Strategic Plan for the Reforestation, Nurseries, and Genetic Resources (RNGR) Program

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FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE

What is the RNGR Program?

RNGR ("ringer") serves as a center of reforestation, nursery, and tree improvement expertise within the Forest Service. The RNGR Team is made up of regional specialists and scientists who work across Deputy Chief areas. Their primary goal is to provide current, relevant technical assistance and technology transfer to the growers and users of native plants for conservation, reforestation, and restoration purposes. Although originally focused on commercial tree species, the RNGR Team has facilitated partnerships and leveraged funding to become a leader in native plant propagation and establishment technology transfer.

Why is RNGR Important?

The success of most reforestation and restoration projects depends upon the use of high-quality and appropriate plant materials produced in nurseries. When implemented successfully, these projects contribute to enhanced air and water quality, wildlife habitat, biodiversity and ecosystem sustainability, timber production, healthy forests, and reduced soil erosion. Collectively, about 1,200 nurseries nationwide currently provide plant materials used in restoration, reforestation, and conservation efforts. Although demand for commercial timber species declined during the past decade, demand for other native plant species, each having its own cultural and site requirements, has risen dramatically. Consequently, requests for information about how to propagate, store, ship, and plant specific native plant species have grown faster than the information is being developed. In addition, information associated with the use of native plants to address climate change, invasive species, and ecosystem services is lacking. Concurrently, relevant expertise and research resources within federal and state agencies, universities, and other organizations have declined to levels outpaced by the need.

To address this disparate trend in native plant knowledge and to continue providing information on conventional forest species, the agency created the RNGR Program in 2001 (Table 1). The RNGR Team assists Federal, State, Territorial, Tribal, and private nurseries by providing technical assistance to produce adequate supplies of reasonably priced, high-quality, genetically well-adapted seedlings for reforestation, conservation, and restoration. The RNGR Team also provides technical expertise on cost-effective propagation and planting methods that improve seedling survival and growth. Geographically dispersed RNGR Team members are attuned to regional needs, but act nationally to bring significantly more expertise to solve localized problems through information sharing.

Table 1 - Geographical and Program Responsibilities for the RNGR Team

Team Member	Coverage Area	Responsibilities
National Nursery Specialist	US & International	Liaison with R&D Technical Assistance, particularly to Forest Service Nurseries
Southern Specialist	Southeastern US, Region 8, and Caribbean Territories	Technical Assistance Technology Transfer Program Reviews
Northeastern Specialist	Northeastern US & Region 9	Technical Assistance Technology Transfer Program Reviews
Western Specialist	Regions 1,2,3,4,5,6, 10 & Pacific Island Territories	Technical Assistance Technology Transfer
Tribal Nursery Specialist	US & International	Technical Assistance Technology Transfer Liaison with Tribal Agencies
Director of National Seed Laboratory	US & International	Technical Assistance Technology Transfer
National Program Coordinator	US	Liaison with BOD & WO

As the Forest Service shifts its focus to "all lands restoration" in the face of increasing threats from drought, development, fire, insects and diseases, and climate change, the RNGR Program is ideally positioned to play a significant role in providing real solutions for addressing the maintenance and restoration of America's forests.

Why is RNGR Unique?

Because of their high degree of specialization, people working in nurseries, genetics, reforestation, and restoration are often professionally isolated from others in their fields. Nurseries and tree improvement facilities are typically located in remote locations so physical isolation makes it difficult to network with other professionals. Furthermore, shrinking budgets reduce the ability to attend meetings or visit other facilities. Nurseries, genetic programs, as well as reforestation and restoration projects are full-time jobs, so managers don't have the time or resources to keep abreast of the latest information or technical developments. Therefore, a need exists for specialists who can provide leadership and have the communication skills to provide technical assistance and technology transfer.

Traditionally, university extension specialists developed many aspects of technology transfer, including writing review articles and newsletters, organizing meetings, and making site visits, but were limited because they always worked within their individual states. RNGR Team members have improved on this classic extension model and taken it to the national and international level. The technical assistance and technology transfer services that the RNGR Team has developed are unique; to our knowledge, no similar programs exist either nationally or internationally.

How Does RNGR Work

The RNGR Program has several components, including Technical Assistance, a Research Program, a Tribal Nursery Emphasis, the National Seed Laboratory, and Collaborative Agreements and Cooperative Efforts.

Technical Assistance

The RNGR Team provides expert support to forest and conservation nurseries throughout the country. This support entails advising nursery managers and other plant professionals on a variety of issues and opportunities pertaining to seedling production, native plant restoration, and forest regeneration. RNGR assists nurseries with problem solving and provides guidance in developing strategies to address seed and seedling quality issues.

Research Program

The RNGR Team facilitates, coordinates, and conducts administrative studies and research projects among a variety of partners within government agencies, universities, and nongovernmental organizations. This work assesses and responds to specific nursery and field questions and problems, and the results are shared with managers through technology transfer presentations and publications, websites, and with peer scientists through refereed science articles. Recent and current studies include developing protocols for assessing hardwood seedling quality and cold hardiness in the Central, Eastern, and Southern U.S.; examining acorn viability; developing sub-irrigation methods for container seedlings to reduce water use and potential pollution; enhancing techniques for growing longleaf pine seedlings in the Southern U.S.; investigating the use of biochar as a media substrate in containers; and tracking isotope signatures and their relationship to seedling physiology during production.

Tribal Nursery Emphasis

Since 2001, the RNGR Team has emphasized outreach to American Indian tribes to foster long-term collaborations focusing on native plants, nurseries, and educational activities. Tribal nations have unique needs based upon their culture, location, and ecology. RNGR has developed a special rapport with them to meet their varied and growing needs.

National Seed Laboratory

The National Seed Laboratory (NSL) serves as the primary national strategic resource for forest and range seed science and technology; it directly addresses the complex challenges associated with the use of seed for conservation and restoration. Located in Macon, GA, the NSL originated in the 1950s to support southern pine restoration work but has undergone several evolutions diversifying its purpose. The latest change occurred in 2005, when the Chief of the Forest Service expanded the NSL's mission to include all native plants, with an emphasis on gene conservation through long-term seed storage. The NSL develops protocols for seed cleaning, germination, and storage of a variety of native plant seeds, ranging from commercial timber species to herbaceous understory plants. It also provides onsite seed storage for many conservation species and backup for seed at Fort Collins, CO for long-term storage. The NSL offers training materials, workshops, and customized individual training programs to U.S. and international seed workers. It also collaborates with research and production

facilities worldwide and participates in several national and international conferences every year. The NSL performs seed tests for private industry, tribal agencies, state governments, and federal agencies. The NSL is the only U.S. facility accredited by the International Seed Testing Association (ISTA) to test forest seeds.

Collaborative Agreements and Cooperative Efforts

To leverage scarce resources, RNGR partners with universities and Federal and State agencies to provide training, technical assistance, and research to nursery and reforestation programs. In addition, RNGR works with the Forest Service's International Forestry Program, Institute for Pacific Island Forestry, and International Institute for Tropical Forestry to provide assistance to programs in the Caribbean and Pacific. RNGR collaborates with the USDA Foreign Agricultural Service (FAS), the U.S. Agency for International Development, U.S. Fish and Wildlife Service, and the Food and Agriculture Organization of the United Nations to provide nursery and reforestation assistance internationally (*e.g.*, RNGR provided FAS with a nursery manual and training tools for use in Afghanistan). RNGR has collaborated to translate *The Container Tree Nursery Manual* into Spanish and Chinese.

RNGR is recognized as an international authority in forest and native plant nursery science, and specialists have been invited to give technical presentations in many foreign countries (Figure 1A). As an example of this international appeal, one-third of the 1,200 subscribers to the RNGR publication *Forest Nursery Notes* are international, representing 62 foreign countries. RNGR publications are in demand worldwide; for example, CONAFOR (Comision Nacional Forestal) of Mexico is funding the translation and printing of all seven volumes of Agriculture Handbook 674, *The Container Tree Nursery Manual* (Figure 1B).

RNGR History and Organization

The RNGR program originated from the Cooperative Forestry Assistance Act of 1978, which mandated that technical, educational, and related assistance be given to State Foresters, extension directors, and similar programs. Technical specialists in the Northeastern Area and Southern Region were created to provide this assistance, as well as a new multiregional nursery specialist to serve the western Regions. Because these specialists were located in widely separated Area and Regional Offices, communications and program coordination were difficult. To overcome these limitations, a virtual RNGR Team was created so that specialists could share approaches

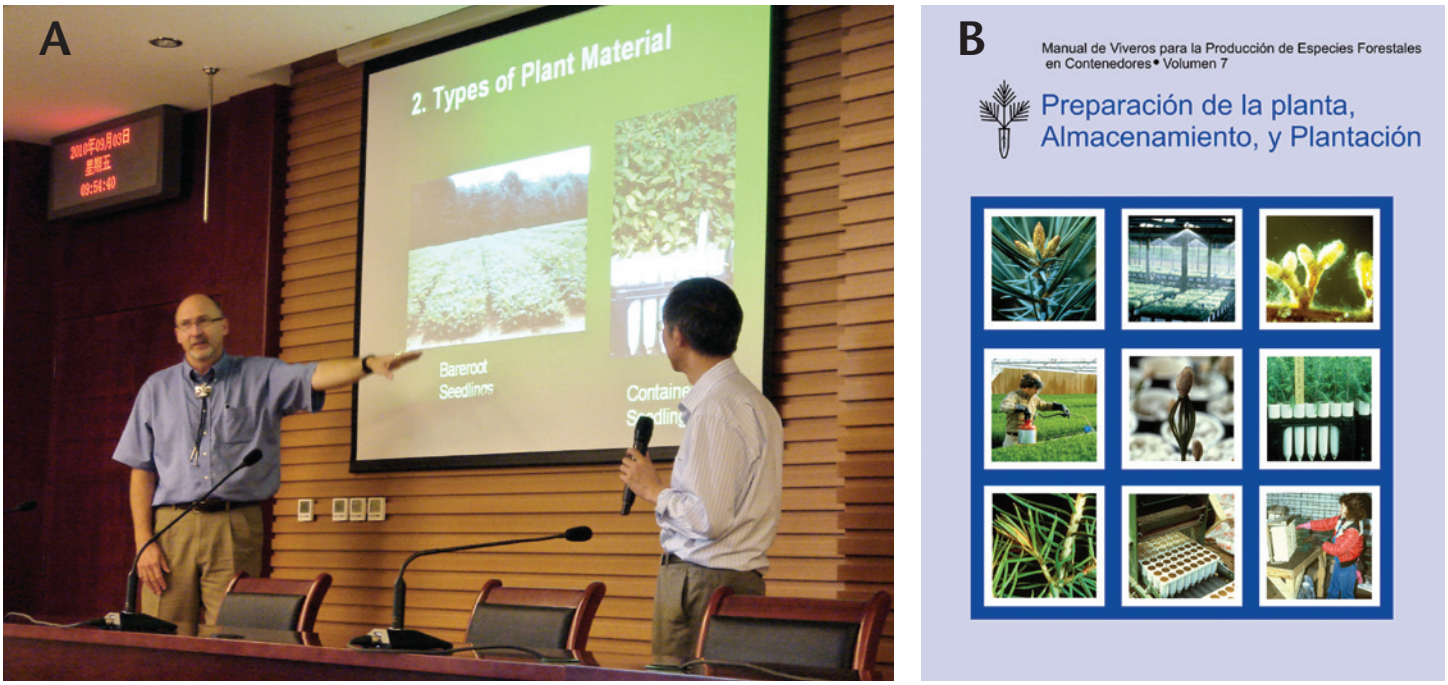

Figure 1 – The RNGR Team has represented the Forest Service as the accepted leader in forest and native plant propagation at national & international meetings and workshops (A), and many RNGR publications have been translated into Spanish and other languages (B).

and new information through electronic correspondence and annual meetings. Originally known as Seedling, Nursery, and Tree Improvement, the program was renamed RNGR as an action item in the 1996 strategic plan.

The 1996 RNGR Strategic Plan expanded the Team to include the Director of the National Seed Laboratory (NSL) and a program coordinator on the Washington Office State and Private Forestry (S&PF) staff. The S&PF National Program Coordinator represents the interests of the RNGR Team at Board of Directors (BOD) meetings, and also helps negotiate details of the annual RNGR budget. An official RNGR charter was proposed in 2001 and included a scientist from Research & Development (R&D) to foster better communication and coordination. In 2003, the structure of RNGR was formalized through a Memorandum of Understanding among the Directors of S&PF, National Forest System (NFS), and R&D. Some of these directors then served as a BOD for the RNGR Program. In 2006, RNGR identified the need for technical assistance and education to American Indian tribes, and an Tribal Nursery Specialist position was added to the Team.

Program priorities for the RNGR Team are developed through group consensus at annual meetings, subject to annual budgets and input from the BOD. Each Team member reports to a staff person in their respective units, and their managers take into account the larger scope of the RNGR workload.

RNGR specialists are considered support staff without traditional line authority and no single budget. The RNGR Team serves all three branches of the Forest Service, and other Federal Agencies including the Natural Resources Conservation Service (NRCS), the Bureau of Land Management, and the National Park Service. RNGR also serves Tribal, State, industrial, and private nurseries and organizations.

RNGR Accomplishments

Through reports, publications, presentations, conferences, workshops, and onsite visits, RNGR personnel provide key information to aid in the understanding and implementation of effective technology for bareroot and container nursery operations. Examples include:

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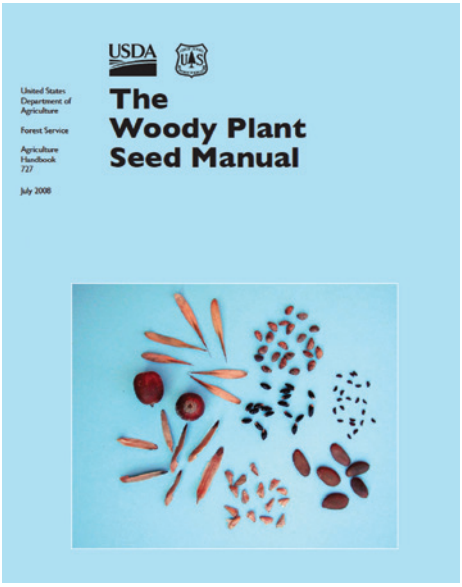


Figure 2 – Technical publications (A) have been a mainstay of the RNGR Program for decades, and often serve as standard references for the industry. The Team has converted them to electronic formats so that they can be accessed on the RNGR website (www.rngr.net) from anywhere in the world (B).

Website: www.rngr.net

B

Periodicals—*Native Plants Journal*, *Tree Planters' Notes*, and *Forest Nursery Notes*.

USDA Agriculture Handbooks—*The Container Tree Nursery Manual* (seven volumes), *The Woody Plant Seed Manual*; and the two-volume *Nursery Manual for Native Plants: A Guide for Tribal Nurseries*.

Internet Sites—The RNGR site (Figure 2B) has the largest online collection of articles on producing native plants for reforestation, conservation, or restoration (approximately 7,000 articles and growing). All articles are searchable and are free to download. During the past two years, the site had 100,782 visits and 92,251 content downloads by visitors from 199 countries—averaging one visit and one download every 10 to 12 minutes. In addition, the RNGR site contains a national nursery and seed directory, a calendar of events, a list of relevant links, and information about the RNGR Program and personnel. RNGR personnel also created the Native Plants Network site (http://www.nativeplantnetwork.org). This one-of-a-kind searchable database contains approximately 3,000 propagation protocols for native plants. New protocols can be added by anyone willing to upload and share their techniques.

Conferences—RNGR assists with organization and management of the western, southern, and northeastern regional nursery conferences and the annual Intertribal Nursery Council meeting. These events provide the venue for sharing technical information, networking, and discussing emerging issues that confront nursery managers. Papers presented at these conferences are published by RNGR in the annual *National Nursery Proceedings*.

Training—RNGR has organized or conducted training in tropical nursery management, seed collection, seed conditioning, native plant propagation, tree planting, longleaf ecosystem restoration, and hardwood nursery management. In addition, RNGR Team members regularly give presentations at various forestry and conservation events.

Tribal Nursery Needs Assessment—Published in 2003, this was the first survey of American Indian native plant needs and the first national directory of tribal nurseries. The RNGR Tribal Nursery Emphasis currently has three components: (1) ongoing technical assistance to tribes about collection, propagation, and deployment of native plants; (2) organization of the Intertribal Nursery Council meeting, an annual forum for tribal members to gather and discuss important topics relevant to native plants; and (3) production of a comprehensive guide detailing nursery development and native plant propagation as they relate to tribes. To date, the program has assisted nearly 80 tribes across the U.S. and Canada and has worked one-on-one with more than 500 professionals within those tribes. This assistance has included conducting various nursery training workshops, organizing information-sharing meetings, and technical assistance.

Strategic Goals of the RNGR Program

The RNGR Team addresses the goals in the USDA Strategic Plan and the goals and objectives in the Forest Service Strategic Plan (Appendix 1) through innovative, crosscutting, and cost-effective partnerships within a diverse cadre of state and private cooperators. In order to maintain and enhance the RNGR Program, the following strategic goals, priorities, and activities will be carried out over the next 5 years.

Goal 1. Effectively and efficiently deliver science-based reforestation, nursery, and genetic resource information through diverse, appropriate formats to meet Forest Service and partner "all lands" restoration needs to achieve resilient landscapes.

Scope and Relevance: Planting programs are essential for responding to climate change, restoring ecosystems, sustaining rural communities, and many other USDA and Forest Service activities. Successful planting depends upon a reliable supply of genetically appropriate, affordable, quality seeds and plant materials that are properly handled and correctly planted to the landscape in a timely manner. At least 20 laws, regulations, and executive orders encourage or mandate the use of native plants on Federal lands, such as the *Guidance for Federal Agencies for Sustainable Practices for Designed Landscapes, and the Native Plant Policy*. In addition, use of native plants is encouraged on non-Federal lands in many ways, including the *USDA Agroforestry Strategic Framework for Fiscal Year 2011-2016,* the *National Roadmap for Responding to Climate Change*, and the *Farm Bill*.

The RNGR Team provides pragmatic assistance and technology transfer to approximately 1,200 nurseries that annually produce 1.5 billion native plant seedlings for reforestation, restoration, and conservation programs for the U.S. and its territories. The assistance has been delivered through periodicals, handbooks, internet sites, conferences and training. With new technologies and constrained budgets, RNGR needs to look at new and innovative ways to deliver these and other services focusing on plant material needs of the Forest Service and partners.

Actions:

Continue to develop new plant material production technologies, seed technology and collection, and assist with gene conservation efforts that address restoration in the face of broad challenges such as fire, drought, land conversion, insects, and diseases.

Provide direct assistance to native plant growers and seed producers.

- Make site visits to trouble shoot unusual or difficult situations at nurseries and seed handling facilities.
- Answer specific questions by telephone, email, and other direct communication methods.
- Provide needed technical services, such as operational seed analysis for growers and the distribution of research seed samples by the National Seed Laboratory.

Transfer technology and information about native plants regularly.

- Continue support of the *Native Plants Journal*.
- Facilitate technical exchanges including the Western Native Plant Conference and Native Plant Seed Workshops.
- Publish *Raising Native Plants: Basic Concepts* to better serve non-professional needs.

Continue to provide technical assistance and research information to stakeholders utilizing new delivery mechanisms such as webinars, and other forms of electronic media where appropriate.

- Continue upgrading the Native Plant Network and the RNGR website (Figure 2B).
- Develop on-line training and explore social media options for delivering RGNR services.

Disseminate new science and inform its application.

- Continue production of periodicals, including the *Native Plants Journal*, *Tree Planters' Notes*, *Forest Nursery Notes*, and the *National Nursery Proceedings* (Figure 2).
- Prepare USDA Agriculture Handbooks: Complete Volume Two of Agriculture Handbook 730: *Nursery Manual for Native Plants: A Guide for Tribal Nurseries*, *Hardwood Nursery Manual*, *Tropical Nursery Manual*, and updated volumes of *The Container Tree Nursery Manual*.

Continue to provide technical assistance to underserved communities, especially to Native American tribes and island communities about collection, propagation, and deployment of native plants.

- Complete Volume Two of Agriculture Handbook 730: *Nursery Manual for Native Plants: A Guide for Tribal Nurseries*.
- Assist tribes with the planning and development of cultural plant propagation centers.
- Complete *Tropical Nursery Manual*.
- Maintain tribal and tropical pages on RNGR website (Figure 2B).

Embrace new technologies to empower stakeholders.

- Manage the RNGR website (Figure 2B) — the largest online collection of articles on producing native plants for reforestation, conservation, or restoration.
- Develop appropriate mobile technologies.

Explore and access opportunities to provide technical assistance, especially regarding native plants, to nurseries and stakeholders that provide plant material to urban areas. Provide findings to the RNGR Board of Directors.

Maintain and enhance RNGR technical expertise.

- Develop a succession plan for RNGR.
- Identify and network with professionals who are potential RNGR members.
- Continue formal and informal training.
- Actively participate at workshops and conferences.
- Expand expertise by adding new Team members in the areas of plant pathology, gene conservation and climate change.

Goal #2. Coordinate and leverage resources within the Forest Service and with partners.

Scope and Relevance: The 2010 RNGR review found the Team functioning effectively in its cross deputy capacity and interacting with R&D and S&PF, but RNGR would benefit from better linkages with Forest Health Protection in S&PF, and Forest Management and Range Management in NFS.

Actions:

Coordinate and collaborate with native plant specialists within the Forest Service.

- Communicate with Regional botanists, range specialists, wildlife specialists, R&D, Office of Tribal Relations (OTR), International Programs, National Forest Genetic Electrophoresis Laboratory (NFGEL), Regional geneticists.
- Utilize the Sustainable Landscape Management Board of Directors (SLMBOD) to increase collaboration and coordination.

Network with native plant programs in other Departments, Agencies, and organizations.

- Federal (USDA): NRCS Plant Material Centers (Appendix 2), Agricultural Research Service (ARS), Foreign Agricultural Service, Farm Service Agency.
- Federal (other): Bureau of Land Management, U.S. Fish & Wildlife Service, National Park Service, U.S. Army Corps of Engineers, Department of Defense, Federal Highway Administration, Plant Conservation Alliance.
- State: National Association of State Foresters Forest Resource Management Committee, Universities.
- Underserved: Tribal agencies, colleges, universities, and organizations (for example: Intertribal Timber Council, United Southern and Eastern Tribes), Pacific Island Committee.
- Private and nonprofit organizations: The Nature Conservancy, National Wild Turkey Federation, Ducks Unlimited, Society for Ecological Restoration, Longleaf Alliance.

Leverage partnerships and agreements.

- Partner with Forest Inventory Analysis (FIA) and universities to collect and report annual nursery production data.
- Establish partnerships to leverage resources, develop new technology, and transfer information.

Create and promote "peer-to-peer" learning networks.

- Support the Native Plant Network (http://www.nativeplantnetwork.org).
- Conduct site visits.

Figure 3 – The RNGR Team has made a special effort to work with underserved communities, such as Native Americans, by creating the Intertribal Nursery Council.

- Organize and manage regional nursery conferences and the annual Intertribal Nursery Council meeting (Figure 3).
- Facilitate specialty workshops and training: tropical nursery management, seed collection, seed conditioning, native plant propagation, tree planting, longleaf ecosystem restoration, and hardwood nursery management.

Support "peer-to-peer" learning networks sensitive to cultural identity.

- Continue sponsoring the Intertribal Nursery Council, which is an annual forum for tribal members to gather and discuss important topics relevant to native plants.
- Plan workshops on native plant propagation and outplanting for the Pacific Islands.
- Identify tribal members and Islanders who show an interest in native plant propagation, and work to help them obtain professional training.

Explore mechanisms to better interact with the following Forest Service units.

- National Forest Genetic Electrophoresis Laboratory (NFGEL).
- Forest Service nurseries.
- Regional and Northeastern Area genetics programs.
- Report to SLMBOD regularly to ensure an ongoing, accurate assessment of the Agency's needs for native plant materials, the capacity to deliver plant materials, and the information to advocate for native plant production activities.

Pursue collaboration opportunities and partnerships with other agencies.

- Bureau of Land Management.
- Natural Resources Conservation Service.
- National Park Service.
- Agricultural Research Service, especially the National Center for Genetic Resources Preservation.
- Farm Services Agency.
- Universities, especially the University of Idaho Center for Forest Nursery and Seedling Research, the Purdue University Hardwood Tree Improvement and Regeneration Center, and the Southern Forest Nursery Management Cooperative at Auburn University.

Goal 3. Manage and conserve genetic resources to maintain and improve health, functionality, and productivity of ecosystems.

Scope and Relevance: Genetic variability within and between individual organisms, populations, and species is the basis for all biodiversity in the world and the most critical resource in mitigating the risks of climate change. Managing genetic resources to maintain natural ecosystems or manage for a variety of products and services, including increased timber yield, is key to the success of restoration, conservation, and reforestation programs. Climate change and non-native plants, insects, and pathogens pose very significant risks to native plant communities and the ecological services and products they provide. The recent report, *Genetic Resource Management and Climate Change: Genetic Options for Adapting National Forests to Climate Change*, identified three overarching principles for recommendations and management options relating to management of genetic resources: (1) genetically diverse and adapted seed and planting stock will provide the foundation for healthy forests and ecosystems in the future; (2) gene conservation is key to preserving vulnerable species and populations for the future; and (3) establishing and maintaining partnerships will be more important than ever. Applying these principles across all lands is essential to minimizing risks from climate change and non-native plants and pests, and to increasing ecosystem productivity.

RNGR has an important role in technical assistance and technology transfer efforts related to producing and deploying genetically appropriate and locally adapted plant material, as well as conserving germplasm of native plants facing extirpation due to climate change or pests. The RNGR Team needs to increase efforts to incorporate genetic resource management principles into plant propagation protocols and practices, increase involvement in germplasm collection and conservation efforts, and replicate successes in ecosystem and species restoration. At the same time, RNGR must continue supporting tree improvement programs to provide a reliable supply of highly productive, well adapted stock for timber, carbon sequestration, and bioenergy plantings.

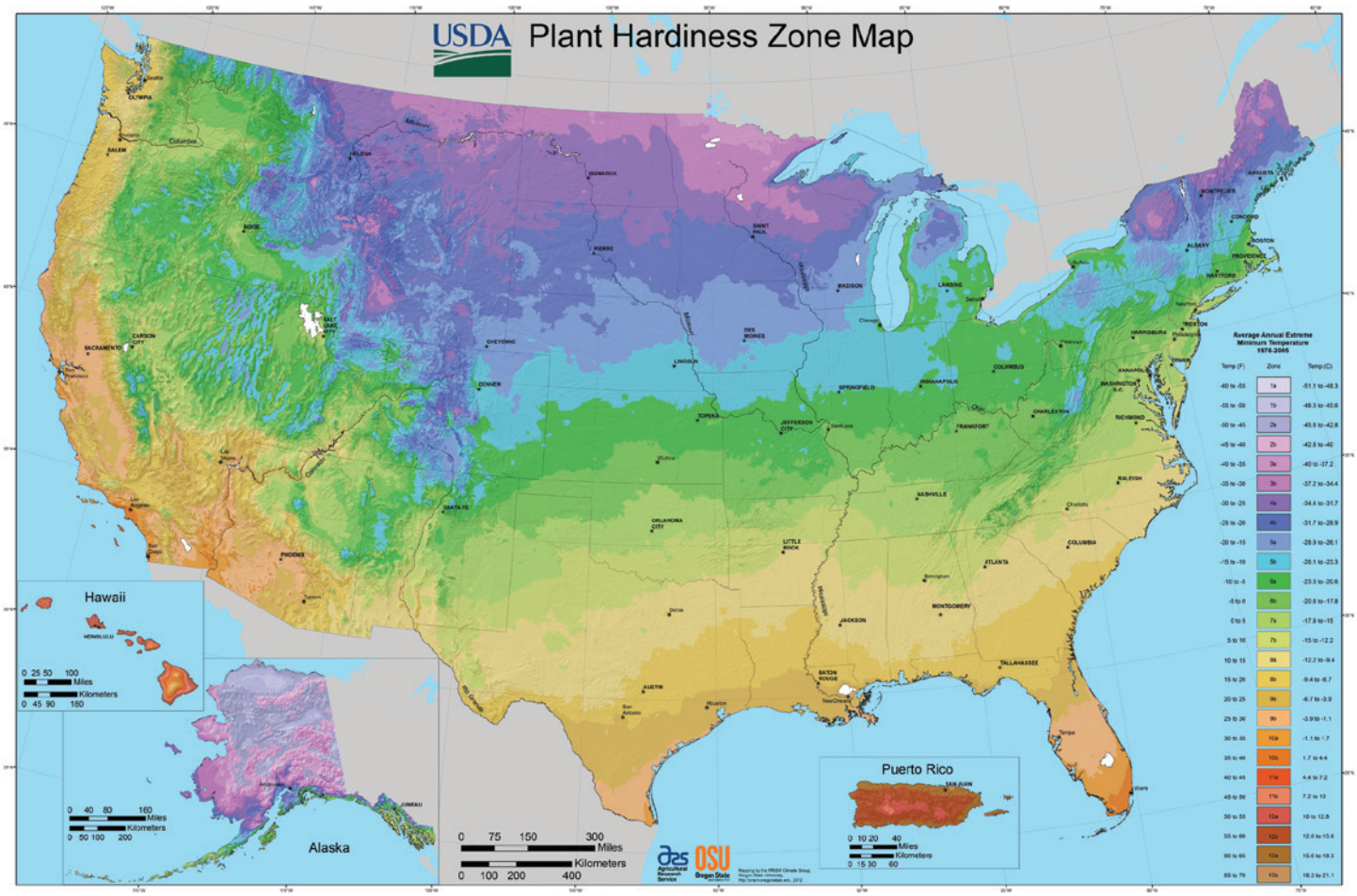


Figure 4 – The RNGR Team is working with its cooperators to meet the challenge of climate change, and its effects on seed zones of native plants.

Actions:

Develop and maintain processes and partnerships: Coordinate and collaborate with geneticists and other natural resource specialists in the Forest Service, and other Federal, State, Territorial, Tribal, and private organizations to maintain or restore natural patterns of genetic diversity in plant material used for ecosystem restoration and/or appropriate levels of genetic improvement in plant material used for reforestation and timber production (Figure 4).

- Increase awareness of genetic resource management principles in State and local natural resource organizations, especially in regard to incorporating these principles in State Forest Assessments, specifications for public restoration, conservation, and reforestation cost-share programs, and other policy and strategy decisions related to forest and ecosystem management.
- Provide technical assistance and technology transfer to develop and/or adopt seed collection and propagation practices that maintain appropriate levels of genetic diversity in plant material produced for ecosystem restoration and reforestation.
- Promote procedures that preserve and document seedlot identity through seed collection, plant material propagation, and outplanting.

Preserve genetic resources: Provide technical assistance and technology transfer for genetic conservation of plant populations under threat of extirpation.

- Cooperate with Forest Health Protection, NFS, and R&D; NRCS; ARS; and other public and private organizations to develop germplasm conservation strategies.

- Participate in international organizations such as the OECD Forest Seed and Plant Scheme, IUFRO working groups, and the International Seed Testing Association to develop technology, science, and international collaboration to advance germplasm conservation efforts.
- Maintain NSL technical leadership role in FS germplasm collection efforts by:
  - Serving as the Agency portal for documenting collections in the Germplasm Resources Information Network and submitting material to the ARS National Center for Genetic Resources Preservation in Fort Collins, CO.
  - Continuing long-term storage and distribution of germplasm samples for research as a component of the National Plant Germplasm System.
  - Developing user-friendly protocols for germplasm collection.

Deploy genetic resources: Develop and/or disseminate seed source guidelines, propagation protocols, outplanting techniques, etc. for restoring native plants and/or plant communities under threat of extirpation and to improve forest productivity.

- Replicate the success of the Southern Native Plant Restoration and Seed Increase Project in restoring longleaf pine ecosystems by facilitating similar efforts for shortleaf pine ecosystems.
- Increase collaboration with Forest Health Protection to restore threatened species by developing, producing, and deploying genetically diverse and/or pest resistant material across the landscape.
- Maintain ongoing technology transfer and technical assistance for tree improvement and reforestation programs to improve performance of timber, bioenergy, and carbon sequestration plantations.

Appendix 1: RNGR Responses to USDA and Forest Service Strategic Goals

USDA Strategic Plan

Goal #1 - Assist Rural Communities to Create Prosperity so They are Self-sustaining, Repopulating, and Economically Thriving

- Reforestation and restoration projects produce jobs in rural areas.
- Work with underserved communities through the Intertribal Nursery Council and Islands Associates.

Goal #2 - Ensure our National Forests and Private Working Lands are Conserved, Restored, and Made More Resilient to Climate Change, while Enhancing our Water Resources

- Help forest, conservation, and native plant nurseries to grow 1.5 billion native plants annually.
- Fill knowledge gaps and develop tools & techniques to address species adaptation and migration in response to climate change.

USDA Forest Service Strategic Plan

Goal #1 - Restore, Sustain, and Enhance the Nation's Forests and Grasslands

- Maintain genetic diversity and local adaptability of plant materials used in reforestation and restoration.
- Developing protocols for collecting, growing, and establishing healthy native plants.

Goal #2 - Provide and Sustain Benefits to the American People

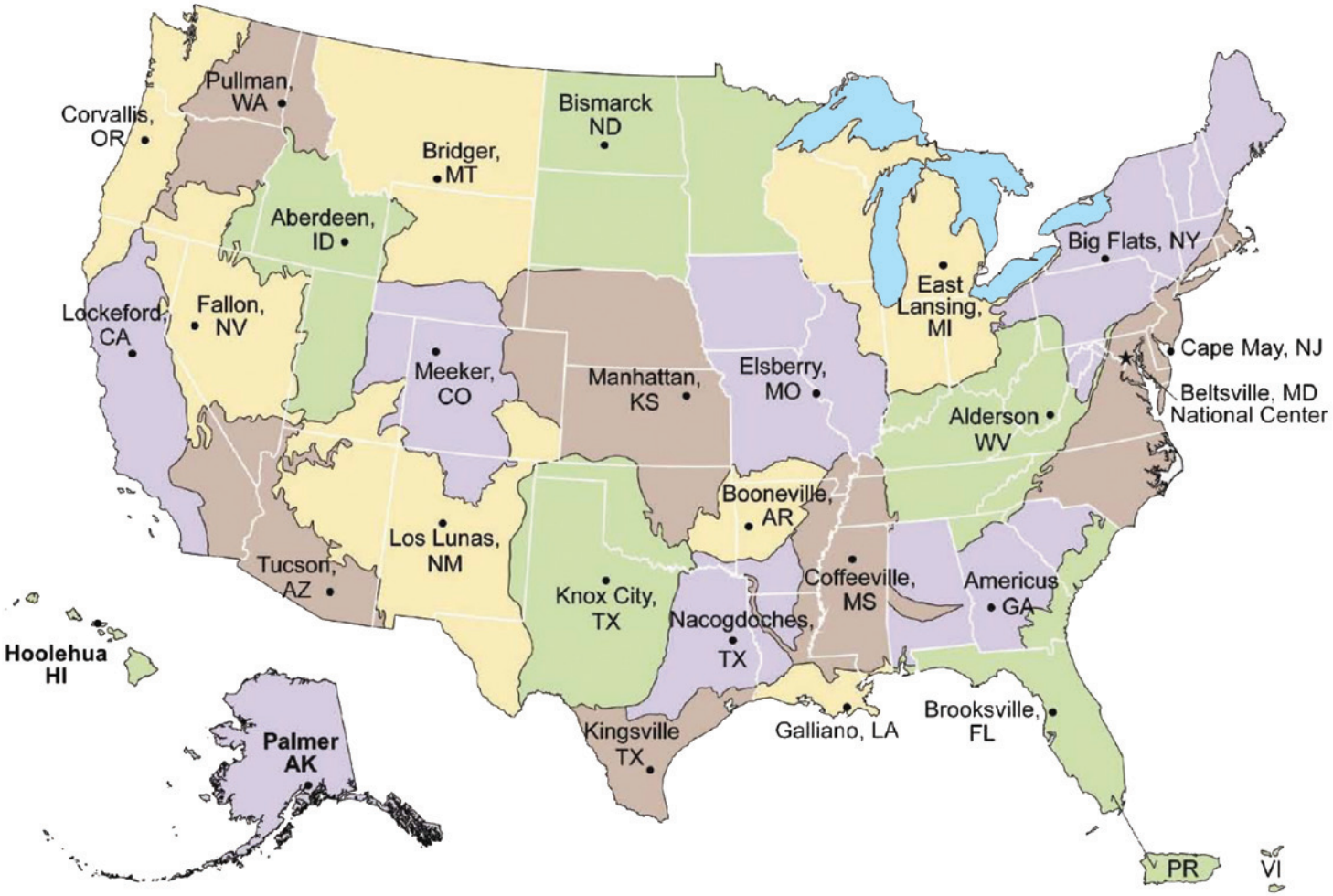
- Support reforestation to produce wood fiber that reduces impacts on natural forest communities.
- Produce plant materials to enhance resilient wildlands and ecosystem services that provide Ecosystem services.

Goal #3 - Conserve Open Space

- Help private landowners and communities maintain and manage their land as sustainable forest and grasslands.
- Provide direct technical support to state, tribal, federal, and private nurseries to provide high quality, locally adapted plant materials.
- Assist tribal communities to establish plant propagation centers that provide plant materials while also promoting environmental education and awareness of their cultural heritage.

Appendix 2:

The mission and area coverage of the USDA Plant Materials Centers overlaps with those of the RNGR Team, so building better coordination is important.

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