees only "where needed."

4 The major exception is forested wetlands, which are protected by state statute and regulation.

5 [RI General Laws § 11-44-2 et.seq.](#) [RI General Laws § 11-4-7.](#)

6 [RI General Laws § 2-15-1 et.seq.](#)

Absent any standards, replacement of trees may be quite minimal. As few communities give incentives for open space or compact style development, options for flexible development siting to avoid impact on trees are usually limited. No Rhode Island community has land development standards similar to those gaining favor in rapidly-urbanizing areas of the country (Atlanta, Seattle, and Washington, DC areas). Such ordinances include tree protection policies, canopy maintenance standards, and/or numerical tree replacement formulas to insure that new development projects retain a prescribed level or density of tree coverage within a site while allowing flexibility between existing tree preservation or replacement. Establishing such canopy coverage standards helps insure that new development does not overwhelm the ability of the forest to operate as “green infrastructure,” providing environmental benefits for both current and new residents.

Land development regulations seeking to protect tree resources need to be carefully crafted to avoid conflicting with existing state laws, such as the Right to Farm Act, or infringing upon the legitimate rights of private landowners. Communities also need to guard against the miss-application of regulations intended to control land development to the detriment of the economic viability of commercial forest operations that actually help to conserve rural forest lands.

We don’t invest sufficiently in trees...

The sums devoted by most public budgets to maintenance and enhancement of community tree resources range from minimal to woefully inadequate. Only one-third of Rhode Island communities invest the amount recommended by national benchmarks.

Although the state passes through federal grants to the Rhode Island Tree Council and to communities, the State’s own investment in urban and community tree resources is minimal.

Tree conservation or in-kind replacement formulas are generally not required of new private development in Rhode Island communities.

Ordinances seeking to protect tree resources must be carefully crafted and applied to avoid impacting the viability of commercial forest operations that actually help to conserve rural forest lands.

State resources devoted to urban and community forestry are essentially limited to expenditures by the DEM's Division of Forest Environment to support the Urban and Community Forestry Program Coordinator and to provide management services for forest landowners. State agencies also spend small parts of their operating budgets on tree maintenance (pruning, removal, etc.) that is incidental to landscape maintenance for their facilities (parks, highway right-of-ways, buildings, etc.).

Despite the many economic values of trees, most communities underinvest in sustaining and enhancing their forest infrastructure.

In terms of capital funding, state recreation and open space bond funds are made available periodically to assist communities (up to 75 percent of the costs) in purchasing land as greenspace and greenways, including public town forests, and to support (50 percent of the costs) tree planting in conjunction with local park and recreation facility development projects. State funds also pay up to 20 percent of the costs for the landscaping (including trees) of new or improved transportation facilities. While these contributions are not inconsequential, community forest management is not their primary purpose.

With a few notable exceptions, the majority of Rhode Island communities appear to regard capital and operating expenditures for trees as a luxury, rather than an investment in the community's infrastructure. Indeed, municipal investments in trees seem to be regarded as so unimportant that they are not systematically tracked on a regular basis. The last attempt, by DEM's Division of Forest Environment in 1994, found that, when communities budget for trees at all, it is mostly for tree removal and emergency pruning as part of their Public Works or Parks operating budgets.⁸

In terms of capital expenditures for replacing and expanding tree resources, the overwhelming majority of communities rely upon external funding sources---America the Beautiful or Community Development Block Grants---to support tree planting programs.

8 Payton, B. "1994 Municipal Needs Assessment". (unpublished survey data)

Overall, counting funds spent from all sources, only one-third of Rhode Island's municipalities were found to be spending at least \$2 per capita—the benchmark recommended for a viable local effort by the National Arbor Day Foundation's Tree City USA Program—on community tree resources and programs in 1994.

Two-thirds of Rhode Island communities budget less for trees than the \$2/capita standard recommended by the National Arbor Day Foundation's Tree City USA program.

Several notable exceptions to this pattern are the urban communities that have developed a sustaining municipal tree program. Newport's budget is \$178,000 for 1998-9, a level of \$7.40 per capita. Providence also regards trees as a priority, investing a total of \$4 per capita (\$625,000) in tree resources in 1996 (this includes contributions from the Mary Elizabeth Sharpe Street Tree Endowment—see Part Four). East Providence also makes a substantial commitment, budgeting approximately \$125,000/year for its program. Warwick and South Kingstown have also increased their investments in tree resources, making \$20,000-\$80,000 local capital commitments to planting and maintenance programs in recent years.

Without proper maintenance, urban trees are more susceptible to stress, disease, and decline.

The comments of tree wardens at a recent workshop attests to the inadequacy of local resources for tree management. One community's warden cited a backlog of three years for "non-emergency" tree maintenance.⁹ Another spoke of taking down 120 trees per year, while having resources to plant around 30. Still another takes down about 60 trees per year and plants about 30. These removal/replacement comments are particularly telling, in view of a state law *mandating* replacement of trees cut on public property on an equivalent diameter basis.

The problem with not investing sufficiently in trees is that we lose them, and their public benefits prematurely and (unless we replace them) permanently. Urban street trees, in particular, are



9 Remarks of municipal tree wardens from East Providence, Barrington, and Warren, RI. RI Tree Council Tree Stewards Education Workshop. June 17, 1998. Bristol, RI.

A 1998 survey of over 200 urban forest managers found the following threats to the health of the northeast region's urban forests:

- **Lack of care and maintenance**
- **Environmental stress**
- **Insects and diseases**
- **Improper site or species selection**
- **Lack of species diversity**
- **Improper planting techniques**
- **Old age**



more susceptible to stress, disease, and premature decline if they are not properly maintained with a program of fertilization, pruning, and irrigation when needed. A recent urban forest health assessment completed by over 200 urban forest managers from across the Forest Service's northeast region.¹⁰ The survey found that only 23% rated the overall health of their urban forest resources as *excellent* or *good*; 27% rated urban health as *fair*, and 16% ranked the health of the urban forest they were responsible for as *poor*. The most frequently-cited problems identified included: "lack of tree care and maintenance," urban environmental stressors," "insect and disease pests," "improper species/site selection," "lack of species diversity," "improper planting techniques," and the "old age of urban forests."

Deferred tree resource maintenance is a concern not only for urban forest managers; but also for municipal governments, as it creates liability for communities if hazardous trees or limbs are left unattended. Unpruned street trees may also obscure vision along roadways, constituting a hazard.

Communities need not shoulder the entire burden of street tree planting and maintenance (indeed, the best programs involve neighborhood residents who benefit most from the trees as volunteer stewards); but it is essential that communities contribute resources for supplies, equipment, and staff to organize and direct such efforts.

Pressed with increasing costs for existing services, mandates for new programs, and public demands for fiscal austerity, it is not surprising that Rhode Island governments tend to look the other way when it comes to maintaining and enhancing their green infrastructure. Trees are abundant, they (falsely) appear to be self-maintaining; and until they are gone, no one seems to miss them.

¹⁰ Pokorny, J.D. Pp. 7-8.

Supplementing the sums set aside by state and local governments are federal grants and investments made in tree maintenance by private entities, including utilities. Although long cast as having a negative impact on tree resources, utilities make significant investments in street tree maintenance and can be important allies of local tree programs. Newport, Middletown, and Pawtucket have worked out arrangements with Eastern Utilities Co.--the local electric utility—under which the company pays for replacement trees when it takes down trees that are hazardous to its overhead wires.

Private utility companies can be important allies of local tree programs, bringing significant resources for street tree management and replacement.



The bottom line... We are losing our urban and community forests

Rhode Island’s urban and community forests are declining, and the public values they provide are eroding. Unless we better understand, plan for, legally protect, and invest in the management of urban and community forest resources, the state’s tree resources will continue to erode, and 21st century Rhode Island will be a significantly less green place.

Across the state we’re cutting or clearing more trees than we plant

Our communities will lose more of the grace and charm that trees provide. We will continue to diminish the water pollution abatement, air pollution mitigation, runoff control, noise attenuation, and other environmental services that trees provide, and will have to substitute expensive, engineered solutions to these problems. We will pay more than we should to heat and cool our buildings. We will have fewer shady places to sit under on hot summer days. Our city streets will be hotter. Familiar places will seem less familiar... our roots to the past less solid.

Losses big and small, a price to the pocket, a piece of the soul of the place. We can avoid these losses if we are determined.



Part Six:

**Urban and Community Forestry
Goal, Policies, and Strategies for
Rhode Island**

Rhode Island is a forest state as well as an ocean state. Community forests and urban trees are critical to Rhode Island’s future. The state will retain and restore tree resources necessary to insure the highest level of environmental integrity and quality of life for its citizens.

A Vision for Rhode Island’s Urban and Community Forests

In 21st century Rhode Island, urban and community forests flourish. Forest resources underpin the state’s verdant ecological tapestry, and support its vibrant economy. Tree resources constitute a “green” infrastructure for cities and towns, providing crucial environmental services and enriching the lives of all Rhode Islanders.

Shaded streets and emerald parks add to the allure of revived cities. Trees’ capacities to shelter, buffer, absorb, and beautify are fully realized. Greenway corridors---fingers of vegetation both narrow and wide---permeate the built landscape, part of a statewide network linking city to countryside, and lacing communities together. Beyond the cities, the land is definitively rural; woodlands comprise a “working” landscape and separate distinctive villages. The integrity and economic viability of large forest tracts is assured, and forested watersheds purify water for drinking, offer habitat for wildlife, and provide places for public relaxation and recreation.

Rhode Islanders revere trees as links across generations. They understand the needs of trees and value community forests for the myriad functions they resiliently provide. People respect

trees and appreciate their pivotal role in beautifying the state's communities and countryside. Having figured out how to build what it needs while preserving forests and protecting trees, 21st century Rhode Island is an emerald state---vibrant in the green regalia of its urban and community forests.

The major goal for urban and community forestry seeks to stabilize the erosion of urban and community forests, while recognizing that some fluctuations in forest land coverage within communities is both unavoidable, and necessary.

Goal, Policies, and Strategies for Urban and Community Forests

Toward achievement of this vision, Rhode Island will pursue the following major goal, policies, and strategies. The major goal for urban and community forestry seeks to stabilize the erosion of urban and community forests, while recognizing that some fluctuations in forest land coverage within communities is both unavoidable, and necessary. Nonetheless, the goal establishes a tangible objective for the state and its communities to work towards.

The plan goal, and each municipality's role in attaining it, should be considered in light of the recommendation of a national urban forestry group, American Forests, that urban metropolitan areas retain or attain an overall 40 percent tree canopy coverage (and higher in rural areas), in order to insure that a region's tree resources retain their capacity to carry out key environmental functions.

Following the goal, guidelines are presented for how Rhode Island communities might reasonably manage their forest land cover in the future. These guidelines are accompanied by tables illustrating the potential changes in forest land cover acreage if communities adhere to the guidelines.¹

Programatic benchmarks, established by the Department of Environmental Management for its urban and community programs in Rhode Island are included in the plan to help communities see how their level of effort compares with other communities.

¹ While the *forest land cover* figures used in the tables are not comparable to *tree canopy coverage* statistics used in other regions (such data are not yet available for Rhode Island); they are nonetheless felt to be useful for communities that wish to examine and plan for, in a quantitative sense, the role of trees in their future landscapes. The land cover data should be used, however, with the understanding that they understate actual tree canopy coverage, particularly for the more urbanized communities.

Policies are established for use in evaluating future plans, programs, projects, and activities as they affect tree resources. Policies established herein must be reflected in future updates or revisions of local comprehensive plans.

Strategies are more specific actions recommended to guide future initiatives of public and private entities toward achievement of the goal and vision of this plan.

An implementation matrix designating entities to be involved in effectuating the recommended strategies concludes the plan.

Table 6
Forest Land Coverage by City and Town, 1988

Major Goal: Sustainable forest and tree resources

To guarantee that vibrant and productive urban and community forests are a fundamental component of Rhode Island's future landscape, and to maximize the benefits that urban and community forests provide as "green" infrastructure, the State of Rhode Island will seek to stabilize overall forest cover at or near the present level, and gradually repair the forest canopies of urbanized areas to the level recommended for proper ecological functioning.

Forest Land Cover Guidelines

Through the application of urban and community forestry principles, land protection and greenway initiatives, and support for sustainable commercial forestry and tree-friendly development practices; Rhode Island and its communities should seek to manage the state's urban and community forests as follows:

- *the state as an entirety should seek to maintain forest land cover at approximately 55 percent of total land area through the year 2020.*
- *communities having 50 percent or higher forest land cover in the 1995 land use survey, should seek to avoid a more than 2 percent decrease below their 1995 baseline of forest land cover through the year 2020.**
- *communities having 20-49 percent forest land cover in the 1995 land use survey, should seek to increase their forest land cover by 4 percent over the 1995 baseline by the year 2010, and by 8 percent over the 1995 baseline by 2020.**
- *communities having less than 20 percent forest land cover in the 1995 land use survey, should seek to increase their forest land cover by 2 percent over the 1995 baseline by 2010, and by 5 percent over the 1995 baseline by 2020.**

* Including forested wetlands. A Land Use Survey is currently underway for Statewide Planning Program/RIGIS, based upon 1988 methodology and 1995 aerial photography. Anticipated data availability: March, 1999.

Table 6.1 provides the latest available forest land cover data for Rhode Island communities and guidelines for the future. Table 6.2 illustrates the changes in forest land cover statewide and by community that could result by the years 2010 and 2020 if the guidelines presented above are adhered to.

Setting challenging guidelines directly tied to forest land coverage reflects a new, performance-based approach to goal setting. Having quantitative guidelines allows the state, individual communities, and citizens to assess progress toward the forest vision for Rhode Island, and to adjust strategies and programs accordingly. Measuring progress towards the goal will require the state and communities to devise a new way of thinking about tree resources. With numerical guidelines in mind, tree resources may be seen less as a limitless, expendable commodity that can be ignored, and more as a renewable resource that must be properly managed. State land use and forest survey methods will also have to be refined to encompass better tracking of canopy coverage statistics. Communities will need to embrace more sophisticated Geographic Information System (GIS)-based tree inventories to monitor their forest land coverage and to model future canopy coverage including the “grow-out” potential of newly-planted trees.

This plan’s vision, goal and guidelines, as future objectives, should be periodically revisited and adjusted over time. This plan should be updated within a decade so that Rhode Islanders are able to reassess whether its vision, goal, and guidelines remain cogent and realistic.

Urban and Community Forestry Program Benchmarks

Attainment of a sustainable forest goal for the state will be largely dependant upon the support that Rhode Island's communities provide for protection and enhancement of tree resources. For this reason, the plan establishes benchmarks for continuing the growth and development of local tree program efforts. Sound local programs that adequately plan for, inventory, legally protect, invest in, maintain, and expand public tree resources, and that encourage a similar commitment on the part of the private sector for private trees in the community are essential to long-term forest sustainability.

Program benchmarks reflect criteria of the U.S. Forest Service's Performance Measurement Accountability System (PMAS) used to assess state and community progress in forestry programs, including urban forest management. Assessment of community program status is accomplished by DEM and reported annually to the Forest Service.

Program Level Criteria

Sustained: includes communities having an organized and functional forestry program providing continuity, planning, awareness, support, and a budget; and requiring infrequent involvement by federal or state forestry agencies.

Developmental: includes communities that are pursuing activities to improve the overall health of their community forests, including conducting an inventory, preparing a maintenance plan, or pursuing adoption of policy and regulations for tree planting, maintenance, and protection.

Formative: includes communities that have decided to start an urban forestry program, and are working to establish tree boards, organize volunteer efforts, hold discussions with community leaders, and conduct a preliminary assessment of community forest resources.

Project: includes communities involved only with specific urban forestry efforts such as an Arbor Day tree planting, or a one-time grant. Such efforts generally do not lead to a long-term investment.

Non-participatory: includes communities having no known involvement in urban and community forestry.

TABLE 6.3 Rhode Island Urban and Community Forestry Program Level Benchmarks							
PROGRAM LEVEL[‡]	Number of Rhode Island Communities Attaining Specified Program Level						
	1997 actual*	1998 actual*	1999 target	2000 target	2001 target	2002 target	2003 target
Sustained	2	3	3	4	5	6	6
Developmental	3	5	7	7	10	9	11
Formative	8	11	12	14	13	15	17
Project	12	14	12	15	12	10	6
Non-participatory	15	7	6	0	0	0	0

*Source: RIDEM, DFE assessment, based on 40 communities, including Narragansett Indian Tribe.

[‡] Program levels defined by U.S. Forest Service – See definitions above table.

In addition to the existing PMAS Program criteria identified above, communities should endeavor to establish additional targets for self-evaluating their performance and improvement in community forestry efforts. Examples of such criteria might include:

- annual expenditures per capita on urban/community forestry program.
- annual tree planting levels as percentage of tree removals and/or available planting locations.
- annual health/condition assessment of targeted percentage of public tree stock.
- annual percentage completion (or update) of targeted percentage of inventory of public tree stock.
- annual progress on mitigation of tree hazards/maintenance needs identified through inventory/assessment of public tree stock.

Policies and Strategies

(See also relevant policies of the Land Use Policies and Plan, Forest Resource Management Plan, and Greenspace and Greenways Plan Elements of the State Guide Plan).

GENERAL

G1 Carry out recommended policies. Seek a higher profile for the protection and management of urban and community forest resources in public and private community planning, development, capital investment and infrastructure management decisions.

1. *Develop and maintain a comprehensive statewide urban and community forestry program to encourage the preservation, protection, and planting of trees on public and private lands.*

G2 Include urban and community forests in the state's planned greenway network.

1. *Plan community-wide greenway systems connecting town forests, watersheds, riparian (river/stream/wetland) corridors, wildlife habitats, and woodland parks, refuges, and recreation areas.*
2. *Protect significant forest resources through acquisition programs, donations, and public dedication requirements.*
3. *Retain vacant publicly-owned land, including excess highway rights-of-way that have open space value.*

G3 Increase the legal protection accorded to tree resources under state and local laws.

1. *Adopt and enforce community tree ordinances regulating the planning, planting, maintenance, and removal of trees on public property.*
2. *Adopt zoning and land development standards requiring the consideration and appropriate protection of trees and vegetation during site planning and development, and insuring that tree resources will provide the environmental benefits and amenities for new development. Encourage standards requiring sustainable percentages of tree canopy coverage (that include the potential "grow-out" of new trees planted) for different development zones or types.*
3. *Enact local zoning and land development ordinances that offer incentives (density bonuses, flexibility in lot lines, etc.) for the clustering of development units in less sensitive portions of the site, and the reservation of sensitive and environmentally or culturally significant site features as open space.*
4. *Evaluate existing legislation relating to replacement requirements for public trees removed or destroyed. Consider amendments to this statute that would strengthen protection of public trees, including those along state highways in urban areas, but provide for replacement ratios to be based upon sound silvicultural practices and the capacities of state and local programs.*
5. *Consider the need for measures to limit pre-development land clearance activities that conflict with the local comprehensive plan or are not in accord with established "best management practices", and that are not covered by present subdivision/land development or zoning act definitions.*

PLANNING FOR URBAN AND COMMUNITY FORESTS

P1 Identify tree resources as a significant natural resource to be comprehensively planned for.

- 1. Maintain and periodically update this urban and community forestry element of the State Guide Plan.*
- 2. Update state comprehensive planning standards to explicitly require comprehensive planning for community tree resources, including inventorying, mapping, and policy development.*
- 3. Insure that local comprehensive plans provide adequate policies for protection and enhancement of urban and community tree resources.*
- 4. Coordinate planning for trees with all interested groups and agencies affected by or having an effect upon tree resources.*

P2 Track the status of Rhode Island's urban and community forest resources on a statewide and community level using GIS-based tools, land use surveys, and community tree inventories.

- 1. Develop community tree inventories, identifying the number, locations, types, and conditions of existing public trees, as well as vacant sites where trees could be added. Encourage communities to expand tree inventories to include canopy cover data.*
- 2. Insure that future state land use surveys include forest canopy coverage data.*
- 3. Utilize GIS-based software packages to establish the functions and benefits performed by community tree resources, and to assess the monetary contributions or value added by trees for use in community development decisions affecting trees.*

TREES AND DEVELOPMENT

D1 Encourage new development that respects forest resources as vital elements of the community and properly integrates trees to create high-quality living and working environments.

- 1. Retain or create greenbelts of forest and farmland as a demarcation between urban and rural areas of the state.*
- 2. Encourage new intensive growth to locate in established urban and suburban areas, and favor village-centered growth patterns in rural areas.*
- 3. Encourage greater use of open space subdivision and similar development forms to promote compact development patterns that retain a large percentage of open space and trees.*
- 4. Require evaluation and protection of natural features and cultural characteristics, including significant woodlands and special trees, as part of the review process for new subdivision and land development projects.*
- 5. Encourage tree-sensitive site design and development practices that include input from landscape and tree resource professionals to identify and protect significant tree resources.*
- 6. Encourage greater municipal expertise in landscape design and tree resource specialties to improve consideration of tree and landscape issues during the development review process.*
- 7. Encourage developers to include landscape and tree professionals in site development teams.*

D2 Integrate trees into the built environment to beautify, buffer, and shelter structures and facilities.

1. *Replace existing tree resources unavoidably lost during development to ensure that the community retains an optimal level of trees for ecological health.*
2. *Encourage the retention of trees in existing developed areas, and include an optimum level of trees and landscaping in all new development and redevelopment projects.*
3. *Plant new trees strategically to maximize the public benefits they provide while minimizing potential conflicts with infrastructure and public safety.*
4. *Utilize trees and vegetation to integrate and/or create an aesthetic transition between differing land uses.*
5. *Plant significant trees in prominent locations where space and other conditions permit.*
6. *Use street trees, landscaping, and container plantings to enliven and beautify downtowns, "Main Streets," and suburban shopping districts.*
7. *Use trees and landscaping to frame landmark structures or to highlight the graceful lines of historic buildings.*
8. *Develop design and landscaping standards for commercial and industrial areas that require the use of trees to soften the edges or break the lines of large, bulky buildings and to enliven monotonous facades.*
9. *Use trees and landscaping creatively to mask unsightly land uses or to buffer adjoining uses from the noise, odor, or other pollution of an "undesired" land use.*

D3 Maximize reliance on the environmental benefits (runoff control, pollutant attenuation, climatic sheltering) provided by trees as a means of minimizing future service costs of development.

1. *Establish flexible buffer requirements, enabling designers to employ vegetated zones of varying types, widths, and densities to effectively minimize pollution, noise, and other negative impacts on surrounding areas and uses.*
2. *Develop stormwater management systems that protect public and private property, maintain water quality, and minimize costs. Encourage the maximum reliance on retention of natural vegetation and the use of natural drainageways, vegetated buffers, swales and filter strips, and permeable paving surfaces to control surface runoff in new developments. Encourage adherence to the design principles of the R.I. Soil and Erosion Control Manual and the R.I. Stormwater Design and Installation Standards Manual for structural stormwater control.*
3. *Develop guidelines for tree planting or retention to shade and/or shelter buildings to minimize their energy consumption needs. Encourage the production of housing that is designed, sited, constructed, and landscaped to facilitate the conservation of energy and water. Consider the energy effects of proposed landscaping (or land clearance) when reviewing subdivision and land development projects.*

D4 Promote the development and management of transportation corridors as greenways.

1. *Identify design objectives (including landscaping and aesthetic goals) for arterials, gateways, major intersections, and collector streets in local comprehensive plans.*
2. *Encourage the use of vegetated buffers to reduce stormwater runoff from highways and parking lots, and to serve as noise barriers along high-volume highways and rail corridors.*
3. *Develop guidelines encouraging the establishment of street trees as buffers delineating pedestrian and vehicular portions of the right-of-way.*
4. *Enhance the livability of communities by designing roadways that include landscaping, parkway trees, compatible street furnishings, and scenic view corridors.*
5. *Require the reservation of planting strips of sufficient width for street trees in plans for new streets and roads approved under local subdivision and land development review provisions.*
6. *Encourage a high level of tree planting and landscaping in state construction projects.*

MANAGING TREES AS COMMUNITY INFRASTRUCTURE

I1 Recognizing that forests are a community asset, promote an increased commitment to public tree planting and maintenance.

1. *Insure that municipal budgets provide sufficient resources for proper maintenance and replacement of public tree resources. The National Arbor Day Foundation's recommended minimum investment level in community tree resources is \$2 per capita per year.*
2. *Retain and increase street trees in urban and suburban neighborhoods to enhance neighborhood aesthetics and character, and provide environmental benefits.*
3. *Support efforts by statewide and local tree groups to actively involve citizens in tree planting, care, and advocacy.*
4. *Promote greater use of the statutory provision allowing public trees to be planted on private land proximate to public ways, as a means to enlist private stewardship of public trees and provide flexibility in siting trees to avoid infrastructure conflicts.*
5. *Cooperate with utility companies and non-profit organizations to develop metropolitan tree planting programs that can reduce energy demands or peak loads, counter the increase in "greenhouse gases," and reduce the "urban heat island" temperature gradient.*
6. *Include tree planting and establishment care as a capital expenditure in new development, redevelopment, and major infrastructure projects.*
7. *Consider funding tree planting projects as a capital development expense under state and local open space and greenways bond issues.*
8. *Develop cost-recovery programs to insure that the costs of replacing public trees damaged or destroyed by negligent private actions are defrayed.*

I2 Maximize the impact of public tree planting. Plant the “right tree for the right place,” using trees appropriate to site conditions.

1. *Tailor the selection of tree species to the climate (sunlight, heat, soil, water availability, etc.), location (relative to structures, roadways, overhead and underground utilities, etc.), and benefits desired (shade, climatic buffering, runoff control, etc.) at the intended site. Avoid planting large trees under overhead wires.*
2. *Promote a diversity of species in tree planting programs and/or requirements.*
3. *Encourage a consistent annual rate of tree planting to foster an age-diverse tree population.*
4. *Work with the nursery industry and landscaping profession to insure that balled tree stock is supplied and installed with the root flare properly situated relative to the site grade, so as to facilitate the proper establishment and long-term vitality of newly-planted trees.*
5. *Encourage communities to designate qualified staff to assist in and oversee community and neighborhood tree planting efforts.*

I3 Guard against the unnecessary loss of community tree resources, especially historic and special trees.

1. *Develop an inventory and designation process for historic, landmark, and champion trees worthy of special status and protection as individual specimens. Recognize and provide technical assistance to private landowners who protect such trees, and develop standards for their protection through local tree and/or land development ordinances.*
2. *Design the placement of utilities, sidewalks, roadways, etc. to minimize the impact on existing and proposed trees, both within public rights-of-way and on private property. Coordinate utility, road,*

and sidewalk excavation projects with the local tree warden to minimize potential impacts of construction upon street tree resources.

3. *Seek custodial agreements to insure that any trees planted in new planned developments will be properly cared for.*
4. *Consider performance bonding for a one-year establishment period for newly-planted trees and up to three years for assurance of the health of existing trees designated to be “saved during construction.”*

I4 Encourage a high level of maintenance of community green infrastructure through adopted standards and adequate funding.

1. *Work to insure that each public tree planted is accompanied by a commitment for adequate long-term stewardship.*
2. *Develop tree inspection and maintenance standards for public trees to avoid hazardous conditions and minimize municipal liability for tree damages.*
3. *Require new development to contribute its fair share to the cost of providing and maintaining community infrastructure, including green infrastructure (parks, street trees, etc.).*
4. *Encourage partnerships with utility companies for replacement of street trees removed for overhead wire clearances.*
5. *Promote coordination in public right-of-way maintenance to insure that tree pruning and removal guidelines safeguard public health and welfare, enhance the vitality of community tree resources, and support community objectives for streetscape aesthetics.*
6. *Encourage the Department of Transportation to review and update its tree protection detail in construction specifications to enhance the protection of trees to be saved during projects. (Note that RIDOT specifications are used by many communities as basic standards for construction projects).*

TREES AND LOCAL ECONOMIES

EC1 Support sustainable forest-product industries as a local economic development strategy and a means to encourage retention of land in forests by private landowners.

1. *Support efforts by private forest landowners to sustainably manage commercially-productive forest lands by providing education, information, research and technical assistance.*
2. *Provide research, outreach and education, and technical assistance to promote the development of viable alternative forest products and services (recreation/nature study, decorative and medicinal plants, woodcrafting, specialty woods, etc.) as a local economic development strategy and means to support retention of forested land.*
3. *Amend the R.I. Farm, Forest and Open Space Act to provide greater incentives for forest landowners to retain their land in forests by establishing a uniform valuation methodology for lands enrolled in the program, and providing for a right of first refusal to the municipality on lands in the program.*
4. *Consider the economic and other impacts of proposed new laws, ordinances, and regulations to avoid threatening the economic viability of privately-held forest lands and increasing pressure for their development.*
5. *Insure that the comprehensive plans of rural communities recognize and support the practice of sustainable forestry and the role of forest products in the local economy. Designate areas for working forests in the comprehensive plan, and revise land development regulations to insure the continued viability and priority of working forest land use in designated areas.*
6. *Educate community officials and the public on the favorable impact which*

retention of land in forests and open space has on the costs of community services and local tax rates.

COMMUNICATING THE VALUES OF TREE RESOURCES TO THE PUBLIC

ED1 Increase public awareness of the benefits provided by community tree resources.

1. *Cooperate with statewide and local tree advocacy organizations to educate the public on the importance and values of trees and on proper tree stewardship practices.*
2. *Educate builders and developers on the beneficial effect that retention of mature trees or provision of greenways and other forest amenities provide in the marketing and valuation of new developments.*
3. *Educate the business community about the value of tree resources (landscaped grounds, street trees, and aesthetic surroundings) in creating a favorable environment for commerce.*
4. *Educate community officials on the positive contribution that urban and community forest resources make to the overall attractiveness and desirability of the state and its communities.*

ED2 Increase awareness of the techniques for protecting existing tree resources during construction and development activities.

1. *Work in partnership with groups such as the R.I. Public Works Association, R.I. Chapter, American Planning Association, and R.I. Builders' Association to educate public works officials, municipal planners, utility officials, builders and developers, and private landowners on construction practices and methods that minimize harm to trees.*

BUILDING PARTNERSHIPS FOR TREES

PR1 Forge partnerships with private groups supporting forest resource protection.

1. *Offer incentives to private forest landowners for protection and management of publicly significant forest and tree resources.*
2. *Cooperate with local land trusts and private land protection and conservation groups to protect significant forest resources.*

PR2 Involve the public and the private sector in efforts to plant and maintain community tree resources including public trees.

1. *Encourage neighborhood tree planting and stewardship programs modeled on efforts such as Providence's and Newport's neighborhood planting programs.*
2. *Seek support for endowment of a statewide tree stewardship fund modeled on the Sharpe and Raleigh trusts in Providence.*
3. *Cooperate with utilities in offering education and incentive programs to customers who install appropriate landscaping as effective means to lessen energy demand in existing buildings.*

TABLE 6.1

RHODE ISLAND URBAN AND COMMUNITY FOREST COVER: STATUS

Forested Land as Percentage of Total Land Area by Municipality, 1988

Arrayed Min. to Max.

City/Town	STATUS: % Forested	OBJECTIVES & GUIDELINES:
PROVIDENCE	3.52%	
CENTRAL FALLS	4.00%	
MIDDLETOWN	4.55%	11 communities
PAWTUCKET	4.80%	
NEWPORT	8.21%	Objective:
NORTH PROVIDENCE	10.54%	<i>Enhance canopy coverage*</i>
EAST PROVIDENCE	15.75%	
BARRINGTON	15.98%	Guidelines:
WARWICK	18.22%	Increase forest cover to 102% of b
NEW SHOREHAM	18.97%	Increase forest cover to 105% of b
WOONSOCKET	19.51%	
WARREN	20.35%	
PORTSMOUTH	20.96%	13 communities
BRISTOL	22.90%	
WEST WARWICK	23.33%	
CRANSTON	29.50%	Objectives:
NARRAGANSETT	36.22%	<i>Retain/enhance canopy coverage</i>
JAMESTOWN	36.69%	<i>Sustainable management of large</i>
LITTLE COMPTON	37.79%	
LINCOLN	43.73%	Guidelines:
WESTERLY	43.98%	Increase forested area to 104% of
CUMBERLAND	47.79%	Increase forested area to 108% of
JOHNSTON	48.06%	
NORTH KINGSTOWN	49.83%	
EAST GREENWICH	51.92%	
SOUTH KINGSTOWN	52.77%	15 communities
TIVERTON	54.66%	
SMITHFIELD	56.01%	Objectives:
NORTH SMITHFIELD	59.31%	<i>Retain/enhance canopy coverage</i>
CHARLESTOWN	65.18%	<i>Sustainable management of large</i>
COVENTRY	67.62%	<i>recognizing that land clearance an</i>
SCITUATE	71.24%	
HOPKINTON	72.10%	Guideline:
RICHMOND	73.12%	Retain 98% of baseline through 20
BURRILLVILLE	76.17%	
GLOCESTER	76.84%	
EXETER	81.13%	
FOSTER	81.74%	
WEST GREENWICH	83.35%	

includes forested wetlands

* Note: Most communities have not developed canopy coverage by 1988 and must use forested land area as surrogate statistic.

Source: 1988 RIGIS Land use/cover and wetlands datasets
R.I. Statewide Planning Program

AND GUIDELINES

baseline by 2010
baseline by 2020

*in developed areas/
forested tracts*

baseline by 2010;
baseline by 2020

*in developed areas/
forested tracts
and development will continue*

20.

baseline estimates or data,

Table 6.5

Rhode Island Urban and Community Forestry Plan IMPLEMENTATION PARTNERSHIP MATRIX

		Strategies (some abbreviated for space reasons)	Partnership necessary to effect strategy
POLICY G1		Carry out recommended policies. Seek a higher profile for the protection and management of urban and community forest resources in public and private community planning, development, capital investment and infrastructure management decisions.	
	1	<i>Develop and maintain a comprehensive statewide urban and community forestry program.</i>	General Assembly, Executive Office, US Forest Service, RIDEM, municipalities, private tree/forest resource advocacy groups
G2		Include urban and community forests in the state's planned greenway network	
	1	<i>Plan community-wide greenway systems.</i>	RIDEM, RI Greenways Council, municipalities, citizens
	2	<i>Protect significant forest resources through acquisition programs, donations, and public dedication requirements.</i>	RIDEM, RI Greenways Council, local planning boards, development community, citizens
	3	<i>Retain vacant publicly-owned land, including excess highway rights-of-way that have open space value.</i>	RIDOT, RISPP, State Prop. Comm., municipalities
G3		Increase the legal protection accorded to tree resources under state and local laws.	
	1	<i>Adopt and enforce community tree ordinances regulating the planning, planting, maintenance, and removal of trees on public property.</i>	Municipalities, private tree/forest resource advocacy groups, citizens
	2	<i>Adopt zoning and land development standards to protect trees and vegetation during site planning and development.</i>	RISPP, municipalities, private interest groups, citizens
	3	<i>Enact local zoning and land development ordinances that offer incentives for the clustering of development and the reservation of sensitive features such as open space.</i>	RISPP, municipalities, private interest groups, citizens
	4	<i>Consider amendments to existing legislation relating to replacement requirements for public trees removed or destroyed.</i>	General Assembly, Executive Office, private interest groups
	5	<i>Consider measures to limit pre-development land clearance activities.</i>	General Assembly, Executive Office, municipalities, private interest groups

Table 6.5 Continued

Rhode Island Urban and Community Forestry Plan IMPLEMENTATION PARTNERSHIP MATRIX

POLICY	Strategies (some abbreviated for space reasons)	Partnership necessary to effect strategy
P1	Identify tree resources as a significant natural resource to be comprehensively planned for.	RISPP, local planning boards, private tree advocacy groups, citizens
1	<i>Maintain and periodically update this urban and community forestry element of the State Guide Plan.</i>	RISPP, RIDEM, private tree advocacy groups
2	<i>Update state comprehensive planning standards to require comprehensive planning for community tree resources.</i>	RISPP
3	<i>Insure that local comprehensive plans provide adequate policies for protection and enhancement of urban and community tree resources.</i>	RISPP
4	<i>Coordinate planning for trees with all interested groups and agencies affected by or having an effect upon tree resources.</i>	RISPP, RIDEM, private tree advocacy groups
P2	Track the status of Rhode Island's urban and community forest resources on a statewide and community level.	
1	<i>Develop community tree inventories and encourage communities to include canopy cover data</i>	Municipalities
2	<i>Insure that future state land use surveys include forest canopy coverage data.</i>	RISPP, RIGIS
3	<i>Utilize GIS-based software packages to establish the functions and benefits performed by community tree resources.</i>	Municipalities
D1	Encourage new development that respects forest resources as vital elements of the community and properly integrates trees to create high-quality living and working environments	
1	<i>Retain or create greenbelts of forest and farmland as a demarcation between urban and rural areas of the state</i>	RISPP, RIDEM, RIGC, RIALPC, RIWRB, municipalities, private land protection organizations & interest groups, citizens
2	<i>Encourage new intensive growth to locate in established urban and suburban areas, and favor village-centered growth patterns in rural areas.</i>	RISPP, municipalities, private interest groups, development community

Table 6.5 Continued

Rhode Island Urban and Community Forestry Plan IMPLEMENTATION PARTNERSHIP MATRIX

POLICY	Strategies (some abbreviated for space reasons)	Partnership necessary to effect strategy
D1 (cont'd.)	3 <i>Encourage greater use of open space subdivision and similar development forms to promote compact development patterns.</i>	RISPP, RIDEM, municipalities, private interest groups, development community
	4 <i>Require evaluation and protection of natural features and cultural characteristics, including significant woodlands and special trees.</i>	Municipalities, citizens
	5 <i>Encourage tree-sensitive site design and development practices that include input from landscape and tree resource professionals to identify and protect significant tree resources.</i>	Municipalities; landscape, design, and forest resource professionals; builders & developers
	6 <i>Encourage greater municipal expertise in landscape design and tree resource specialties to improve consideration of tree and landscape issues during the development review process.</i>	Municipalities; landscape, design, and forest resource professionals, citizens
	7 <i>Encourage developers to include landscape and tree professionals in site development teams.</i>	Municipalities; landscape, design, and forest resource professionals, citizens
D2	Integrate trees into the built environment to beautify, buffer, and shelter structures and facilities.	
	1 <i>Replace existing tree resources unavoidably lost during development.</i>	State and municipal agencies, builders & developers
	2 <i>Encourage the retention of trees in existing developed areas, and include an optimum level of trees and landscaping in all new development and redevelopment projects.</i>	Municipalities, builders & developers
	3 <i>Plant new trees strategically to maximize the public benefits they provide while minimizing potential conflicts with infrastructure and public safety.</i>	Municipalities, landscape professionals, builders & developers, tree advocacy groups, citizens
	4 <i>Utilize trees and vegetation to integrate and/or create an aesthetic transition between differing land uses.</i>	Municipalities, landscape professionals, builders & developers

Table 6.5 Continued

Rhode Island Urban and Community Forestry Plan IMPLEMENTATION PARTNERSHIP MATRIX

POLICY		Strategies (some abbreviated for space reasons)	Partnership necessary to effect strategy
D2 (cont'd.)	5	<i>Plant significant trees in prominent locations where space and other conditions permit.</i>	Municipalities, landscape professionals, builders & developers, tree advocacy groups, citizens
	6	<i>Use street trees, landscaping, and container plantings to enliven and beautify downtowns, "Main Streets," and suburban shopping districts.</i>	Municipalities, landscape professionals, builders & developers, tree advocacy groups, citizens
	7	<i>Use trees and landscaping to frame landmark structures or to highlight the graceful lines of historic buildings.</i>	State and municipal agencies, landscape professionals, builders & developers, tree advocacy groups, citizens
	8	<i>Develop design and landscaping standards for commercial and industrial areas that require the use of trees to soften the edges or break the lines of large, bulky buildings and to enliven monotonous facades.</i>	Municipalities, landscape professionals, builders & developers, tree advocacy groups, citizens
	9	<i>Use trees and landscaping creatively to mask unsightly land uses or to buffer adjoining uses from the noise, odor, or other pollution of an "undesired" land use.</i>	Municipalities, landscape professionals, builders & developers, tree advocacy groups, citizens
D3		Maximize reliance on the environmental benefits provided by trees as a means of minimizing future service costs of development.	
	1	<i>Establish flexible buffer requirements...to employ vegetated zones of varying types, widths, and densities to effectively minimize pollution, noise, and other negative impacts.</i>	RIDEM, RICRMC, municipalities, design and landscape professionals
	2	<i>Develop stormwater management systems that ...encourage the maximum reliance on retention of natural vegetation and the use of natural drainageways, vegetated buffers, swales and filter strips, and permeable paving surfaces to control surface runoff in new developments.</i>	RIDEM, RICRMC, municipalities, design and landscape professionals
	3	<i>Develop guidelines for tree planting or retention to... minimize ... energy consumption ... Consider the energy effects of proposed landscaping (or land clearance) when reviewing subdivision and land development projects</i>	Municipalities, design and landscape professionals, utility companies, builders & developers

Table 6.5 Continued

Rhode Island Urban and Community Forestry Plan IMPLEMENTATION PARTNERSHIP MATRIX

POLICY	Strategies (some abbreviated for space reasons)	Partnership necessary to effect strategy
D4	Promote the development and management of transportation corridors as greenways.	
	1 <i>Identify design objectives (including landscaping and aesthetic goals) for arterials, gateways, major intersections, and collector streets in local comprehensive plans.</i>	RISPP, RIDOT, municipalities, citizens
	2 <i>Encourage the use of vegetated buffers to reduce stormwater runoff from highways and parking lots, and to serve as noise barriers along high-volume highways and rail corridors.</i>	RIDOT, RIDEM, RICRMC, RIGC, municipalities
	3 <i>Develop guidelines encouraging the establishment of street trees as buffers delineating pedestrian and vehicular portions of the right-of-way.</i>	RIDOT, RIGC, municipalities, design professions, private interest groups
	4 <i>Enhance the livability of communities by designing roadways that include landscaping, parkway trees, compatible street furnishings, and scenic view corridors.</i>	RIDOT, RISHB, municipalities, design professions, private interest groups
	5 <i>Require the reservation of planting strips of sufficient width for street trees in plans for new streets and roads approved under local subdivision and land development review provisions.</i>	Municipal planning boards and public works departments
	6 <i>Encourage a high level of tree planting and landscaping in state construction projects.</i>	State and local governments, citizens
I1	Recognizing that forests are a community asset, promote an increased commitment to public tree planting and maintenance.	
	1 <i>Insure that municipal budgets provide sufficient resources for proper maintenance and replacement of public tree resources.</i>	City and town councils
	2 <i>Retain and increase street trees in urban and suburban neighborhoods.</i>	State and local governments, private tree advocacy groups, citizens
	3 <i>Support efforts by statewide and local tree groups to involve citizens actively in tree planting, care, and advocacy.</i>	State and local governments, private tree advocacy groups, citizens

Table 6.5 Continued

Rhode Island Urban and Community Forestry Plan IMPLEMENTATION PARTNERSHIP MATRIX

POLICY	Strategies (some abbreviated for space reasons)	Partnership necessary to effect strategy
I1 (cont'd.)	4 <i>Promote greater use of the statutory provision allowing public trees to be planted on private land proximate to public ways, ... to avoid infrastructure conflicts.</i>	Municipal governments, private tree advocacy groups, citizens
	5 <i>Cooperate with utility companies and non-profit organizations to develop metropolitan tree planting programs.</i>	Municipal governments, utility companies, private tree advocacy groups
	6 <i>Include tree planting and establishment care as a capital expenditure in new development, redevelopment, and major infrastructure projects.</i>	State and municipal governments, private tree advocacy groups
	7 <i>Consider funding tree planting projects as a capital development expense under state and local open space and greenways bond issues.</i>	RIDEM, RIGC, municipal governments
	8 <i>Develop cost-recovery programs to insure that the costs of replacing public trees damaged or destroyed by negligent private actions are defrayed.</i>	State and local governments
I2	Maximize the impact of public tree planting. Plant the "right tree for the right place," using trees appropriate to site conditions.	
	1 <i>Tailor the selection of tree species to the climate, location, and benefits desired at the intended site.</i>	State and local governments, private tree advocacy groups, citizens' planting programs
	2 <i>Promote a diversity of species in tree planting programs and/or requirements.</i>	State and local governments, private tree advocacy groups, citizens' planting programs
	3 <i>Encourage a consistent annual rate of tree planting to foster an age-diverse tree population.</i>	State and local governments, private tree advocacy groups, citizens' planting programs
	4 <i>Work with the nursery industry and landscaping profession to insure that balled tree stock is supplied and installed with the root flare properly situated relative to the site grade.</i>	RIDEM, private tree advocacy groups, nursery and landscape professionals.

Table 6.5 Continued

Rhode Island Urban and Community Forestry Plan IMPLEMENTATION PARTNERSHIP MATRIX

POLICY	Strategies (some abbreviated for space reasons)	Partnership necessary to effect strategy
I2 (cont'd)	5 <i>Encourage communities to designate qualified staff to assist in and oversee community and neighborhood tree planting efforts.</i>	Municipalities, RIDEM, private tree advocacy groups, citizens
I3	Guard against the unnecessary loss of community tree resources, especially historic and special trees.	
	1 <i>Develop an inventory and designation process for historic, landmark, and champion trees worthy of special status and protection as individual specimens. Recognize and provide technical assistance to private landowners.</i>	Municipal governments, private tree advocacy groups, citizens
	2 <i>Design the placement of utilities, sidewalks, roadways, etc. to minimize the impact on existing and proposed trees. Coordinate utility, road, and sidewalk excavation projects with the local tree warden.</i>	State and local agencies, utility companies, private tree advocacy groups
	3 <i>Seek custodial agreements to insure that any trees planted in new planned developments will be properly cared for.</i>	Local planning boards
	4 <i>Consider performance bonding... for newly-planted trees and.... for ...existing trees designated to be "saved during construction."</i>	Local planning boards, local public works departments
I4	Encourage a high level of maintenance of community green infrastructure through adopted standards and adequate funding.	
	1 <i>Work to insure that each public tree planted is accompanied by a commitment for adequate long-term stewardship.</i>	Municipal governments, private tree advocacy groups
	2 <i>Develop tree inspection and maintenance standards for public trees to avoid hazardous conditions and minimize municipal liability for tree damages.</i>	State and local governments
	3 <i>Require new development to contribute its fair share to the cost of providing and maintaining community infrastructure, including green infrastructure (parks, street trees, etc.).</i>	Municipal governments, local planning boards, builders and developers

Table 6.5 Continued

Rhode Island Urban and Community Forestry Plan IMPLEMENTATION PARTNERSHIP MATRIX

POLICY	Strategies (some abbreviated for space reasons)	Partnership necessary to effect strategy
I4 (cont'd)	4 <i>Encourage partnerships with utility companies for replacement of street trees removed for overhead wire clearances.</i>	Municipal governments, private tree advocacy groups, utility companies
	5 <i>Promote coordination in public right-of-way maintenance to insure that tree pruning and removal guidelines safeguard public health and welfare, enhance the vitality of community tree resources, and support community objectives for streetscape aesthetics.</i>	Municipal governments, private tree advocacy groups, utility companies
	6 <i>Encourage the Department of Transportation to review and update its tree protection detail in construction specifications to enhance the protection of trees to be saved during projects. (Note that RIDOT specifications are used by many communities as basic standards for construction projects).</i>	State and municipal governments, private tree advocacy groups, citizens
EC1	Support sustainable forest- product industries as a local economic development strategy ... to encourage retention of land in forests by private landowners.	
	1 <i>Support efforts by private forest landowners to sustainably manage commercially-productive forest lands by providing education, information, research and technical assistance.</i>	RIDEM, URI-CE, municipal governments, private tree advocacy groups
	2 <i>Provide research, outreach and education, and technical assistance to promote the development of viable alternative forest products and services.</i>	RIDEM, URI-CE, municipal governments, private tree advocacy groups
	3 <i>Amend the R.I. Farm, Forest and Open Space Act to provide greater incentives for forest landowners to retain their land in forests.</i>	RI General Assembly and Executive Office, private interest groups
	4 <i>Consider the economic and other impacts of proposed new laws, ordinances, and regulations to avoid threatening the economic viability of privately-held forest lands...</i>	RI General Assembly and Executive Office, municipal governments, private interest groups

Table 6.5 Continued

Rhode Island Urban and Community Forestry Plan IMPLEMENTATION PARTNERSHIP MATRIX

POLICY		Strategies (some abbreviated for space reasons)	Partnership necessary to effect strategy
EC1 (cont'd)	5	<i>Insure that the comprehensive plans of rural communities recognize and support the practice of sustainable forestry and the role of forest products in the local economy...</i>	RISPP, municipal governments, private interest groups, citizens
	6	<i>Educate community officials and the public on the favorable impact which retention of land in forests and open space has on the costs of community services and local tax rates.</i>	RIDEM, RISPP, private interest groups
ED1		Increase public awareness of the benefits provided by community tree resources.	
	1	<i>Cooperate with statewide and local tree advocacy organizations to educate the public on the importance and values of trees and on proper tree stewardship practices.</i>	RIDEM, private tree advocacy groups
	2	<i>Educate builders and developers on the beneficial effect that retention of mature trees or provision of greenways and other forest amenities provide in the marketing and valuation of new developments.</i>	Private tree advocacy groups, builders and developers
	3	<i>Educate the business community about the value of tree resources... in creating a favorable environment for commerce.</i>	Private tree advocacy groups, business groups
	4	<i>Educate community officials on the positive contribution that urban and community forest resources make to the overall attractiveness and desirability of the state and its communities.</i>	Private tree advocacy groups, municipal governments, private interest groups
ED2		Increase awareness of the techniques for protecting existing tree resources during construction and development activities.	
	1	<i>Work in partnership ... to educate public works officials, municipal planners, utility officials, builders and developers, and private landowners on construction practices and methods that minimize harm to trees.</i>	Private tree advocacy groups, municipal governments, builders and developers, private interest groups

Table 6.5 Continued

Rhode Island Urban and Community Forestry Plan IMPLEMENTATION PARTNERSHIP MATRIX

POLICY	Strategies (some abbreviated for space reasons)	Partnership necessary to effect strategy
PR1	Forge partnerships with private groups supporting forest resource protection.	
	1 <i>Offer incentives to private forest landowners for protection and management of publicly-significant forest and tree resources.</i>	State and municipal governments, private tree advocacy groups, private interest groups, citizens
	2 <i>Cooperate with local land trusts and private land protection and conservation groups to protect significant forest resources.</i>	Municipal governments, private land protection organizations, private tree advocacy groups
PR2	Involve the public and the private sector in efforts to plant and maintain community tree resources including public trees.	
	1 <i>Encourage neighborhood tree planting and stewardship programs modeled on efforts such as Providence's and Newport's neighborhood planting programs.</i>	RIDEM, private tree advocacy groups, citizens
	2 <i>Seek support for endowment of a statewide tree stewardship fund modeled on the Sharpe and Raleigh trusts in Providence.</i>	State and municipal governments, private tree advocacy groups, citizens
	3 <i>Cooperate with utility companies in offering education and incentive programs to customers who install appropriate landscaping as effective means to lessen energy demand in existing buildings.</i>	State and municipal governments, private tree advocacy groups, utility companies

TABLE 6.4
Rhode Island Urban and Community Forestry Program
Selected Program Elements in Place and Community PMAS Status⁺, 1998

Community	Tree Board	Landscape Req'mts.	Tree Ordinance	Arbor Day Events	Advocacy Group	Tree Warden	PMAS Status
Barrington		●		●		●	P
Bristol		●	○			●	F
Burrillville		●		●		●	N
Central Falls						●	P
Charlestown		●	○			●	F
Coventry		●	○			●	F
Cranston		●	○	●		●	D
Cumberland		●				●	P
East Greenwich	○	●	○	●		●	F
East Providence	●	●	●	●		●	D
Exeter		●					N
Foster		●		●		●	P
Glocester	●	●	●	●		●	F
Hopkinton		●				●	N
Jamestown		●					N
Johnston						●	P
Lincoln						●	N
Little Compton						●	P
Middletown	●	●	●	●		●	D
Narragansett		●				●	P
New Shoreham		●				●	N
Newport	●	●	●	●	●	●	S
North Kingstown		●					F
North Providence				●			F
North Smithfield		●				●	P
Pawtucket	●	●	●	●		●	D
Portsmouth						●	N
Providence	●	●	●	●	●		S
Richmond		●					N
Scituate		●				●	P
Smithfield		●				●	P
South Kingstown		●	○	●	●	●	S
Tiverton		●				●	F
Warren			●			●	P
Warwick	○	●	●	●	○	●	D
West Greenwich		●				●	N
West Warwick		●					P
Westerly		●				●	P
Woonsocket		●				●	P
Narragansett Tribe							P

⁺ PMAS = US Forest Service *Performance Measurement Accountability System* (see page 6.7 for description)