Excerpt from "The Status of Temperate North American Forest Genetic Resources. 1996. D.L. Rogers and F.T. Ledig, eds. Report No. 16, University of California Genetic Resources Conservation Program, Davis, CA. 102 p.

Emerging issues

Workshop participants

Society is in an era of rapid global change. We were not able to analyze the effects of various political, economic, and social changes on conservation of genetic resources but their impact is certain. Shifting political alliances, in particular those creating common markets, will affect conservation of forest genetic resources. Some of the effects of new trade policies and agreements may have unintended impacts on the conservation of forest genetic resources (see Box 25). The North American Free Trade Agreement (NAFTA) will probably result in greater exploitation of resources. In forestry, NAFTA may have the result of intensifying logging and shortening rotations. Shorter rotations may conflict with dynamic evolution of local races. Increased competition in formerly protected national markets, particularly in México, may result in conversion to short-rotation exotics, such as eucalypts, potentially reducing habitat for native North American species. The increasing demand for forest-derived consumer goods may outstrip the ability to design and implement conservation strategies in that country.

Another effect of free trade agreements and common-market conditions may be the freer exchange of materials, including forest genetic resources. Therefore, it is important to focus on issues relating to exchange of germplasm. In particular, there is a need for identification of materials; i.e., where they are from and where they are distributed, plus the genetic characterization of the source populations and how that affects the extent and context for their cultivation. The anticipated increase in germplasm exchange also increases the need for *in situ* conservation programs. Conversely, there is also a need to increase attention on the potential of exotic gene pools as sources of genes for diminished natural populations.

With expanding global market connections, there is a need to further consider the role and importance of nongovernmental organizations (NGOs) in developing conservation strategies, recognizing that these organizations have, in part, driven the international conservation agreements now in place.

To achieve the objectives of the Convention on Biological Diversity, concerns that must be addressed include policy compliance on privately owned forests and policies directed at nonforest issues (e.g., those concerned with agriculture, regional or industrial developments, or trade), both of which affect the success of forest policies (Kanowski 1995). Finally, there is a need to resolve any conflicts between the Rio Conven-

tion on Biological Diversity and conventions to enhance the exchange of genetic materials. These emerging and potentially conflicting issues include bioprospecting agreements, breeders' rights, patents on life forms, and protection and conservation regulations (e.g., CITES).

Box 25
Some negative aspects of European Community policy on management of forest genetic resources in Spain

European Community regulation 2080/92 promotes the conversion of agricultural lands to forest. Ironically, the maintenance of forest species diversity in Spain has been negatively affected by this regulation, whose basic purpose was to reduce excess agrarian production and improve competitiveness by removing marginal agricultural lands from production. The regulation provides funding to cover the costs of site preparation, tree planting, and maintenance for the first five years after plantation establishment, and compensates the loss of agricultural rents during the next 20 years. However, the level of support depends on the species used in the plantations.

The way in which the regulation is applied in Spain has resulted in the planting of nonnative seed sources of native species. The level of support for planting autochthonous tree or shrub species (endemic, valuable wood producers, or endangered), is more than double that for planting trees for wood production that have rotations longer than 18 years. Fast-growing species (such as eucalypts) are not even considered. Consequently, during the last two years, the demand for planting stock of yew, holly, juniper, arbutus (*Taxus, Ilex, Juniperus, Arbutus*), etc. has increased beyond any precedent. The result is that commercial nurseries have collected plants all over Europe, without any regard for their origin and without maintaining any record, for planting on agricultural lands throughout Spain.

Afforestation of agrarian lands without proper regard to the match between species and site will be compounded by problems peculiar to these sites, such as soil compaction, lack of mycorrhizal fungi, improper soil pH and nutritional imbalances, etc. Worse, from the standpoint of conserving forest genetic resources, the use of uncontrolled, nonnative genetic material near the natural populations of rare or endangered species will result in genetic contamination that compromises future preservation or conservation programs. Most local populations of native forest and shrub species have not been genetically described, so we cannot even gauge the extent of the problem.

European Communities Council Directive 66/404 supports the use of forest sexual-reproductive material of 13 species and vegetative-reproductive material of poplars. This directive also has adversely affected forestry. The directive fixed the use of forest reproductive material for the 13 'noble' species that it named at only two selection levels: 1) selected reproductive material (i.e., from desig- ➤

Box 25 (continued)

nated seed stands); and 2) controlled reproductive material (i.e., from tested seed orchards). It excluded the use of material that was merely identified by source (i.e., of known provenance).

When this directive was applied in Spain, no selected seed stands or production seed orchards existed for any of the species involved. The forest administration was forced to request annual exemptions from the directive to maintain its forest planting program (other countries in Europe decided to identify all their forests as selected stands). However, the exemptions did not cover the entire seedling demand. Therefore, it was necessary to import and plant material that had been selected under other environmental conditions and from nonnative genetic bases. This was done without the benefit of records or controls, and, in some cases, plantations were established in close proximity to native Spanish populations.

A special situation was created with regard to Douglas-fir (*Pseudotsuga menziesii*). Douglas-fir is one of the directive's 13 'noble' species. The performance of Douglas-fir in northern Spain is excellent, and its use, by both the forest administration and by private owners, is increasing year after year. However, the possibility of building a good genetic base is threatened if it is not possible to assemble a broad sample of the native North American populations (especially those from northern California and southern Oregon) that have proven most adapted in provenance tests in Spain (Figure 16). These populations are of minor interest to the rest of Europe, and there is no adequate European base in select seed stands or seed orchards to draw upon.

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Figure 16. Fourteen-year-old Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco) from southern Oregon, U.S.A. in a seed source test in Orense Province, Galicia, Spain. (Photo courtesy of James L. Jenkinson, Pacific Southwest Research Station, USDA Forest Service, Berkeley, California, U.S.A.)