

**STATEMENT OF
SCOTT E. SCHLARBAUM, JAMES R. COX PROFESSOR OF FOREST GENETICS
DEPARTMENT OF FORESTRY, WILDLIFE AND FISHERIES
INSTITUTE OF AGRICULTURE
THE UNIVERSITY OF TENNESSEE**

**Before the
Committee on Resources
Subcommittee on Forests and Forest Health
United States House of Representatives**

**Concerning Issues associated with Reforestation Problems
on National Forests**

April 27, 2005

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MR. CHAIRMAN AND COMMITTEE MEMBERS:

National Forests provide a multitude of opportunities for use by American citizens. They are valued for timber, wildlife, recreation, and other uses connected with natural settings. Although managed by the USDA Forest Service, citizens can have input into the Forest Plan for each National Forest. The Forest Plan is the centerpiece for management actions on a National Forest that include decisions on reforestation, goals and objectives, timber land suitability, wilderness designation, monitoring, and other management activities. Moreover, the Forest Plan ensures multiple use and sustained yield of goods and services from the National Forest System. Fire, insects, adverse weather, and other catastrophic events that destroy or damage large areas in National Forests are unpredictable and therefore, are not addressed in the Forest Plan. Reforestation of these areas is necessary in order to attain previous structure and function as specified by the Forest Plan. Successful reforestation is a three-pronged process that depends on funding, a source of living materials, i.e., seeds, seedlings, sprouts, and actual management activities.

Reforestation Funding - Funding for reforestation activities come from three sources: Knutsen-Vanderberg (K-V) funds, National Forest Vegetation and Watershed Management budget (NFVW), and the Reforestation Trust Fund (RTRT). The K-V dollars are tied to planned harvest sales and sales of salvage timber from unpredictable events. The NFVW funds are appropriated based on a submitted fiscal year budget, which normally does not take catastrophic events into consideration. The RTRT funds originate from certain tariffs and may not exceed \$30 million dollars in total. The RTRT funds to each Region are based on annual request of current year silvicultural program and budget planning information. As with NFVW funds, the RTRT funds do not normally consider catastrophic events in Regional allocations.

On the surface, it appears that K-V funds, generated by salvage sales would provide for reforestation, even in a large catastrophic event. In reality, K-V funds do not provide enough

dollars to reforest large acreages for several reasons. When a catastrophic event occurs and wood is plentiful, there can be a market saturation, and paper mills and sawmills will not buy more logs. This is particularly critical to southern National Forests in that the stems of a dead tree will degrade in a relatively short period of time. Another problem stems from the National Environmental Policy Act (NEPA). Under NEPA, generally a large (over 250 acres) salvage logging operation requires an Environmental Assessment (EA). When the EA is complete and a decision has been made that there will be no significant impacts, a Decision Notice is posted as a Paper of Record with an appeal process. This process can lead to legal challenges, which can last until the trees that could have been salvaged are worthless due to degradation.

Given the above limitations for K-V, NFWW, and RTRT funding of restoration, it is evident that reforestation backlogs from catastrophic events will continue to occur and certain objectives in Forest Plans will not be met. Additional funding through RTRT or some other channel will be needed to properly reforest and manage devastated lands according to their respective Forest Plan.

Source of Living Materials - Reforestation efforts depend upon a source of living materials that can be managed or planted to achieve a desired outcome. Disturbed forest land regenerates by natural or artificial (=tree planting) regeneration. Natural regeneration can occur from seeds and/or sprouts. Natural regeneration by seed requires the presence of reproductively mature trees, which are called seed trees. Sprouting is generally limited to hardwood species, although a few coniferous species, e.g., coast redwood, can sprout. The conifer-dominated western forests of pines, spruces, true firs, and Douglas-fir do not regenerate from sprouting and thereby, require seed trees or a source of nursery-grown seedlings to regenerate the forest. Eastern forests can be either conifer or hardwood dominated. Many hardwood species will sprout unless over mature or killed entirely, i.e., stem, crown and root system are dead. Therefore, the need for a supply of seed for artificial regeneration can be critical for reforestation.

Seed Origin - Although forest tree species can have natural ranges that span many states and physiographic regions, there are genetic differences in trees of the same species from different seed sources. For example, seedlings of northern red oak from the deep South may not be adapted to upstate New York environmental conditions where northern red oak also occurs naturally. Reforestation efforts should use seedlings from local sources or seedlings from seed orchards that have been evaluated in the environment that will be planted.

Regional Genetic Resources Program - The foundation for artificial regeneration within the Forest Service lies in the Regional Genetic Resources Programs (Table 1). Regional Genetic Resources Programs (RGRP) were formerly called Regional Tree Improvement Programs and existed in all Regions with the exception of Region 10 (Alaska). These programs were originally developed to improve species for timber production through breeding, testing and creation of seed production orchards. In recent years, however, the Programs have become more holistic in purpose. In addition to producing seed for general reforestation or reforestation due to catastrophic events, the RGRPs can: 1) initiate gene conservation of threatened and endangered species and populations, 2) respond to forest decline from air pollution and global warming, 3) respond to changes in emphasis for National Forest use, and 4) develop genetically resistant trees for various native and exotic pests.

The continued existence of RGRPs is essential to reforestation efforts where artificial regeneration is necessary. The planting of seedlings that are adapted to the reforestation site is critical for long term survival and productivity. Unfortunately, these Programs have been struggling with declining budgets and have been further impacted by the Forest Service’s Budget

Table 1. USDA Forest Service Regions and Regional Genetic Resources Programs (RGRP)

Region	States and Affiliates	RGRP Primary Location
Northern (R1)	MT, northeastern WA, northern ID, National Grasslands in ND and northwestern SD	Moscow, ID
Rocky Mountain (R2)	CO, NE, ND, WY	Administered by R1
Southwestern (R3)	AZ, NM, National Grasslands in NM, OK, and TX panhandle	Administered by R1
Intermountain (R4)	NV, UT, western WY, southern ID, and small amount of CA	Administered by R1
Pacific Southwest (R5)	CA, HI, affiliated Pacific islands	Chico, CA
Pacific Northwest (R6)	OR, WA	Portland, OR
Southern (R8)	AL, AR, FL, GA, LA, MS, NC, OK Puerto Rico, SC, TN, TX, VA	Atlanta, GA
Eastern (R9)	CT, DE, IL, IN, IO, ME, MD, MA, MI, MN, MO, NH, NJ, NY, OH, PA, RI, VT, WV, WI	Milwaukee, WI
Alaska (R10)	AK	none

Formulation and Execution System, which was implemented in FY03. In 1991, the combined RGRP budget was over \$16 million dollars, but had slipped to approximately \$10 million dollars by 1998. In addition, the Region 2, Region 3, and Region 4 Programs were consolidated and placed under the Regional Geneticist for Region 1 in 1998. The new budget system has removed control of most funds from the Regional Geneticists and allocated them to National Forest budgets. Forest Supervisors are now faced with the difficult decisions of funding immediate needs or long-term needs such as seed orchards, which produce seed for reforestation. Seed orchards have been closed or mothballed due to lack of funding.

With respect to reforestation backlogs, the RGRPs should be regarded as an integral part of the solution. Funding increases to address reforestation backlogs should be in concert with funding increases for the RGRPs, in order to sustain a supply of seedlings that are of the appropriate seed source for reforestation sites.

Reforestation Management – There are a wide range of management activities in conjunction with reforestation. In eastern forests dominated by hardwoods, seedlings and sprouts of fast

growing hardwood species, such as yellow-poplar, black gum, red maple, sycamore, and sweetgum, will often quickly dominate a site at the expense of slower growing species, e.g., oaks, which are important contributors to habitat and diversity. Southern forests have an array of aggressive vines, weeds, and grasses that will overtop seedlings unless controlled. Forest managers need to have the flexibility in controlling these competitors, but lack a Categorical Exclusion for herbicides despite the fact that some herbicides are benign to human health and do not move through soil, e.g., glyphosate. Herbicide use now requires an Environmental Impact Statement (EIS) or an EA, which cost money to conduct and can be appealed. Delay by litigation can be critical in some regions, as degradation will quickly ruin the market value for a log.

Reforestation Backlogs in Southern Region (R8) National Forests - Recently, southern National Forests have been subjected to catastrophic damage from insects. In addition, a large portion of land was acquired that had considerable fire damage. Overall, there is a large reforestation backlog in the Southern Region (Table 2).

Table 2. Reforestation program accomplishments and backlog, FY2003-FY2005 for the Southern Region (NFVW = National Forest Vegetation and Watershed Management funds, RTRT = Reforestation Trust Fund; K-V= Knutsen-Vanderberg funds). Source: USDA Forest Service R8 2003-2004 TRACS (Timber Activity Control System) report.

Reforestation Acres	Fiscal Year 2003	Fiscal Year 2004	Fiscal Year 2005
Reforestation using NFVW/RTRT funds	8,694	9,262	7,753*
Reforestation using K-V funds	16,630	14,182	12,505*
Total accomplishment	25,324	23,444	20,258*
Reforestation Backlog	179,803	181,809	

* assigned targets

Below are three examples of problems that have caused a reforestation backlog in southern National Forests. In each situation, there is a lack of funding that has caused a reforestation backlog and there is a lack of seed from an appropriate source for artificial regeneration.

Ozark-St. Francis National Forests - Currently, there are 350,000 acres of severe oak mortality with another 300,000 acres of moderate mortality on the Ozark National Forest (Arkansas). In the areas with severe mortality, over 50 percent of the red and white oaks are dead, and many of the remaining oaks have thinning crowns (loss of leaves) indicating that they may die as well. The red oak borer has been identified as the primary causal agent. Damage occurs from the larval stage of this insect, which chews large holes in the tree's stem and branches in the crown. The borer will attack even small oaks, i.e., 3" diameter, and cause mortality. In heavily infested trees, one oak borer per linear inch of the stem has been found. This damage predisposes a tree to Armillaria root rot and hypoxylon canker diseases and attacks from other insects such as white oak borers, carpenterworms, walking sticks, and grasshoppers. Although the mortality has been primarily ascribed to the red oak borer, the oak-dominated forests on the Ozark National Forest were heading for decline because of drought, relatively oak age (70-90 years-old), overstocking, and poor site quality.

The overall result of the oak mortality will be low density forests consisting of species inferior for timber and mast production. Regeneration of the oak component will be limited, due to the lack of seed trees and intense competition from faster growing hardwoods. If allowed to occur, this will be a significant change in forest habitat and diversity. Restoration of the oak component will require the use of artificial regeneration and post-planting management to reduce competition. Unfortunately, there are no seed orchards for production of red or white oak acorns adapted for the Ozark National Forest. The Region 8 RGRP has recently created some oak plantations for eventual conversion to seed orchards, but it will be a number of years before the trees reach reproductive maturity.

Daniel Boone National Forest – At the advent of the 21st century, southern pine beetle populations began to multiply and reached epidemic proportions in 2001 on the Daniel Boone National Forest (Kentucky). By 2002, there were dead or damaged pines on approximately 70,000 to 90,000 acres within the Forest boundaries. Within the predominately pine stands of the Daniel Boone National Forest, were red-cockaded woodpecker colonies, a federally listed endangered species. Until the southern pine beetle outbreak, these colonies had been increasing in size. The outbreak destroyed their habitat, which necessitated trapping the surviving birds and relocating them to more southern locations in Arkansas, Georgia, and South Carolina.

The Forest Plan was revised in 2004 to include an objective to reforest 8200 acres in shortleaf pine over the next 10 years and approximately 42,000 acres over a longer period of time. With current resources, the Forest is reforesting approximately 600 acres per year, which is short of the amount of acreage required under the Forest Plan. Correspondingly, a reforestation backlog exists. Over time, reforestation will become more expensive as hardwood species are in the process of dominating the sites and will have to be killed or removed prior to planting shortleaf pine. In addition, there is not enough shortleaf pine seed adapted for the Daniel Boone National Forest to sustain the reforestation effort.

Osceola National Forest – The Osceola National Forest in Florida recently exchanged land with a timber company to better consolidate the National Forest and thereby, reduce management costs, improve water quality, and reduce forest fragmentation, which is important to wildlife. Prior to the exchange, a prescribed fire on the National Forest escaped and burned approximately 14,000 acres of the land that was intended for exchange. The exchange proceeded, but the Forest inherited a block of burnt-over land, instead of a longleaf pine forest, and must fund any restoration with existing funds, i.e., from RTRT and NFVW. Reforestation efforts will be limited as there are no funds to collect longleaf pine seed adapted for the local environment.

Closing Statement

Reforestation backlogs on National Forests will continue to occur as catastrophic events are difficult to predict. Provisions for additional funding to meet immediate reforestation needs from catastrophic events should be made. Otherwise, there will continue to be alterations in the habitat and diversity on National Forests where a catastrophic event has occurred, resulting in failure to meet certain Forest Plan objectives. Reforestation should be regarded as a combination of actions leading to a single outcome. The Regional Genetic Resources Programs are the

foundation for reforestation where artificial regeneration is required and thereby, are integral in the reforestation process. Increases in funding to meet reforestation backlogs should correspond to increases in the Regional Genetic Resources Programs' budget in order to generate enough seed of appropriate origin to meet reforestation needs. Management activities in conjunction with reforestation should be efficient and environmentally safe. A Categorical Exclusion for the use of benign herbicides to control competition in reforestation plantings would significantly improve survival and growth without damaging the environment.

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