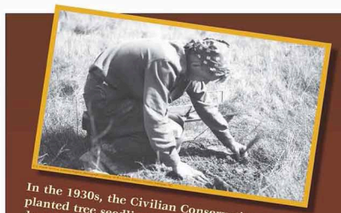
U.S. Department of Agriculture Forest Service
Eastern Region Genetic Resources Program

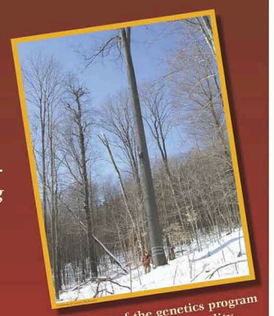
Healthy Forests—Past, Present, Future



In the 1930s, the Civilian Conservation Corps planted tree seedlings on millions of acres of denuded land.

National forests in the Eastern Region (Region 9) were created primarily from "the land that nobody wanted"—private property that had been logged, burned, eroded, farmed, or mined.

The Region 9 Genetic Resources Program helps ensure forests are healthy by conserving genetic resources for the future, providing plant materials for reforestation and restoration, developing insect- and disease-tolerant plant material, and supplying appropriate seed for a changing climate.

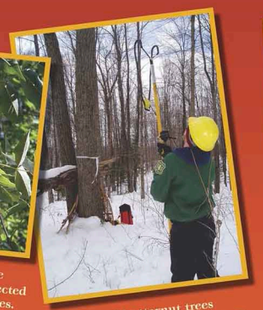


The focus of the genetics program has changed from commodity production to the long-term survival of threatened species.

Conserving Genetic Resources

We don't know which threats will affect a particular population. However, populations that are genetically diverse are most likely to survive. Forest Service geneticists maintain healthy forests and grasslands by helping preserve the genetic diversity of plant populations.

Emerald ash borer is expected to kill more than 99% of native ash. Seed is being collected to preserve genetic diversity of the ash trees.



With 98% of butternut trees infected or dead, these trees may disappear forever. The genetics program is collecting samples for clone banks.

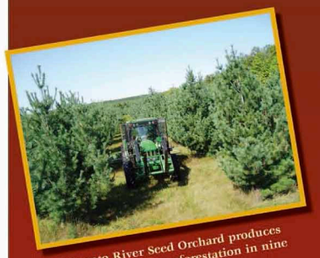
A molecular study of Canada yew conducted with the National Forest Genetics Laboratory is helping guide restoration of this species.

Forest Service geneticists can help protect the genetic diversity of plant materials outside a normal forest setting until a more permanent solution is found.

Providing Plant Materials for Reforestation and Restoration

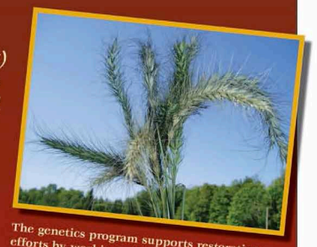
Trees lost to a disturbance can be regenerated naturally or artificially. In the East, national forests often rely on natural regeneration. Geneticists can provide advice on maintaining genetic diversity and desirable traits.

Seed collection zones show the best places to get seed for a planting project.



The Oconto River Seed Orchard produces high-quality seed for reforestation in nine seed collection zones.

When artificial regeneration (planting) is needed, the genetics program provides seed that is genetically diverse and locally adapted.



The genetics program supports restoration efforts by working with the J.W. Toumey Nursery to provide appropriate seed sources for native plants and trees.

Developing Pest-Tolerant Plant Material

Exotic pests can devastate native plant populations. Eastern forests are threatened and affected by exotic insects and diseases. New threats continue to arise. After our partners in research demonstrate that breeding plants for resistance to a particular pest is practical, the Region 9 genetics program will continue the breeding program for the national forests.

In the 1950s, Robert Patton of the University of Wisconsin showed that resistance to blister rust is genetically determined.

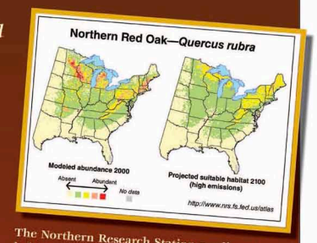
Region 9 is working with the Northern Research Station (Jennifer Koch) to identify American beech trees that are resistant to the beech bark disease complex.

Seed orchard manager Carrie Sweeney uses techniques developed by Robert Patton to identify rust-resistant plants for Region 9.

Adapting to Climate Change

The climate change predicted in Region 9 is expected to affect the distribution of many plant and tree species. Many of today's plant populations are not likely to be suited for the climate of 2100.

Many populations may not be able to migrate or evolve fast enough to survive. Maintaining healthy forests would require assisted migration. Forest Service geneticists can identify seed for future climates and can make the seed available.



The Northern Research Station predicts the habitat suitable for northern red oak will diminish during this century. Team members include Louis Iverson, Anantha Prasad, Stephen Matthews, and Matthew Peters.

Our partners help provide labor, guidance, analyses, protocols, and plant material. Our Forest Service partners include the national forests, State and Private Forestry, and Research and Development. Partners also include other Federal agencies, university researchers, State natural resource agencies, and nonprofit organizations.

The Forest Service and cooperators, such as the University of Minnesota, improve their programs by sharing plant material.

The American Chestnut Foundation is working with Region 9 to restore chestnut trees to the eastern forests.

We Want to Hear From You!

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We can be successful only with your help.

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