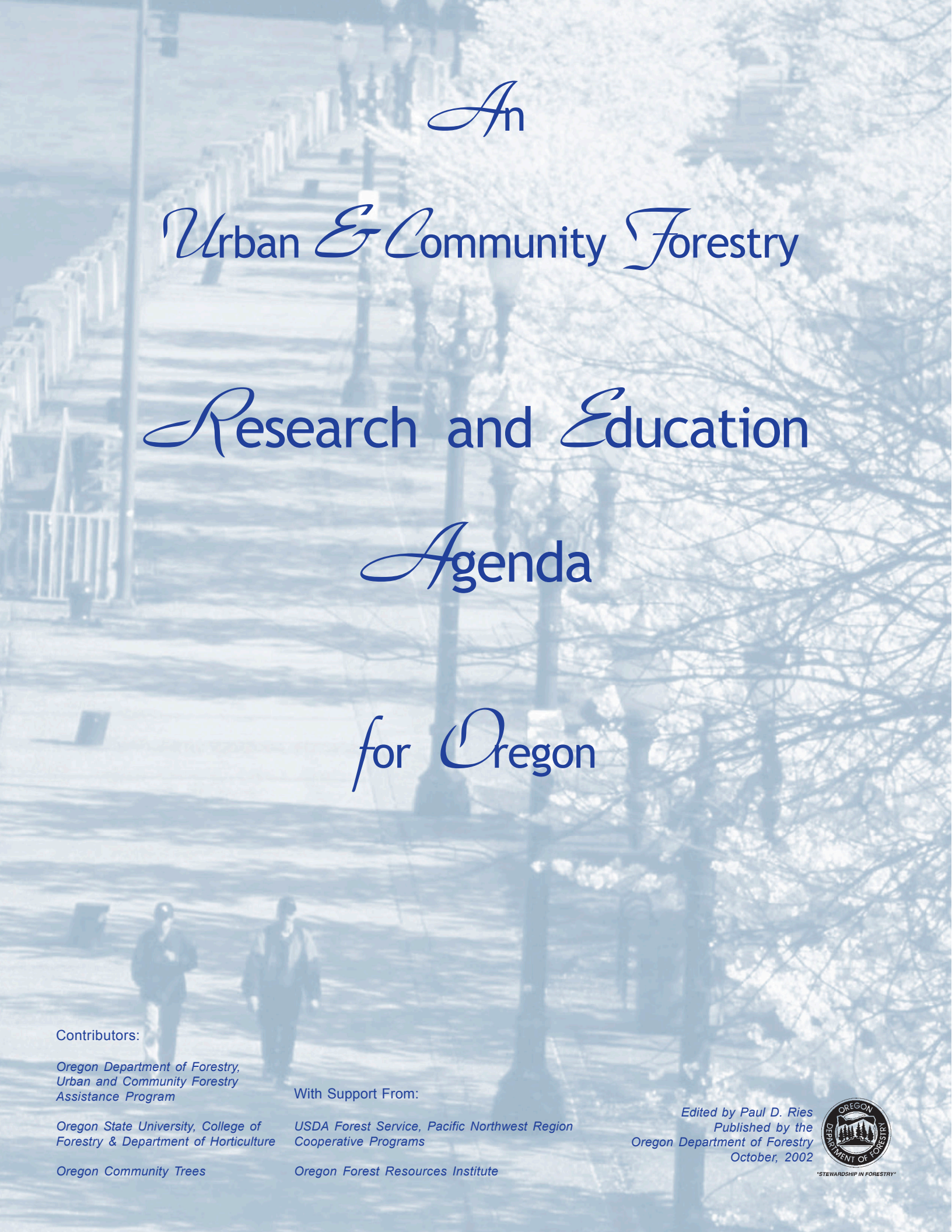

An Urban & Community Forestry Research and Education Agenda for Oregon

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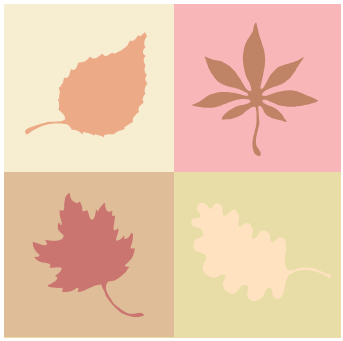
"STEWARDSHIP IN FORESTRY"

What's inside?



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EXECUTIVE SUMMARY

The trees and related vegetation within Oregon cities constitute an urban forest—a resource that when properly managed, provides myriad economic and environmental benefits while contributing to the quality of life for all residents. This publication, *An Urban and Community Forestry Research and Education Agenda for Oregon*, is designed to provide practitioners, researchers, policymakers, and potential funding organizations and agencies with a blueprint for the future to help address critical issues in Oregon communities through the management of our urban forests.

With 65 percent of all Oregonians now living in cities and towns, and with increasing land use controversies and growth management pressures, urban forestry issues are becoming paramount to our ability to maintain and enhance the quality of life of our cities. The need for research and education efforts to more effectively manage Oregon's urban forests, to prepare new professionals to enter the field of urban forestry, and to inform and educate citizens, organizations, and governments becomes more compelling with each passing year.

Cognizant of the value and importance of Urban and Community Forestry research and education, over 75 individuals representing a variety of agencies, organizations, and institutions, participated in a yearlong effort to identify, characterize, and prioritize the most important urban forestry research and education issues facing the state. The following action items reflect **research** and **education** steps necessary to confront the urban and community forestry issues facing Oregon over the next decade. Given the volume of work necessary to bring urban and community forestry research and education up to a level that will make an impact on public policy and the health of urban forests in the state, all of these items listed can be viewed as high priorities.

- **Develop research projects that quantify the environmental and economic values of green infrastructure**
- **Create an Oregon tree failure analysis team**
- **Conduct research into urban forest health threats**
- **Conduct research on native forest remnant conservation strategies**
- **Conduct research on stormwater management strategies**
- **Conduct research on riparian area standards for urban areas**
- **Conduct research into the environmental value of trees**
- **Research alternative codes/ordinances scenarios**
- **Conduct research on the economic benefits of the urban forest**
- **Develop interdisciplinary distance learning courses in urban forestry**
- **Incorporate an urban forestry component within the Master Gardener Training Program**
- **Create a Tree Steward Program**
- **Establish a college level introductory urban forestry class at Oregon State University**

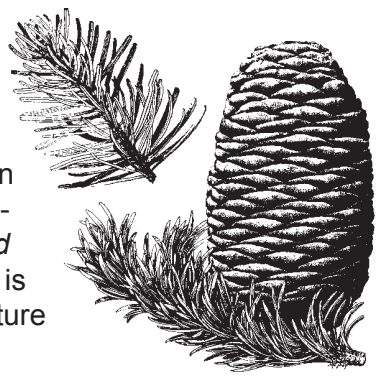
- **Require an urban forestry class for selected OSU College of Forestry undergraduate students**
- **Develop an urban forestry undergraduate major within the OSU College of Forestry**
- **Develop an educational effort to explain the value of the urban forest**
- **Facilitate tree information distributions for new home buyers**
- **Develop a tree planting "kit"**
- **Create a traveling tree pruning exhibit for libraries**
- **Facilitate tree board training**
- **Form a collaborative effort among state community colleges**
- **Establish a coordinated education effort aimed at policy makers to help them understand the value of trees**
- **Develop action plan for educating decision-makers and the public about the concept of green infrastructure.**

There are two key elements to implementing a plan of action as ambitious as this one—money and people. These recommendations require an investment of money, time, and talent. This *Agenda* proposes no new fee, tax, or revenue stream. It proposes that an investment be made in the quality of life in Oregon through the implementation of recommendations that can change Oregon's future for the better. Successful implementation of these items will require public and private financing, but it will be much more of an investment than an expenditure.

It should be remembered that the key to any good research project is the transfer of that information to practitioners. Without scientific research backing the information provided to the public, urban forestry researchers and educators will be unable to effectively communicate the benefits to them.

A well-organized statewide urban forestry research and education effort will have a positive impact on the health of our urban and community forests. No one agency or organization can carry the burden of fulfilling this *Agenda*. Partnerships are a virtual requirement in today's world, and this is especially true in a relatively young academic discipline such as urban forestry. Fortunately, there are many potential partners available to work on urban forestry issues in Oregon. The organizations and agencies that must play a vital role in fulfilling this *Agenda* include, but are not limited to, educational institutions, natural resource agencies, non-profit organizations, professional societies and trade organizations, and regional agencies or institutions. Crossing professional disciplines, state lines, and even academic and institutional boundaries will be necessary for this *Agenda* to become a reality.

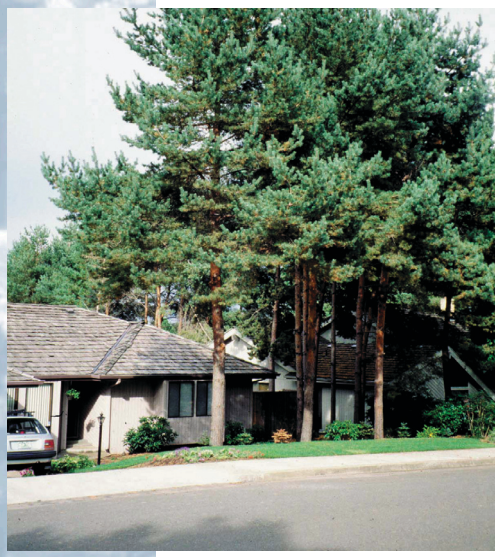
This *Agenda* was developed as a means to identify, characterize, prioritize, and publicize urban and community forestry research and education needs in the state of Oregon. The priorities listed in this publication have been based on an extensive needs assessment, lengthy discussions among urban and community forestry professionals, and the review of qualified researchers and educators. Working together, individuals and the groups they represent can make a significant difference in the future of our communities through fostering research and education efforts that enhance our quality of life through the planting, management, and care of our urban and community forests. *An Urban and Community Forestry Research and Education Agenda for Oregon* is offered as a first step down this path toward a more sustainable future for Oregon communities.



INTRODUCTION AND BACKGROUND

The trees and related vegetation within Oregon cities constitute an urban forest—a resource that when properly managed, provides myriad economic and environmental benefits while contributing to the quality of life for all residents. Through the establishment, care, and management of the urban forest, the benefits of having cleaner air, controlling stormwater runoff, maintaining healthy streams, attracting people to shop in downtown business districts, increasing property values, and increasing a sense of community livability can be realized.

The ability of a city to maximize urban forestry benefits such as economic development, environmental protection, social enhancement, and community livability is dependent in part on research and education. Basic and applied research provides the knowledge and tools necessary to effectively manage the urban forest. Education facilitates the development of future professionals, provides continuing education of existing professionals, and transfers technical knowledge to consumers, homeowners, and the general public. Without this interrelationship of science, practice, and information creating and applying new knowledge, our urban forests would not provide the benefits and services we rely upon.



Although society has been planting trees in cities as long as there have been cities, as a management strategy and an academic discipline, the study and understanding of urban and community forestry as a distinct field is relatively young. It wasn't until 1978 that state forestry agencies began developing programs that helped cities deal with urban forestry issues. Soon thereafter, colleges and universities began developing Urban and Community Forestry curricula, and a concerted effort to develop Urban and Community Forestry research projects began. Today, most major cities employ a city forester to provide professional management of their urban forests; many public universities grant degrees in urban forestry; and research scientists across the country are finding new and better ways to manage our nation's urban forest resources.

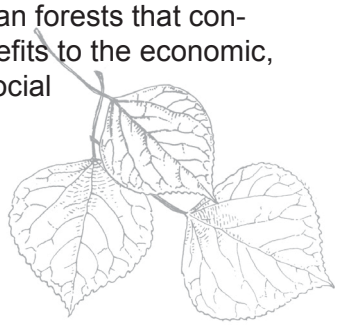
In 1991, the Oregon Department of Forestry (ODF) initiated an Urban and Community Forestry Assistance Program providing technical, financial, and educational assistance to cities and community organizations in order to promote healthy urban forests within Oregon's 240 incorporated cities. Between 1991 and 2001, ODF's staff of three professional urban foresters gave over 4,000 technical assists, provided more than 2,000 person-hours of continuing education credit, and managed over $1.5 million in grants that leveraged an additional $2.5 million in local expenditures. The program has been instrumental in raising the importance of urban forestry among city officials, non-profit citizen organizations, and the public.

While the state of Oregon has made great strides in improving the health of its urban forests, research and education in urban and community forestry has not been a high priority. In a heavily forested state like Oregon, most forestry research and education efforts focus on the rural forest and the traditional industries associated with it. This is not to suggest that the state should shift its focus from rural forestry to urban forestry; rather that it must strive to do both, and realize that the two are not mutually exclusive. In fact, some rural

forestry oriented research can be quite applicable to urban forestry. Dr. Alex Shigo's ground-breaking work on tree wounding that changed tree pruning practices had its origins in decades of research on logging damage. Rural forest insects and diseases do not automatically cease their destruction at the urban growth boundary. Wildfires on the rural-urban interface have threatened communities such as Bend, Jacksonville, Black Butte, Cave Junction, and many others. For two consecutive years, even Portland has witnessed an urban wildfire greater than an acre within its city limits. Clearly there is no perceptible line drawn dividing rural and urban issues.

With 65 percent of all Oregonians now living in incorporated cities and towns, and with increasing land use controversies and growth management pressures, urban forestry issues are becoming paramount to our ability to maintain and enhance the quality of life in our cities. The need for research and education efforts to more effectively manage Oregon's urban forests, to prepare new professionals to enter the field of urban forestry, and to inform and educate citizens, organizations, and governments becomes more compelling with each passing year.

Cognizant of the value and importance of Urban and Community Forestry research and education, over 75 urban forestry professionals representing a variety of agencies, organizations, and institutions, participated in a yearlong effort to identify, characterize, and prioritize the most important urban forestry research and education issues facing the state. This publication, *An Urban and Community Forestry Research and Education Agenda for Oregon*, is the culmination of that process. The *Agenda* is designed to provide practitioners, researchers, policy-makers, and potential funding organizations and agencies with a blueprint for the future to help address these critical issues. Implementing these recommendations will result in healthier urban forests that contribute increased benefits to the economic, environmental, and social well-being of Oregon communities.



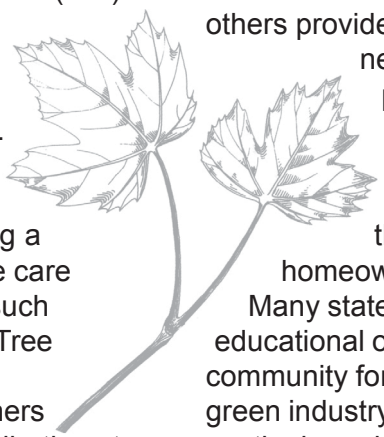
CURRENT URBAN & COMMUNITY FORESTRY RESEARCH AND EDUCATION EFFORTS IN THE UNITED STATES

Urban and Community Forestry research efforts are carried out by public agencies, major corporations, private companies, utility providers, colleges and universities, and non-profit organiza-tions. Since urban forestry research efforts began decades ago, researchers have illustrated that the trees in our cities provide extensive environmental benefits such as carbon dioxide exchange, a decrease in energy use, reduction in air pollution, and water quality improvements. On the economic side of the ledger, a healthy urban forest has been shown to be responsible for increased property values, attractive business districts that draw more shoppers, and higher occupancy rates in tree-shaded office parks. Social scientists have demonstrated that interaction with plants in urban settings helps reduce stress and anxiety, improves medical recovery and convalescence, contributes to greater job satisfaction and productivity, and enhances the quality of community life. Tree planting programs have served to project a visible sign of change and provide the impetus for other community renewal and action programs. Basic and applied research findings have made major contributions to the ability of professional urban foresters to maximize the benefits provided by urban forests.

The USDA Forest Service conducts urban forestry research at stations in Davis, CA, Syracuse, NY, and Chicago, IL. Research scientists at these facilities conduct urban forestry benefit-cost analyses, study air and water impacts of healthy urban forests, and identify social benefits of urban forests.

Research findings are employed to help practitioners efficiently maintain and restore urban ecosystems used by large segments of the U.S. population. This research includes studies that (1) assess the effectiveness of urban forest ecosystems in mitigating air pollution, slowing streamwater runoff rates and transpiring water; and (2) identify values of forests to urban populations. In addition, this research includes development of landscape design tools to reduce energy and water consumption, and reduce the risk of fire in the urban/wildland interface.

Faculty members at major U.S. universities conduct research on a variety of urban forestry related subjects. Non-profit professional organizations such as the International Society of Arboriculture (ISA) also facilitate urban forestry research through support of the Tree Research Education and Endowment Fund (TREE Fund). The TREE Fund (formerly the ISA Research Trust) provides grants to researchers addressing a variety of urban forestry and tree care questions. Private companies such as HortScience Inc., the Davey Tree Expert Company, Bartlett Tree Expert Company, ACRT, and others have also made significant contributions to urban forestry research.



The practical application of urban forestry principles takes place through formal educational programs, outreach education, and technology transfer. Many U.S. universities sustain academic majors in a variety of urban forestry-related subjects. Some universities provide an urban forestry degree option and dedicate a portion of their extension outreach to urban settings and associated forestry issues. Community colleges throughout the country play a vital role in the technical training of students completing degrees in ornamental horticulture and arboriculture.

Educational efforts such as the state Extension Master Gardener programs and others provide homeowners with the necessary information to properly plant and care for trees in their yards and neighborhoods. Non-profit tree planting groups across the country also provide homeowner education opportunities. Many state forestry agencies provide educational opportunities in the urban and community forestry field. ISA, and other green industry organizations provide continuing education programming for professionals as well.

Nationally, there is an active and growing commitment to urban forestry research and education, and while these efforts are fragmented when compared to more mature scientific disciplines, great strides have been made in the last twenty years. While professionals in Oregon have reaped the benefits of these research endeavors, very little Oregon-specific work has been accomplished.

CURRENT URBAN & COMMUNITY FORESTRY RESEARCH AND EDUCATION EFFORTS IN OREGON

Oregon is a state characterized by a diverse climate, a large percentage of cities with less than 5,000 people, a high number of communities at risk for wildland fires, a large amount of urban riparian areas, and a wide array of native forest remnants within urban growth boundaries. All of these factors represent potential research questions, the answers to which could significantly improve the management of urban forest ecosystems within the state.

With no college or university faculty positions solely dedicated to the urban and community forestry discipline, Oregon currently lacks the capacity to conduct extensive formal research or teaching activities in urban forestry. Faculty members at Portland State University and the University of Oregon have conducted a few research studies, and researchers have obtained a few grants from national funding sources. Research conducted by professionals in allied professions such as landscape architecture, horticulture, forestry, arboriculture, urban planning, and geography has been utilized by urban foresters in the state. While these efforts have made contributions to our understanding of urban forestry, no coordinated effort currently exists to make significant gains in this field.

Oregon has no formal urban forestry curricula at the college or university level. Portland State University has periodically offered an urban forestry class as an elective in the Geography Department. Some courses in the Landscape Architecture program at the University of Oregon cover urban forestry topics. Oregon State University offers some urban forestry-related courses in its Landscape Horticulture program and Forestry curriculum. At the community college level, Portland Community College, Mt. Hood Community College, Clackamas Community College, and Linn-Benton Community College all offer landscape horticulture, ornamental horticulture, or arboriculture courses containing urban forestry components.

Professional societies such as the Pacific Northwest Chapter of the International Society of Arboriculture offer continuing education to urban forestry professionals. The Oregon State University Extension Service offers some informal education related to urban forestry through its Master Gardener training program and to homeowners in the rural-urban interface. The Oregon Department of Forestry holds an intensive training for municipal urban foresters on a biennial basis.

Since there is very little urban forestry research being accomplished in Oregon, most of the research used by agencies and organizations comes from outside the state. While much of this research is applicable to Oregon, there is specific need to conduct research based on Oregon's climate, vegetation, development pattern, and cultural distinctives. With additional capacity to do research and education activities, Oregon could advance its knowledge, understanding, and practice of urban forestry significantly.

URBAN & COMMUNITY FORESTRY RESEARCH AND EDUCATION NEEDS FOR OREGON'S FUTURE

In 2001, representatives from agencies and organizations interested in urban forestry research and education began developing a framework for identifying, characterizing, and prioritizing the most critical urban and community forestry research and education needs in Oregon. In surveys completed that year, urban forestry professionals, educators, and citizen activists from around the state provided input on issues of importance to them. A steering committee synthesized all these comments into six issues (Table 1) that formed the foundation for the Urban and Community Forestry Research and Education Forum held in November of 2001 at Oregon State University. At this meeting, the attendees convened working groups which further refined the parameters of each issue and developed action items for future investigation and work. After the event, a steering committee coordinated an effort to refine the issues and prioritize the needs.

TABLE 1: URBAN FORESTRY ISSUES

Planning Urban Forest Infrastructure (INFRASTRUCTURE)

The urban forest should be addressed early in the planning process, not as an afterthought. Trees should be recognized as a part of a city's infrastructure just like roads, bridges, utilities, and other amenities. How can we incorporate existing trees and new plantings into the landscape to serve dual purposes such as storm water retention, parking lot cooling, and traffic calming? How does development influence street-scapes, trails and riparian/wetland enhancements? How can trees help increase the livability of our communities?

Bridging the Knowledge Gap in Urban Forestry (KNOWLEDGE GAP)

As more areas of the Pacific Northwest become urbanized, the real and perceived value of the urban forest increases. In order to maintain this resource for the long term, well-educated professionals are needed. Where can current educational programs be improved, and what issues need to be addressed in future curriculum development and implementation? How do we work with nursery production personnel, municipalities, and designers, installers, and maintenance professionals to further their knowledge base and skills? How do we educate individuals not in the field, such as K-12 students and community volunteers, about the urban forest?

Collaborative Partnerships (PARTNERSHIPS)

Many issues and problems are too complex to be solved by any one organization. Numerous different relationships exist where public and private organizations work together, utilizing their own strengths and missions. Think about the nature of cooperation, collaboration, and partnerships in urban and community forestry. What organizations should be identified, and how should their roles be configured? Are there

unique opportunities that should be addressed? What are resource challenges and/or implications, if any, to allow such organizations to contribute?

Ecological Analysis and Riparian Health (ECOLOGICAL)

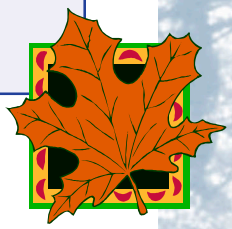
What should be the priorities for developing research projects dealing with the ecological foundations of the practice of urban forestry? What is known and unknown regarding the quantifiable relationships among urban canopy cover, urban riparian zones, urban soil quality, and air quality? How can we attract more research dollars for urban ecological analysis? What tools in use in other professions can be adapted to or applied to urban forestry?

Restoration Urban Forestry within Built Environments (RESTORATION)

The urban built environment creates many research and education challenges in the restoration and management of a healthy urban forest. What are some of the educational issues in restoring the forest within the urban built environment? How can education and research efforts in this area address the health and sustainability of urban forests? Are there unique opportunities, partnerships, or sources of funding for these efforts?

Economics of Trees & Forests (ECONOMICS)

Money talks. Credible cost information can help sell a new urban forestry program or support an existing one. What additional economic data relating to urban forestry would be powerful tools for decision-makers? How does urban forestry affect Oregon property values? What are the ecological cost benefits in reducing storm water treatment and enhancing habitat quality?



Subsequent discussions among the Forum participants, session moderators, and the steering committee yielded a set of over 60 action items suitable for further investigation. The steering committee and session moderators distilled this work and developed the 23 priority items contained in this document.

The following tables reflect **research (Table 2)** and **education (Table 3)** steps necessary to confront the urban and community forestry issues facing Oregon over the next decade. Items in this table are listed sequentially by the issue they pertain to, not in a priority order. For each recommendation, the pertaining issue is cited in parentheses. A brief description of each item is provided, followed by a list of suggested beneficiaries or users of the recommendation's outcomes, and finally a list of suggested collaborators whose participation can bring this recommendation to reality. Given the volume of work necessary to bring urban and community forestry research and education up to a level that will make an impact on public policy and the health of urban forests in the state, each of the 23 items listed in this table can be viewed as high priorities.

Urban and Community Forestry Research & Education Agenda
Table 2: Research Action Items

Recommended Action	Description of Item	Beneficiaries	Suggested Collaborators
Develop research projects that quantify the environmental and economic values of green infrastructure **(INFRASTRUCTURE)**	Research can quantify the benefits of a city's green infrastructure and serve as a basis of comparison to the gray infrastructure. Additional research, and Oregon-specific research, that quantifies the benefits of urban trees, parks, and riparian areas is needed. Oregon projects that quantify the benefits of green infrastructure could be used to develop standards that reflect best management practices, particularly for issues such as salmon restoration.	Planners City Foresters Civil Engineers Local elected officials	University researchers Municipal urban foresters City planners
Create an Oregon tree failure analysis team **(PARTNERSHIPS)**	In order to reduce property damage and personal injury, we need to learn more about why trees fail. Very little Oregon-specific research has documented tree failures. A team should be assembled to look critically at tree failures that occur in the state. This effort should be integrated with the ISA's Pacific Northwest Tree Failure Reporting Program. Statistical analysis on data collected can serve to develop tree failure profiles.	Risk managers Insurance companies	Certified Arborists International Society of Arboriculture City urban forestry staffs Oregon Department of Forestry Utility foresters
Conduct research into urban forest health threats **(ECOLOGICAL)**	Exotic insects and diseases have already threatened the Pacific Northwest forests surrounding port cities. Native forest remnants in urban areas are susceptible to the same health threats as rural forests. Research is needed to identify and map urban forest health threats, to develop monitoring and control approaches, and to identify strategies that ensure protection of the resource. Research specific to identified threats, such as Sudden Oak Death, will also be necessary to help minimize the economic and environmental risk to the state.	Urban forest managers Nursery owners	University researchers USDA Forest Service researchers International Society of Arboriculture City urban forestry staffs

Urban and Community Forestry Research & Education Agenda
Table 2: Research Action Items

Recommended Action	Description of Item	Beneficiaries	Suggested Collaborators
Conduct research on native forest remnant conservation strategies **(ECOLOGICAL)**	Native forest remnants–those groves of trees left standing as cities are developed–are untapped reservoirs of research questions. Specific projects should evaluate the effectiveness of tree conservation ordinances in retaining mature trees on developing sites, and determine how high-density building mandates affect the size and number of remnants retained. Other emerging issues include how to control invasive non-native species in the urban forest and how to protect remnants from urban/rural wildfires.	Urban forest managers Land use planners Builders Developers	University researchers USDA Forest Service researchers Ecologists City planners
Conduct research on stormwater management strategies **(ECOLOGICAL)**	As urbanization increases, planners and engineers are looking for ways to more effectively manage stormwater runoff. Research is needed to better understand the role trees can play in controlling runoff; to identify the best methods to divert stormwater from entering streams; and to determine the effectiveness of swales, detention ponds, or biofiltration solutions. Research is also needed to determine which species are most effective as street trees in holding and slowing water for stormwater retention and if there are quantitative differences between different species.	Urban forest managers Land use planners Civil engineers	University researchers USDA Forest Service researchers Hydrologists Environmental engineers
Conduct research on riparian area standards for urban areas **(ECOLOGICAL)**	With land at a premium in urban areas, research is needed to determine the most effective methods for managing urban streams and riparian areas. Research should determine the optimal width, composition, and design of buffer strips to keep stream temperatures low for suitable salmon habitat, while at the same time allowing for recreational access and other urban uses.	Urban forest managers Land use planners Civil engineers	University researchers USDA Forest Service researchers Riparian ecologists Fish biologists

Urban and Community Forestry Research & Education Agenda
Table 2: Research Action Items

Recommended Action	Description of Item	Beneficiaries	Suggested Collaborators
Conduct research into the environmental value of trees **(ECOLOGICAL)**	Significant urban forestry research conducted elsewhere in the U.S. has quantified the value of trees in urban areas. None of these studies have been replicated in Oregon. Research is needed to identify the value of trees so that decision-makers have the data to make wise decisions regarding the management of urban natural resources.	Urban forest managers State legislators Local elected officials	University researchers USDA Forest Service researchers
Research alternative codes/ordinances scenarios **(RESTORATION)**	Ordinances and codes are the legal and administrative mechanisms for orderly development and administration of the city environment. Research could gauge the effectiveness of current ordinances and codes, determine if codes cause fragmenting of native forest remnants, and evaluate if or how specific laws and codes such as the Americans with Disabilities Act, parking lot size requirements, and zoning regulations conflict with urban forestry's best management practices.	Urban forest managers Land use planners	University researchers USDA Forest Service researchers City planners
Conduct research on the economic benefits of the urban forest **(ECONOMICS)**	Research conducted in other states has quantified the benefits of urban forestry. Little of this research has been conducted or replicated in Oregon. Research that quantifies values and benefits can be used in long term community planning, budgeting, and staffing. Some of the possible research questions to be answered: How can the benefits of urban forests be optimized in Oregon communities? Are the short-term benefits of retaining existing trees greater than removal and replacement with new trees?	Urban forest managers State legislators Local elected officials	University researchers USDA Forest Service researchers Real estate appraisers

Urban and Community Forestry Research & Education Agenda
Table 3: Education Action Items

Recommended Action	Description of Item	Beneficiaries	Suggested Collaborators
Develop interdisciplinary distance learning courses in urban forestry **(INFRASTRUCTURE)** **(KNOWLEDGE GAP)**	There is a demonstrated need for continuing education aimed at municipal urban foresters and other green industry professionals, particularly those in the planning process. A distance learning course should be developed using current internet and computer technology. These courses should be made available for credit at colleges and universities across the state.	Municipal employees in Parks, Planning, and Public Works positions Green industry professionals	Oregon Department of Forestry OSU Extension Service State universities Community colleges International Society of Arboriculture
Incorporate an urban forestry component within the Master Gardener Training Program **(KNOWLEDGE GAP)**	The OSU Extension Master Gardener program is well established and well respected statewide. Current tree training is limited to a few hours of tree identification and a cursory look at insects and diseases. All Master Gardeners could benefit from additional training in urban forestry issues to enhance the value of the volunteer time they provide in return for their training.	Master Gardeners Homeowners	OSU Extension Service OSU Department of Horticulture OSU Master Gardener Association Community college instructors Arborists Oregon Department of Forestry
Create a Tree Steward Program **(PARTNERSHIPS)**	The OSU Master Gardener and OSU Master Woodland Manager programs are successful educational models for home gardening and woodland management curricula. The existing subject matter training could be expanded by the development of a special training segment for advanced Master Gardeners or Woodland Managers that focuses on urban tree stewardship and on conserving trees during development. An advanced "credential" would create another level of assistance for homeowners and the public.	Master Gardeners Master Woodland Managers Homeowners	OSU Master Gardener Association OSU Department of Horticulture OSU Extension Service Oregon Department of Forestry

Urban and Community Forestry Research & Education Agenda
Table 3: Education Action Items

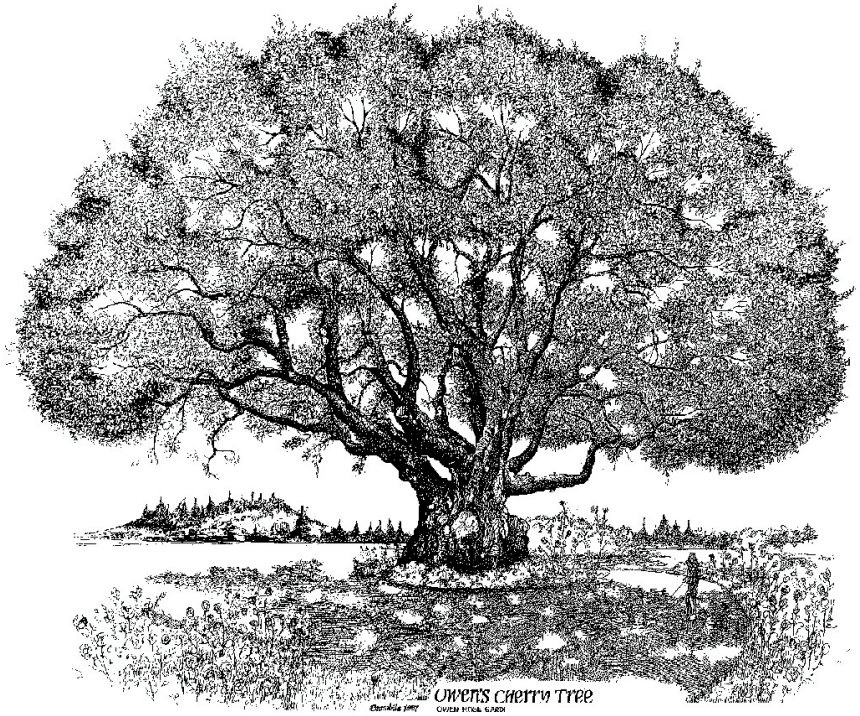
Recommended Action	Description of Item	Beneficiaries	Suggested Collaborators
Establish a college level introductory urban forestry class at Oregon State University **(KNOWLEDGE GAP)**	Oregon State University has several urban forestry-related majors, but no urban forestry courses. An introductory class on urban forestry should be developed to expose students to this profession. This course would introduce students to the topic and orient them towards important issues in the field.	OSU College of Forestry and Horticulture Department undergraduate students	OSU College of Forestry OSU Department of Horticulture Oregon Department of Forestry Urban Forestry professionals
Require an urban forestry class for selected OSU College of Forestry undergraduate students **(KNOWLEDGE GAP)**	The OSU College of Forestry curriculum is primarily rural resource-focused, thereby limiting students' knowledge to solve rural-urban interface problems, and restricting their professional opportunities in urban forestry. Requiring OSU College of Forestry students to complete one course in urban forestry issues would heighten awareness and inform students of forestry issues within urban areas and at the rural-urban interface.	Forest Management, Forest Recreation Resources, and Natural Resources undergraduate students	OSU College of Forestry
Develop an urban forestry undergraduate major within the OSU College of Forestry **(KNOWLEDGE GAP)**	OSU's College of Forestry is one of the premier rural forestry education providers in the nation. With its extensive research and teaching expertise, the College could develop an interdisciplinary urban forestry option. Focus should not be solely upon urban forests but also on forestry at the wildland/urban interface. Eventually, a graduate program might also be considered.	OSU College of Forestry undergraduate students	OSU College of Forestry
Develop an educational effort to explain the value of the urban forest **(KNOWLEDGE GAP)**	Developers, builders, and planners have an extensive impact on the urban forest. There is a demonstrated need for a coordinated educational approach to effectively reach this audience. Much of the educational material already exists; however, it needs to be packaged, synthesized, and focused for maximum impact.	Developers, Planners, Local politicians	OSU Extension & Experiment Station Communications Oregon Department of Forestry International Society of Arboriculture Oregon Community Trees

Urban and Community Forestry Research & Education Agenda
Table 3: Education Action Items

Recommended Action	Description of Item	Beneficiaries	Suggested Collaborators
Facilitate tree information distributions for new home buyers **(PARTNERSHIPS)**	New homeowners often lack the knowledge to properly plan and care for home landscapes. New homeowners should be given the opportunity to either attend a class or to receive written information provided by their city or real estate company regarding the planting and care of their yard trees and the city's street tree policies. In rural-urban interface areas, this information should include defensible space and wildland fire information.	New home buyers Developers Realtors Realtor associations	City urban forestry staffs Realty companies and associations International Society of Arboriculture Oregon Chapter, ASLA Oregon Department of Forestry
Develop a tree planting "kit" **(PARTNERSHIPS)**	Often when people plant trees in cities, either on their own property or on city right-of-way, they do not follow recommended guidelines for staking, guying, mulching, etc. This program would use partners willing to provide materials, such as stakes, ties, and root barriers, along with tree planting information, at no or low cost to citizens who are planting trees.	Homeowners planting trees	City urban forestry staffs Oregon Association of Nurserymen Oregon Landscape Contractors Association Oregon Department of Forestry
Create a traveling tree pruning exhibit for libraries **(PARTNERSHIPS)**	Proper tree pruning still appears to be a mystery to some, as tree topping continues to be a problem in Oregon. An educational exhibit on tree pruning could help this effort. This exhibit, containing items such as several limb and trunk cuts that show decay and compartmentalization, pruning tools, an ISA brochure display, books, interpretive signs, and photos could be loaned to public libraries for use in their entry or display areas.	Public libraries state-wide Homeowners	International Society of Arboriculture Oregon Community Trees Local arborists Library volunteers/staff Local tree boards Master Gardeners Oregon Department of Forestry

Urban and Community Forestry Research & Education Agenda Table 3: Education Action Items			
Recommended Action	**Description of Item**	**Beneficiaries**	**Suggested Collaborators**
Facilitate tree board training **(PARTNERSHIPS)**	Many municipal urban forestry programs have citizen advisory boards that provide needed input to the success of local programs. There is currently no training mechanism to serve these valuable volunteers. This effort would be modeled after ODF's Community Tree Management Institute program, but would focus on the needs of tree board volunteers.	Citizen tree board volunteers City forestry programs	Friends of Trees and other non-profit tree planting organizations Oregon Department of Forestry Oregon Community Trees
Form a collaborative effort among state community colleges **(PARTNERSHIPS)**	Oregon's community colleges offer a variety of urban forestry-related educational programs, but without a coordinated effort among the colleges. Oregon's leading community college horticultural programs should meet together regularly to determine arboricultural and urban forestry education needs, and curriculum design. Professional organizations could provide support and additional instructors.	Community college staff and instructors Students	State community colleges Oregon Landscape Contractors Association International Society of Arboriculture
Establish a coordinated education effort aimed at policymakers to help them understand the value of trees **(ECONOMICS)**	Significant research conducted in the last 25 years has documented the value of trees in urban areas. Although not routinely conducted in Oregon, this research from other states and the USDA Forest Service shows the contributions trees make to economic development. There is a need to communicate these data and these research findings to policy makers. Educational efforts should illustrate and quantify the economic benefits that have the greatest impacts on the urban forest.	State legislators Local elected officials	Oregon Department of Forestry OSU Extension Service Oregon Community Trees

Urban and Community Forestry Research & Education Agenda Table 3: Education Action Items			
Recommended Action	**Description of Item**	**Beneficiaries**	**Suggested Collaborators**
Develop action plan for educating decision-makers and the public about the concept of green infrastructure **(INFRASTRUCTURE)**	Decision-makers and the public need to understand the role trees play as part of a city's infrastructure. Educational efforts should show the benefit of trees in a "dollars and sense" analogy, such as quantifying the benefits within a typical city block for stormwater runoff, prevention of erosion, air quality, energy savings, salmon habitat, noise reduction, property values, etc. Efforts should also show a cost savings between traditional (sewer, water, streets) infrastructure and the inclusion of trees as infrastructure.	State legislators Local elected officials Community leaders	Oregon Department of Forestry Oregon Community Trees

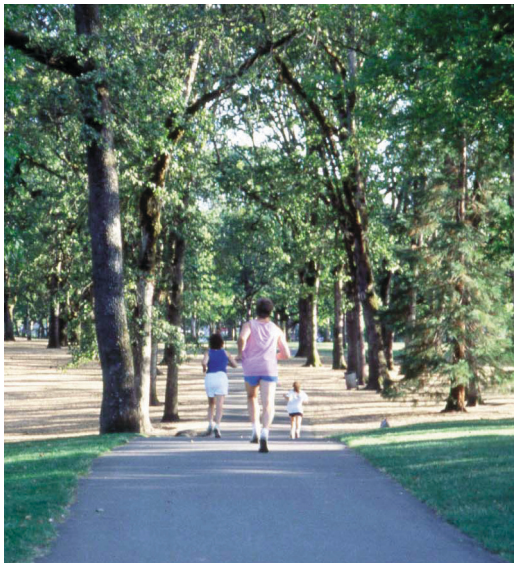


IMPLEMENTING THIS AGENDA

There are two key elements to implementing a plan of action as ambitious as this one—money and people. Many of the action items in this *Agenda* require significant expenditures while others require very little. Many of these actions require the coordination of many groups and individuals while others can be accomplished by a few dedicated individuals. In some instances, implementing these recommendations will take a change in organizational culture or thinking. In others, it will take a realization that we can no longer exclusively focus on the rural forest and ignore the urban forest. The common denominator may be an attitude of commitment to the cause of improving our knowledge of urban forestry and a recognition that urban and community forestry can be a solution to a wide array of economic, environmental, and social situations.

Research & Education Funding

Simply stated, these recommendations require an investment of money, time, and talent. This *Agenda* proposes no new fee, tax, or revenue stream. It proposes that an investment be made in the quality of life in Oregon through the implementation of recommendations that can change Oregon's future for the better. Successful implementation of these recommendations will require public and private financing, but it will be much more of an investment than an expenditure.



Competition for research dollars is keen in today's economy. The fact that urban forestry can be linked to so many other academic disciplines, management strategies, and real-life situations should lead to a diversification of funding options. For example, given the significant wildland fire problem facing the state of Oregon, urban and community forestry principles such as defensible space may attract the interest of insurance companies who might be willing to participate in research that reduces insurance risks related to fires in the rural-urban interface.

Potential funding sources for urban and community forestry research include: The TREE Fund, the federal government, the state government, private foundations, corporations, private industry, utilities, and green industry organizations. It is anticipated that by virtue of being listed as a research issue in this *Agenda*, research proposals addressing these issues will be able to show significance and need as justifications for approval. Research projects often have multiple funding sources, and the diverse nature of urban forestry may make some of these research proposals more attractive than a more narrowly drawn discipline.

Some of the educational projects listed in this *Agenda* require less funding in order to bring them to reality than do the research projects. However, at public universities and community colleges, state appropriations are the primary funding sources for academic budgets, so the diversity of funding sources available for research may not hold true for some of these educational recommendations. For some of these recommendations to become a reality, it may take a change in thinking, a rearranging of priorities, and a commitment on the part of legislators, administrators, and stakeholders.

Some of these educational recommendations may be implemented earlier than the research ones, but it should be remembered that the key to any good research project is the transfer of that information to practitioners. Without scientific research backing the information provided to the public, urban forestry researchers and educators will be unable to effectively communicate the benefits to them.

Next Steps

This *Agenda* was developed as a means to identify, characterize, prioritize, and publicize urban and community forestry research and education needs in the state of Oregon. Over the next several years, it is expected that individuals, agencies, companies, organizations, and institutions will take up the challenge of implementing these recommendations. If sufficient accomplishments are achieved, a "scorecard" or status report may be issued in the future. Urban forestry leaders from various agencies and organizations will be monitoring this progress and keeping these issues visible among community leaders, legislators, and decision-makers.

The priorities listed in this publication have been based on an extensive needs assessment, lengthy discussions among urban and community forestry professionals, and the review of qualified researchers and educators. Working together, individuals and the groups they represent can make a significant difference in the future of our communities, through fostering research and education efforts that enhance our quality of life through the planting, management, and care of our urban and community forests. *An Urban and Community Forestry Research and Education Agenda for Oregon* is offered as a first step down this path toward a more sustainable future for Oregon communities.

RESEARCH & EDUCATION PARTNERS

A well-organized statewide urban forestry research and education effort will have a positive impact on the health of our urban and community forests. No one agency or organization can carry the burden of fulfilling this *Agenda*. Partnerships are a virtual requirement in today's world, and this is especially true in a relatively young academic discipline such as urban forestry. Fortunately, there are many potential partners available to work on urban forestry issues in Oregon. The organizations and agencies that must play a vital role in fulfilling this *Agenda* include, but are not limited to, the following:

Educational Institutions

Clackamas Community College
Linn-Benton Community College
Mt. Hood Community College
Other community colleges
Oregon State University College of Forestry
Oregon State University Horticulture Department
Oregon State University Cooperative Extension
Portland State University Geography Department
University of Oregon Department of Landscape Architecture

Natural Resource Agencies

Local municipal forestry programs
Oregon Department of Forestry
METRO Parks and Greenspaces
USDA Forest Service PNW Region – Cooperative Programs

Non-Profit Organizations

Friends of Trees
Oregon Community Trees
Oregon Master Gardener Association

Professional Societies and Trade Organizations

American Planning Association, Oregon Chapter
Oregon Association of Nurserymen
Oregon Chapter, American Society of Landscape Architects
Oregon Landscape Contractors Association
Pacific Northwest Chapter/International Society of Arboriculture
Oregon Society of American Foresters

Regional Agencies and Institutions

University of Washington Center for Urban Horticulture
USDA Forest Service Center for Urban Forest Research

Given the fact that the state of Washington is characteristically similar to Oregon, regional partnerships may be formed to address some of these issues as well. Many of these agencies, organizations, and institutions are already working together to improve the quality of life in Oregon cities through the stewardship of our urban forests. Since urban forestry research is more multi-disciplinary than other subjects, cooperation and collaboration among professionals and institutions is a primary means of accomplishing recommendations such as these. Crossing professional disciplines, state lines, and even academic and institutional boundaries will be necessary for this *Agenda* to become a reality.

Oregon Community Trees
is a non-profit organization formed to promote healthy urban and community forests through leadership, education, awareness, and advocacy.

For more information visit their website at:
www.oregoncommunitytrees.org

For more information about Urban and Community Forestry in Oregon, contact:

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"STEWARDSHIP IN FORESTRY"