



## ***The National Forest Genetics Laboratory (NFGEL)***

***Purpose and Mission*** The National Forest Genetics Laboratory (NFGEL) provides genetic testing and information for integrated solutions to on-the-ground problems faced by natural resource managers and policy makers. Solutions are provided for public agencies, non-government organizations, and private industries across the United States, often spanning geographical and organizational boundaries. Part of the National Forest System, Forest Management since 1988, the laboratory is located at the Institute of Forest Genetics in Placerville, California.

NFGEL works closely with land managers to provide them key genetic information that is relevant and timely for their management decisions. Society's ability to establish and sustain healthy forests and rangelands—especially in face of current pressures such as habitat fragmentation, climate change, and degraded ecosystems—requires an understanding of genetics. Information about genetics helps assess past, current and future biological changes, and provides implications for management options in the future. NFGEL uses state-of-the-art technology to address genetic conservation and management of all plant species using various laboratory techniques including DNA analyses.

NFGEL links science to management in the area of genetics to meet resource management needs -- whether they be the need to develop conservation strategies for whitebark pine, produce restoration guidelines for native grasses, or use DNA to identify wood stolen from a National Forest.

***Activities*** Using advanced DNA technologies, NFGEL produces genetic information for:

### **Reforestation**

- ◆ maintaining species and genetic diversity at the local and landscape levels
- ◆ identifying species, populations, and communities that are sensitive to increased disturbance
- ◆ refining seed collections within adaptive zones, so that they are genetically diverse, disease resistant, and adapted

### **Climate Change**

- ◆ assisting in the breeding and production of new genotypes and seed sources for assisted migration in the face of changing climate
- ◆ identifying refugia that can be used as sources of seed for species and population recovery
- ◆ identifying genetic variation in climatic tolerances of tree and other plant species

### **TES Species Protection**

- ◆ identifying endangered and invasive plant species
- ◆ identifying the effectiveness of conservation efforts
- ◆ determining taxonomic status of key species

### **Timber Theft and Illegal Logging**

- ◆ matching seized logs or fuelwood to source stumps
- ◆ determining the origin of illegally logged material
- ◆ reconstructing the scene of wildland fires

