The Forest Service National Genetic Resources Management Program and Integration with the National Forest and Grasslands

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The Forest Service's Genetic Resource Management Program is critical for providing genetics expertise and training to support the National Forests and Grasslands ensuring ecosystems resilience and health while conserving biodiversity. Our national program supports the Forest Service Mission "to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations." It contributes to successes in restoration, revegetation, reforestation, species conservation, mitigating impacts of non-native pathogens and insects, fire recovery and climate change adaptation efforts. Environmental problems, climate change, pest and diseases, wildfire and other natural disasters are part of the threats impacting the agency's forests and grassland resources. The National Forest System (NFS) Geneticists routinely work collectively on commercial and non-commercial conifer and hardwood tree species, as well as native grasses and forbs. The major responsibilities of the NFS Geneticists are to: (1) Coordinate tree improvement and plant breeding programs to develop better adapted, climate change resilient, and disease/pest resistant genetic resources for planting, (2) Manage orchards for operational seed production and breeding arboreta as *ex situ* conservation reserves, (3) Select disease and pest resistant germplasm with durable genetic resistance to endemic and introduced diseases of forest trees, (4) Implement strategies for genetic conservation of threatened and endangered tree species or populations for *ex situ* and *in situ* preservation, (5) Develop and apply seed zones, breeding zones, and seed transfer guidelines to ensure adaptability and successful reforestation or revegetation with proper seed deployment recommendations, (6) Provide planting programs with assisted migration guidance on the proper relocation of species or populations to ensure resilient landscapes under climate change, (7) Establish evaluation plantations to assess the genetic worth of plant materials for long-term adaptation in lieu of climate change, (8) Plan, coordinate, and train for seed procurement activities to ensure seed supply with genetically diverse and adapted planting materials, and (8) Collaborate in genetic related activities with research, academic, non-profit, private sector, tribal, and international entities in cooperative efforts, consultations, reviews, information and germplasm exchange. The Forest Service Genetic Resources Management Program also provides genetic and genomic services for forest and grassland management with the National Forest Genetics Laboratory (NFGEL). NFGEL provides baseline genetic information, determines the effect of management on the genetic resource, supports genetic improvement programs, and contributes to conservation and restoration programs, especially those involving native and threatened, endangered, and sensitive species. State-of-the-art molecular genetic information is provided to National Forests and grassland managers as well as to other cooperating agencies to assist with the proper management of our nation's genetic resources.