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**FORESTS AND SOCIETY:
THE ROLE OF RESEARCH**

SUB-PLenary SESSIONS

VOLUME 1

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Forestry in Urban and Urbanizing Areas of the United States: Connecting People With Forests in the 21st Century

by

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Abstract

Resource managers worldwide face challenges in responding to expanding urbanization and its effects on forest resources. These challenges can be met head on if managers work toward: (1) comprehensive management of forest resources in urban and urbanizing areas, and (2) connection of urban people with forests and their management. Opportunities exist for accomplishing both of these goals through involvement of a broad spectrum of urban residents and organizations in collaborative management of forest resources in urban and urbanizing areas. Comprehensive and adaptive management of forests in urban and urbanizing areas is outlined, and efforts to involve individuals and groups in that management are discussed with examples from the Chicago, Illinois, area. Involving urban citizens in resource management can have implications for forest resource management across the urban to wilderness landscape.

Keywords: Urban residents, Forests, Collaboration, Involvement, Partnerships.

Introduction

Urbanization is having increasing implications for forest resource management around the globe. Urban expansion is displacing or transforming significant forest resources and changing the interactions between residents and forest resource management. In the process of urbanization, conflicting demands for resources emerge, as do different perspectives on resource management. Diverse values -- including functional, economic, recreational, wildlife, esthetic, and symbolic values -- must be considered in resource management decisionmaking. Land ownership across the urban to wilderness landscape is becoming more complex and fragmented. The decisions on resources management near a community are now influenced not only by the people who live there, but also perhaps by seasonal and part-time residents, casual visitors, and others whose only involvement with the forest may be reading about it.

Experiences to date suggest that while there is substantial public support for the protection, restoration, and management of urban forest resources, there can be controversy over particular management practices such as removal of trees and brush, use of herbicides, burning, and control of deer populations. Controversy can revolve around the appearance of an area. "Good forest management" is not always pretty. Research has found that native landscaping may look messy and overgrown to certain segments of the population, signaling an area is being neglected rather than managed (Nassauer 1995). In addition, controversy may involve how and where specific management practices are planned and carried out, how much and what type of information is made available to the public, how the public is involved in decisionmaking and planning for management activities, and how or if they are informed of proposed changes to the landscape (Gobster 1997). Implementing comprehensive and adaptive management of forests in urban and urbanizing areas, as well as connecting urban people with forests and their management will help address these challenges.

Urbanization transforms lands uses, ownership patterns, distributions of people and settlements over the landscape, and changes

the social/political environment of the affected areas. The people who move to these new developments largely come from urban areas. Compared to those who already lived in the affected area, these new residents may have different values and preferences for the management of forest and associated resources. Previously rural communities may experience substantial growth in population, businesses, and industry. Smaller tract sizes and higher population densities may reduce availability of timber and increase the costs of harvesting it. Important recreation areas on private and public lands may be lost or rendered inaccessible by developments. The altered landscape is likely to bring changes in ecological processes. Development brings new challenges to managers such as increased risk of introduction of exotic weeds and pests, heightened conflicts between people and wildlife, increased threat of fire, and altered movement and control strategies for pest populations. An increased number of landowners, including a significant portion of absentee landowners, will complicate the management of landscapes to provide opportunities for outdoor recreation and esthetics, wildlife and wildlife habitat, and water and flood control. Planners and developers face new challenges, as do existing communities and businesses in the affected area (e.g., farms surrounded by homes).

Defining the boundaries of the urban forest is becoming increasingly complex in a country where the population continues to sprawl across the landscape. In the past the definition has depended on a relationship between the geographic location of the forest and its proximity to a large population center. As the United States increases in population, the boundaries of populated areas are rapidly expanding and constantly changing. It is difficult to determine where the rural forest ends and the urban forest begins, but even more difficult to designate resource management practices as being more appropriate in an urban forest rather than a rural forest. Given this integration, comprehensive and adaptive management at the regional scale is critical

Comprehensive and Adaptive Management

Several implications for the planning and management process begin to emerge, given that U.S. urban forests are substantial and growing; are complex ecosystems with diverse resources that are owned and influenced by a number of important groups; are connected to other urban and natural systems; and undergo significant change over time.

The diversity of urban forest resources and their extension across land uses, property lines, and political boundaries calls for management programs that bridge jurisdictions and employ multiple disciplines. Among the fields that may be involved in urban forest planning and management are forestry and arboriculture, ecology and wildlife management, entomology and pathology, hydrology and soils, meteorology and atmospheric science, landscape architecture and recreation management, psychology and sociology, planning and economics, and political science.

Given the unique character of urban forests found in particular settings, effective management also requires different forest management strategies within an urban environment (for example, by land use, land ownership, degree of development, and population density) and among urban areas (with different ecoregions, populations, and other attributes). Because of the complexity of land uses, ownership, and resources, a "one-size fits all" urban forest management scheme is not appropriate.

A key element in managing urban forests in a regional context is the coordination of activities among different owners and managers across jurisdictions, as well as the acceptance of different management goals. The participation of multiple stakeholders in urban forest management requires a forum to help link forest structures and their management throughout and beyond the urban system. Such collaborative stewardship should include not only owners, users, and managers of natural resources; but also individuals and groups involved in the management of other urban components (for example, commercial developers, city planners, utilities, and

residents). Collaboration among a wide range of decisionmakers who affect urban forest resources provides opportunities for those involved to identify common interests, resolve potential problems, and coordinate efforts to meet multiple objectives. Our subsequent discussion of the Urban Resources Partnership, Chicago Wilderness, Volunteer Stewardship Network, and TreeKeepers illustrates such collaboration.

The diversity and connectedness of urban forest resources demand comprehensive approaches to their planning and management (Dwyer et al. in press). The complex interrelationships between urban forest components and air and water quality, wildlife habitat, utilities and other infrastructure, and the overall aesthetic character of the community point to the need for an ecosystem-based approach to policy, planning, and management.

Because urban forests are dynamic systems, their management must also accommodate rapid changes in the extent, health, and use of resources over time. Implicit in adaptive management of urban forests is the ability to monitor progress and evaluate the effectiveness of management decisions. By monitoring the effects of program activities on the extent, health, and use of the resource, by identifying areas for improvement, and by modifying management plans to address problems, adaptive management provides the flexibility necessary to sustain and enhance important forest resources in changing urban environments.

The advantages of comprehensive and adaptive planning and management are clear; however, implementing this approach to planning and management poses difficult challenges to urban forest managers (Dwyer and Nowak in press, Dwyer et al. in press). Specific emphasis areas for the future that will facilitate the implementation of comprehensive and adaptive management include improving: comprehensive health of urban vegetation; ecological restoration techniques; inventory and monitoring of the urban forest resource; dialogue among urban forest owners, users, and managers; collaboration among agencies and groups; understanding of how forest configuration influences forest use and

benefits; knowledge about urban forest health; and the dissemination of information about urban forests, their benefits, and their management.

Involving Individuals and Groups in Resource Management

Urban populations in the United States have diverse incomes, education, racial/ethnic backgrounds, lifestyles, and associations with and views of resource management. It is important to recognize and embrace this diversity when dealing with urban populations. It is also important to recognize that many urban residents, as individuals or members of groups, have existing or potential ties to urban natural resources and their management. Efforts to connect urban residents to resource management should take advantage of the existing infrastructure for linking people and natural resources in urban areas.

Urban residents may obtain natural resource experiences in settings different from what a natural resource manager is accustomed to. Their involvement in natural resource issues may not be active -- they may not purposely feel, touch, and explore nature. However, they may be involved in less direct ways. Urban residents may behold nature (view it from a window) or derive pleasure from just knowing it is there. They may read about it, vote on issues related to it, write letters to the editor, join organizations that impart a philosophy in tune with their own, donate time or money to a cause, protest an activity, attend city council meetings and public hearings, etc. Urban residents experience nature not only by vacations to faraway forests but also by walks in a neighborhood park or by visits to zoos, museums, libraries, web sites, and nature centers. This diversity of experiences with nature shapes how urban people value the forest and view forest management.

Overall, the effectiveness of forest resource management in urban and urbanizing areas in the years ahead is likely to hinge on collaborative partnerships among a wide range of public, private, and not-for-profit groups; the expertise from a large number of scientific disciplines; and perhaps most important of all - the involvement of citizens in planning for,

implementing, and monitoring the results of resource management.

The results of comprehensive management of urban forest resources, including collaborative approaches and the dialogue with citizens about forest resources and their management, are likely to have influence across the urban to wilderness landscape as urban residents purchase, use, and care about forest and associated resources. The success of the extension of the urban experience to rural areas is likely to hinge on the extent to which urban natural resource management issues are linked to their rural counterparts, the involvement of urban people in planning and carrying out management, and the ties made among resource management, resource use, and environmental education.

In the subsequent discussion we will examine two forms of involvement in natural resources management: (1) citizen participation, and (2) urban coalitions or partnerships.

Citizen Participation

A key to enhancing the management of forests in urban and urbanizing areas and connecting urban people with forests and their management is the involvement of urban residents in comprehensive and adaptive forest resource management. To illustrate this involvement, we have drawn examples from the urban forestry and ecological restoration movements in the Chicago area. These efforts provide useful models for more effective connections between urban people and forest ecosystems in the 21st century.

Both the urban forestry and ecological restoration movements have developed in response to loss of valuable urban natural resources. Each has evolved into a strong movement that significantly influences resource management in urban areas and beyond, but each has developed a different strategy for involving people in natural resources management. There are important similarities, differences, and opportunities for synergism between these two movements (Dwyer and Childs 1997, 1998). Both contain important elements of comprehensive and adaptive management in urban and urbanizing areas. Our subsequent discussion focuses on

the Chicago area and draws heavily on USDA Forest Service work with the Openlands Project's TreeKeepers urban forestry program, as well as with the ecological restoration efforts of the Illinois Nature Conservancy's Volunteer Stewardship Network (Ross 1994, Westphal 1993, Westphal and Childs 1994).

Urban forestry in Chicago has grown and gained strength partly in response to the catastrophic loss of trees, including the loss of elms to disease, and the loss of trees, forests, and greenspace to urban development. Given significant past losses and a high level of interest in trees by citizens and public officials, urban forestry has received significant attention in the Chicago area. Early urban forestry efforts focused on maintaining the trees along streets and in parks and forest preserves, but the scope has broadened over time to include comprehensive management of trees, forests, and associated greenspace across the urban environment and adjacent areas. Many urban forestry organizations such as city forestry departments and not-for-profit organizations spend most of their effort caring for trees in areas where the native ecosystems have been significantly modified.

Ecological restoration focuses on rehabilitating and maintaining biologically significant natural systems. There are many such systems in the Chicago area, including some that are unique and highly valuable, which have generated significant attention. The effort developed partly in response to the continuing loss of plant and animal diversity in prairies, but subsequently expanded to savanna, woodland, and forest ecosystems. In Chicago, the loss of diversity includes the incremental loss of natural areas to development, erosion of the quality of protected natural areas due to the lack of fires and other natural disturbances, as well as the introduction of exotic species. Traditionally, restoration activities are planned with reference to landscapes as they appeared before European settlement, but also consider current conditions, problems, and resources. Interest in ecological restoration is now extending beyond individual species and sites to the broader regional landscape. This landscape-level approach has accelerated under the Chicago Region Biodiversity Council (i.e., Chicago Wilderness) (Chicago Wilderness 1999b, Ross 1997).

These two movements in Chicago are similar in many ways. Both share a large amount of citizen involvement, including a high level of activism. Not-for-profit groups organize and train volunteers and build strong volunteer organizations that in themselves become important advocates for urban natural resources and their management. Studies show strong commitment by volunteers and similar motivations for the two movements (Westphal 1993, Schroeder 1998). Charismatic leadership among volunteers and in not-for-profit groups has been a driving force in shaping both movements. Efforts of both movements have brought increased public attention to trees and other natural resources in the urban environment.

Urban forestry volunteers participate in site design, site preparation, tree planting, mulching, and follow-up care of young trees such as watering and pruning. Ecological restoration volunteers participate in site mapping, location of significant species of plants and animals, prescribed burning, seed harvesting, and removal of non-native species. These tasks are sometimes organized as social events that may include potluck dinners or picnics in addition to the work activity. While both movements stress on-the-ground action, some volunteers participate in other ways, including writing newsletters, scheduling and coordinating events, and so forth. Increased attention is being given to volunteer training so that they can work more effectively with natural resources, as well as with the people who manage and use them. Training materials are sophisticated, well developed, and updated regularly. Both movements have strong environmental education programs aimed at children and adults.

Both movements capitalize on "active" participation as a means for citizen involvement, but neither has fully embraced or mastered widespread public involvement. There is a belief among both movements that if people can see and participate in management activities they will support these activities. Both movements are working hard to make urban residents and public officials more aware of urban vegetation, its management, and its significance to the urban environment and quality of life.

A comprehensive and adaptive approach to management of vegetation throughout the urban ecosystem would encourage linking of urban forestry and ecological restoration efforts, as well as collaboration among them (Dwyer and Childs 1997, 1998). From the standpoint of citizen involvement with natural resources, combined training and environmental education programs for individuals and groups involved in urban forestry and ecological restoration would provide a wider range of skills and experiences for volunteers, enhancing their experiences and the contributions that they will be able to make to resource management across the urban environment and beyond. The movement in this direction is encouraging. Some of the TreeKeepers effort is being focused on the restoration and management of specific sites. Volunteers from TreeKeepers and the Volunteer Stewardship Network have received training and are working to survey for the Asian longhorned beetle, an exotic invasive pest that was recently discovered in three Chicago-area neighborhoods.

Discussions with homeowners in the areas where trees were lost to the Asian longhorned beetle made it clear that they wanted to be kept well informed about the beetle, control options, and decisionmaking concerning management of the pest and its damage. This response reaffirms the interest of urban citizens in learning about and becoming involved in natural resource management. Such interest is a cornerstone of citizen involvement in collaborative management of urban forests.

Urban Coalitions and Partnerships

Collaborative stewardship requires a wide range of organizations working together to manage natural resources. To illustrate how this can take place, we will discuss two initiatives in the Chicago Area: (1) the Urban Resources Partnership, and (2) Chicago Wilderness. Both of these efforts bring public agencies, not-for-profit groups, communities, and citizens together into new working relationships to do a more effective job of natural resource management in the Chicago area. Each effort seeks improvement in the management of urban natural resources, but has different origins, emphases, and goals.

Both efforts encourage citizen involvement and have included volunteers from the urban forestry and ecological restoration movements. Although the efforts involve some of the same organizations, they remain separate in their mission and goals.

The Urban Resources Partnership

The Urban Resources Partnership (URP) is administered by the U.S. Department of Agriculture and co-sponsored by the Forest Service and the Natural Resource Conservation Service in 13 cities around the United States. Agencies with missions related to the urban environment have joined the partnership. In Chicago these partners include the U.S. Fish and Wildlife Service, National Park Service, U.S. Environmental Protection Agency, U.S. Department of Housing and Urban Development, and Cooperative Extension Service; as well as the State of Illinois (Department of Natural Resources) and City of Chicago (Department of Environment). The program advocates and assists community-based action through local partnerships to enhance, restore, and sustain urban ecosystems. These actions contribute to the improvement of the social, economic, and physical well-being of the people and their natural environment. The partnership provides technical assistance and partial funding to community-driven environmental restoration, enhancement, and educational projects. The program stresses projects that have physical (on the ground) components. URP strives to link community residents and the environment. The URP philosophy hinges on the belief that through education and participation, project participants build lasting ties to the natural environment, their communities, the government agencies that serve them, and most importantly, each other.

Chicago URP projects range from community gardens to large-scale ecosystem restorations. Chicago URP resource goals include: open space enhancement; water quality improvement; urban habitat creation, enhancement, and management; environmental education and stewardship; and the implementation of ecosystem management techniques.

The partnership supports natural resource conservation projects throughout the Chicago Metropolitan Area. Many individual projects involve Federal partners, not-for-profit groups, and community organizations. Projects target underserved inner city areas. Efforts are made to support projects where there is substantial community involvement and to encourage the involvement of urban residents in the actual management efforts. URP does not try to organize community groups, but rather approaches groups that already have community consensus for a project. URP targets urban conservation projects through a unique network of community groups such as boys and girls clubs, block clubs, public housing resident associations, and youth service organizations.

The URP experience in cities around the U.S. demonstrates a wide range of useful approaches for enhancing the management of urban natural resources by spawning partnerships that involve many different actors, organizational structures, and group missions in each city. Variation in the types of groups, resources, and resource issues involved in the different URP cities suggests that the most effective mix of partners, working relationships, and leadership structures in collaborative urban natural resource management may be different for each city.

What has been learned from the Chicago URP experience?

1. There are a wide range of important conservation needs in urban areas, and while local residents and community groups are interested in addressing these needs, they are often unfamiliar with the public agencies and not-for-profit groups that can assist them.
2. Urban residents see conservation efforts as a way to derive a range of important benefits for their community such as improving appearance, increasing recreational possibilities, creating jobs and opportunities for youth involvement, and building the capability to tackle other issues.
3. Community-led projects can be difficult to manage for a natural resources professional. In some cases,

the community may have different priorities for resource management than the professional.

4. Local support and involvement are critical to getting urban conservation projects started, and absolutely essential for sustaining them.
5. In getting urban conservation work done, technical assistance is often as much of a limitation as funding is. The demand for technical assistance for natural resources management exceeds current capacity of natural resource agencies.
6. Natural resource management issues in urban areas may be more complex than rural resource issues, and may require a level of sophistication and expertise beyond what one agency can provide. Agencies problem-solving together may be a solution.
7. There are substantial differences in the way that federal, state, and local agencies, even within the same urban area, approach resource management issues in urban areas. Thus, there is much to share and to learn through collaboration, and that sharing enhances the resulting projects.

Chicago Wilderness

The 100 + members of the Chicago Region Biodiversity Council (or "Chicago Wilderness") work to protect the natural communities of the Chicago region and to restore them to long-term viability to enrich the quality of life of citizens and to contribute to the preservation of global biodiversity. Chicago Wilderness has brought significant attention to the management of more than 200,000 acres of public and private land in northeastern Illinois, southeastern Wisconsin, and northwestern Indiana; and brought new collaboration among diverse groups. The areas that make up Chicago Wilderness are seen as a globally significant concentration of rare natural communities -- woodlands, forests, grasslands, streams, and wetlands.

Chicago Wilderness originated in local efforts to protect, restore, and enhance biodiversity. Those efforts drew support from the existence

of significant remnants of pre-settlement vegetation in the Chicago Metropolitan Area and the desire to prevent their loss to development or exotic invasive plants. As this work expanded in scope, scale, and significance and began to take a landscape perspective, Chicago Wilderness was born.

The scope of the work of Chicago Wilderness is captured in the titles of the teams responsible for work that is carried out: science, land management, education and communications, and policy and strategy. There are strong efforts to integrate the work of these teams. The science and land management teams often meet jointly to be certain that there is a science input into land management. Policy and strategy works to implement initiatives developed by the other teams. Education and communications are tightly interwoven into developments in science and land management, and there are designated demonstration areas for restoration activity.

The partnership expanded rapidly and includes members from land management agencies; environmental groups; educational institutions; and federal, state, and local natural resource agencies. Chicago Wilderness provides funding for a wide range of projects that further its mission. A substantial amount of the initial funding has come from Federal agencies, but there has been some funding from state, foundation, and private sources.

Chicago Wilderness took a multi-pronged approach to engaging the public in restoration activities. The partnership attracts public interest by creating museum displays, zoo exhibits, and demonstration areas in forest preserves, organizing volunteer days at forest preserves, parks and nature centers, and by publishing and distributing Chicago Wilderness magazine throughout the metropolitan region. In addition, the partnership has produced a series of educational materials, including: an *Atlas of Biodiversity* (Chicago Wilderness 1999a), and *12 Natural Wonders of the Chicago Wilderness* (Chicago Wilderness 1998). The *Atlas of Biodiversity* has been distributed to every 8th grade teacher and every library within Cook County. Chicago Wilderness has also produced the *Biodiversity Recovery Plan*

for *Northeastern Illinois* (Chicago Wilderness 1999b) that outlines the steps necessary to achieve the overall goal of Chicago Wilderness. The plan was adopted by the Northeastern Illinois Planning Commission (NIPC) in December 1999, the first major metropolitan planning agency in the nation to adopt a biodiversity plan for its region. Not only do these documents broadcast the importance of biodiversity to urban residents, they serve as a means of instilling public pride in the uniqueness of the prairie landscape.

What has been learned from the Chicago Wilderness experience?

1. The coalition can accomplish much in terms of public awareness and environmental policy that individual member organizations cannot do alone.
2. Preservation and enhancement of biodiversity can be a useful integrating theme for a group of diverse organizations with missions that focus on land management, research, and education.
3. There are numerous linkages among the Chicago Wilderness partners, with many opportunities for productive partnerships.
4. Public relations are important for the effort, and it can be a challenge given the large number of diverse organizations involved.
5. Coordinating a large coalition with a wide-ranging mission is a challenge that requires a significant amount of time and effort. Coordination across political and institutional boundaries is difficult. Even though most Chicago Wilderness partners agree on the mission, and the mission reflects that of their own institution, each institution has prior commitments of time, resources, and personnel that complicate its participation in Chicago Wilderness.
6. Even with the commitment to public relations and public outreach, Chicago Wilderness is hardly a household name with the metropolitan public.

Summary and Conclusions

Urbanization poses important challenges to resource managers. These challenges can be met by implementing comprehensive and adaptive management of forest resources in urban and urbanizing areas, and by connecting people with forests and their management. Comprehensive and adaptive management involves a wide range of disciplines, government organizations, citizen groups, etc. In this process, a widening spectrum of people become involved in forest resource management, including the establishment of policies and plans, generating support for those efforts, and actually carrying out resource management activities. These efforts are enhanced by coalitions and partnerships of public agencies, not-for-profit groups, community organizations, and others. Examples of successful collaborations include the Urban Resources Partnership and Chicago Wilderness. Direct involvement of citizens in resource management through groups such as TreeKeepers and the Volunteer Stewardship Network is also helping to implement collaborative stewardship and to connect citizens to natural resources and their management. As urban forestry becomes more comprehensive and more people are involved, the ties between it and forestry in rural areas become stronger, and the urban experience is more likely to influence what happens in rural areas. Comprehensive urban forest management can become a demonstration or reference for management of forests in rural areas. Citizen involvement and collaboration among groups is not only improving the management and use of urban forests, but also helping to establish critical links between people and resources that will help enhance resource management across the urban to rural spectrum of lands in the 21st century. Individuals and groups interested in involving urban residents in resource management decisionmaking might find it productive to work in conjunction with urban forestry programs and associated collaborative and citizen involvement efforts in urban areas.

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