Executive Summary

Urban and Community Forestry (U&CF) Technology Transfer is the development and dissemination of products and technical information that interpret relevant research for States, communities, practitioners, and other users (customers). Technology transfer's role is to effectively share new science-based knowledge and new technologies to facilitate improved management and long-term sustainability of our urban ecosystems.

This document defines the current state of U&CF Technology Transfer in the Forest Service, U.S. Department of Agriculture (USDA), by describing the research and transfer/delivery process, listing key products, identifying gaps in product development and delivery, and presenting strategies for improvement.

Importance of U&CF Technology Transfer

Technology transfer ensures that urban and community forests are better understood and that important principles are shared with and used by practitioners, community leaders, local residents, and others.

Of no lesser importance is the impact U&CF Technology Transfer can have on creating healthier forests. With increasing population growth and urbanization, U&CF programs are now more mission critical than ever, and well positioned to not only help mitigate natural resource issues within urban and suburban areas but also influence attitudes about all forestry practices. A healthy and sustainable urban forest is a frontline solution to helping manage other natural resource problems. Through greater awareness and understanding, fostered by U&CF Technology Transfer, a broader base of support will result in more sustainable ecosystems, whether rural or urban.

Forests can no longer be treated as discrete parcels that are independently managed, given rampant landscape change and urbanization. Forests are now a continuum of variable types and health in many U.S. regions, distributed from the urban core to suburbs, rural areas, and wildlands. All forested landscapes are linked by both ecological and social dynamics.

Current U&CF Research

Urban trees and forests are considered integral to the sustainability of cities. Sustainable urban forests do not arise at random, but rather result from a communitywide commitment to their creation and management. Providing science-based knowledge that creates commitment and guides action may represent our most significant challenge.

Urban forest sustainability has been an intense focus of research since 1997, as evidenced by the primary areas of research at the various Forest Service research stations across the country: The Pacific Southwest Research Station in Davis, CA; the Northern Research Station in Syracuse, NY, Burlington, VT, and Evanston, IL; and the Southern Research Station in Athens, GA, Gainesville, FL, and Lincoln, NE. Primary areas of research include: quantifying ecosystem services of urban trees, quantifying urban forest structure and change, quantifying changes in basic ecological functions due to urbanization, urban tree canopy analysis, environmental justice, natural environments for urban populations, analysis of urbanization effects on forest vegetation, cultural dimensions of landscape change, and ecological functions of buffers. The research results produced by these research stations are presented in Appendix A as main areas of research and current research emphasis.

It is important to mention two research centers that are not Forest Service organizations but have had a significant impact on U&CF research in recent years and, in fact, many of their results are used in Forest Service technology transfer products: the Human Dimensions of Urban Forestry and Urban Greening Center in Seattle, WA, and the Landscape and Human Health Laboratory at Champaign, Urbana, IL. Their primary areas of research include: urban forestry and human services benefits, trees and transportation, nature and consumer environments, policy and planning, civic ecology, impacts of the urban forest on individual health and healthy functioning, and impacts of the urban forest on neighborhood health and functioning.

U&CF Technology Transfer Centers

U&CF Technology Transfer is being conducted by all U&CF staff and through specialists in seven centers located across the country: Center for Urban Forest Research, Davis, CA; Urban Natural Resources Institute, Amherst, MA; Midwest Center for Urban and Community Forestry, St. Paul, MN; Mid-Atlantic Center for Urban and Community Forestry, La Plume, PA; Southern Center for Urban Forestry Research and Information, Athens, GA; Southern Center for Wildland-Urban Interface Research and Information, Gainesville, FL; and the USDA National Agroforestry Center, Lincoln, NE.

The products produced by these centers are presented in Appendixes B through D as a listing of their most recent and successful products, along with a detailed description of their key national and key regional products.

How Is New Technology Being Transferred?

With the advent of new computer technologies, the opportunities for technology transfer have been greatly expanded. Even though staff has a more challenging and complicated role in this expanded technological environment, it provides the opportunity to get our messages to more people with less effort and money. The biggest challenge seems to be in keeping up with, and affording, all the new advances that are constantly becoming available.

Currently, more than 30 methods are being used to transfer Forest Service research technology: assessment summaries (municipal forest resources analysis; urban tree and forest risk assessments), blogs, books, brochures/booklets (including tree guides), case studies, customer service, decision-support systems, displays, DVDs/CDs, e-learning Webcasts, fact sheets/leaflets, LISTSERV e-mailing, management tools, manuals, models/software, news briefs/bulletins/notes, newsletters/updates/e-news, photo galleries, posters, presentations, press releases, promotional items, scientific reports, repackaged information, research summaries, trade publication articles, training/workshops/conferences, urban tree and forest risk assessments, tree guides, Web-based exchange forums, and Web sites.

What Is Working?

From this investigation, it is quite clear that Forest Service U&CF Technology Transfer is very active and successful. Technology transfer programs have operated with limited staff and budgets, and yet they have been extremely productive. This success is due largely to the staff's ability to innovate, adjust quickly to changing customer needs, and work well with partners.

This report accounts for more than 30 different technology transfer methods being used by Forest Service staff to get U&CF research and informational products into the hands of customers. But four methods stand out over the rest: center Web sites, e-mail/LISTSERVs, speeches/presentations, and e-learning Webcasts. These are the top four methods because they have been highly effective at reaching audiences, keeping new products and methods in front of customers, and delivering maximum knowledge with minimal costs.

Where Could Changes Be Made?

While inventorying the various research and technology transfer units for this report, it has become apparent that technology is rapidly changing and that some specific areas in our delivery process are outdated. We need to stop doing some things, adopt new methods, and refocus to reach our full potential or we will become irrelevant. The future of U&CF depends on it. The Internet and Google have opened up a new world of instant access, but people have become more impatient and expect to have links and information at their fingertips. Because of these extremely rapid changes in technology and the way people want or get information, U&CF Technology Transfer must continually adapt its approach to transferring research technology or risk weakening its ability to influence positive changes to urban forests.

The specific areas in which gaps exist and improvements could be made are National Technology Transfer Team leadership, performance and feedback measures, reaching all the right people, cobranded products, TechNet, application programming interface (API) update tool, UFind, Treesearch, TreeLink Web site, availability of U&CF challenge cost-share program projects,

LISTSERVs, U&CF Web site inconsistencies, marketing, U&CF partnerships, Webcasts, podcasts, environmental news services, Webinars, teleconferences, blogs, and privatization of software.

Recommendations for Improvement

The following recommendation is offered as the next step. The right combination of strategies will meet future needs, make more efficient use of resources and partnerships, capitalize on new technologies and opportunities, avoid duplication, and streamline the way we do business. This new way of doing business will significantly improve the ability of technology transfer specialists to deliver technology to all U&CF customers.

Recommendation: Convene a Technology Transfer Summit

Convene a Technology Transfer Summit that invites key Forest Service U&CF staff, Sustainable Urban Forest Coalition members, U&CF partners, and technology and communications experts from the high-tech industry to strategize the best approach to bringing better efficiency and effectiveness to Forest Service U&CF Technology Transfer. The Summit's deliberations should be guided by the following questions:

- Has the U&CF audience changed and, if so, who is the intended audience of Forest Service U&CF Technology Transfer?

- What combination of new strategies will improve technology transfer?

- Should a procedure be implemented to review proposed technology transfer products before they are developed?

- Are the National Technology Transfer Team Goals still relevant?

- What should be the role of NUCFAC, TreeLink, UFind, and Treesearch?

- Where should technology transfer plug in (timing) for products that are in the Research and Development pipeline?

- How can duplication in research and technology transfer be avoided?

An extensive list of possible strategies for improvement to be considered during summit deliberations is provided on page 12 of this review.

The Appendixes

The bulk of this report is contained in the appendixes, pages 15 through 106.

Appendix A. The Research. Presents the current U&CF research and highlights the main areas of research along with the current research emphasis. For those stations that do not have a direct link to a technology transfer center, their technology transfer products are also listed.

Appendix B. Transferring the Technology. Presents the current U&CF Technology Transfer processes and products. Because literally thousands of products are available, only the most recent and successful products are listed.

Appendix C. Key National Technology Transfer Products. Lists the most recent technology transfer products that have had the biggest impact nationally. Each entry includes a description of the product, the benefit to urban forestry, the funding source, the location in which it can be found, and a list of the partners who were involved in the development of the product.

Appendix D. Key Regional Technology Transfer Products. Lists the most recent technology transfer products that have had the biggest impact regionally. Each entry includes a description of the product, the benefit to urban forestry, the funding source, the location in which it can be found, and a list of the partners who were involved in the development of a product.