GENETIC RESOURCE MANAGEMENT AT THE NATIONAL FOREST GENETIC ELECTROPHORESIS LABORATORY (NFGEL)

Valerie Hipkins, Suellen Carroll, Pat Guge, Randy Meyer, and Paul A. Skaggs. [1]

NFGEL is a national Forest Service facility established in 1988 as part of the National Forest System. Our mission is to provide state-of-the-art molecular genetic information to the National Forests and other cooperating agencies for the evaluation and protection of our nation's genetic resource. Current techniques include starch gel electrophoresis (isozymes), isoelectric focusing, PCR-based technologies such as RAPDs, microsatellite analysis, and RFLPs. We work closely with research institutions to incorporate the latest technological advancements into our program. Our protein work is conducted in Camino, and our DNA analyses are carried out in a cooperative agreement with Dr. David Neale at eh PSW Institute of Forest Genetics in Placerville. At the inception of our lab, we focused exclusively on tree improvement issues. It has been a decade of change and varied opportunities as we have expanded our scope of activities to address genetic conservation and management of all plant species. NFGEL is staffed by a Director, Associate Director, Lab Manager, two Biological Lab Technicians, and Computer Programmer. The NFGEL staff provides varied services to our clients. We function as a clearinghouse of genetic information as well as providing genetic lab services. Laboratory services include developing project proposals, formulating sampling design and collection strategies, conducting electrophoresis of protein and DNA markers, analyzing and interpreting data, reporting results, and drawing management implications. To date, we have studied 20 different gymnosperms (all but one of which belongs to the family Pinaceae), and 19 different angiosperm species. Angiosperms studied include woody species (such as aspen, cottonwood, and oaks) as well as grasses, shrubs, and forbs. Land management questions NFGEL studies include issues of genetic diversity and structure, taxonomy, and plant identification. Our work supports tree improvement programs, conservation of plant species (particularly threatened, endangered, and sensitive species), and restoration efforts. Our genetic tools offer objective options for the assessment of diversity and can contribute to appropriate management strategies.

[1] USDA Forest Service-NFGEL, 2375 Fruitridge Rd, Camino, CA 95709