Committee on Resources

Witness Testimony

Testimony on
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MADAM CHAIRMAN AND COMMITTEE MEMBERS:

Conservation of the natural resource heritage in the United States is every citizen's concern. The varied forest ecosystems in this country make a significant contribution to present day existence and lifestyles as well as in being vital to the existence and well-being of future generations. The introduction and establishment of invasive exotic species, including pathogens, insects, nematodes and plants, in North American forests has caused dramatic changes in these ecosystems. Probably the greatest ecological disaster in North America was due to an exotic pathogen. Chestnut blight (Cryphonectria parasitica) altered the face of eastern forests by removing the dominant tree species, American chestnut (Castanea dentata), which comprised 25 percent of the standing timber. In western forests, the initial spread of white pine blister rust (Cronartium ribicola) devastated 5-needled pine species, impacting timber-based industries and critical mast production for wildlife. Exotic pest plants have become prevalent in forest and range settings by invading disturbed areas and displacing the natural vegetation. In southern states, kudzu (Pueraria lobata) provides spectacular examples of enshrouding a site with a leafy blanket. Invasion of disturbed sites by Scotch broom (Cytisus striatus) have impacted forest regeneration in western states.

Native species often have little or no resistance to exotic diseases and insects, and these pests can potentially decimate host species to the point of extinction. Many arguments can be made for the continued existence of native plant and animal species inhabiting forest ecosystems. These arguments can be one-dimensional, concentrating on a particular use or attribute of the species. Some justifications are based on the value of the species as a commodity or for aesthetics. In reality, there are many reasons that these species are present in forest ecosystems. We may not fully understand nor appreciate what role each species plays in the forest, but there are reasons that they are there. From a human perspective, the importance of each species has been shown to transcend time. Species or certain populations that may appear to be relatively insignificant in one time frame can be crucial to civilization in another period. There are numerous examples of incorporating a desirable trait, such as pest resistance, into a domesticated crop species through hybridization with a related, but commercially unimportant species. A loss of these non-domesticated or "wild" species may have an immediate or a future effect on mankind.

The disruptive effects of exotic pests affects many values a forest ecosystem has to contribute to the quality of human life. These values include timber and non-timber products, recreational opportunities, employment, water volume and quality, and values associated with existence, historical and spiritual perspectives. The loss from timber revenues alone is estimated at 2 billion dollars each year. In addition to

affecting forest-related values, resident exotic pests drain millions of dollars from state and federal treasuries in research related to control and in mitigation/eradication procedures.

To resolve a resident exotic pest problem, there should be a balance between pest control, protection of the host or displaced species' genetic resources (if potentially endangered with extinction), and reintroduction of the host or displaced species into the ecosystem. To date, the most emphasis has been on developing and implementing control measures. However, there has been a variable response to exotic pests, in terms of control. Gypsy moth (Lymantria dispar) impacts a wide spectrum of tree species and is addressed by spectrum of research-based control measures, including biocontrol, pesticide applications, and cultural practices. Conversely, research to address pests such as butternut canker (Sirococcus clavigignenti-juglandacearum), beech bark disease complex [European beech scale (Cryptococcus fagisuga); Nectria species], and balsam (Adelges piceae) and hemlock woolly (Adelges tsugae) adelgid problems has been minimal, although populations of the primary host species are being progressively eroded.

Unfortunately, protection of the host or displaced species' genetic resources is often ignored due to the absence of funding and a lack of recognition of the importance of conserving locally adapted genotypes. If genetic resistance is found or effective control measures are developed, locally adapted genotypes would be optimal material to use in crossing schemes or seedling production, respectively. Without locally adapted genotypes, long-term survival of the reintroduced host species into the forest ecosystem may be jeopardized.

Reintroduction of host or displaced species usually involves generating seedlings in large numbers. Seed orchards or seed production areas for non-arborescent species are needed to generate the necessary number of seeds for reintroduction on a landscape- scale. As with protection of genetic resources, little planning or emphasis has been given to the mechanics of seed production as well as defining the cultural approaches to reintroducing a species into the forest.

Exotic pests have caused serious problems in National Forests, particularly in the eastern United States. Addressing exotic pest problems in National Forests is through the combined efforts of Forest Service Research and the Forest Service National Forest System. Forest Service Research is responsible for developing different control approaches, including management options, biocontrol, and breeding for host resistance. Once developed, control options are implemented under the auspices of National Forest Management programs by the National Forest System. Production of resistant seeds and seedlings for reintroduction falls under the auspices of the Regional Tree Improvement Programs in each Forest Service Region. These Regional Programs, particularly in Regions 1, 5, 6, and 8, have the infrastructure to develop seed orchards to produce resistant seeds or seeds of locally adapted genotypes if the exotic pest has been controlled through biocontrol or another procedure. Two examples of successful technology transfer from Forest Service Research to the Regional Programs are the production of blister rust-resistant western white (Pinus monticola) and sugar pine (Pinus lambertiana) seedlings in western states and fusiform rust-resistant loblolly (Pinus taeda) and slash (Pinus elliottii) pine seedlings in southeastern states. These examples represent over forty years of research and development efforts.

Unfortunately, the continued effectiveness of the Forest Service to respond to exotic pests is currently in doubt. Correspondingly, the maintenance of species composition and thereby, ecosystem integrity on National Forests with exotic pest problems is in jeopardy. Since 1985, declining budgets and redirection of research projects have eliminated many forest pathologist and entomologist positions. With respect to developing host species resistance, Forest Service Research has dramatically reduced the number of geneticists and has redirected program emphasis away from breeding and other traditional tree improvement research activities. This staff reduction and redirection has significantly reduced the opportunity to capitalize

on genetic resistance to various exotic pests including chestnut blight, hemlock woolly adelgid, beech bark disease, butternut canker, Dutch elm disease (Ophiostoma species), and dogwood anthracnose disease (Discula destrutiva). Correspondingly, no resistant genotypes will be available for the Regional Tree Improvement Programs to augment in seed orchard settings.

The future of the Regional Tree Improvement Programs is questionable. These Programs are funded through the vegetation management budget for each Region, which includes tree improvement, nursery production, reforestation, and timber stand improvement activities. These budgets have steadily declined over the past five years. Even if funding was not reduced, Regional Tree Improvement Program response to non-timber related exotic pests are hampered by laws regarding appropriate use of designated funds. As long as the Forest Service budget follows the present functional lines, these Programs will not have the flexibility to respond to non-timber exotic pest problems. Despite much rhetoric about ecosystem management and ecosystem restoration, reorganization of the Forest Service budgeting process has not occurred to properly support these landscape-scale activities.

The National Forests nor the general public cannot expect to rely upon much assistance from private industry or state-funded tree improvement programs in efforts to develop host resistance or reintroduce trees or plants. Industrial tree improvement programs and industrial-based university cooperative programs generally only address pest problems on commercial species in plantation settings. With respect to state-funded programs, there has be progressive elimination of tree improvement programs nationwide. Over the past two decades, many university and state programs have been eliminated due to budgetary constraints, the lack of opportunity to participate in competitive federal funding programs, and administrative short sightedness. Even if other adequate pest control measures are developed, the infrastructure to preserve the local genetic resources and develop a propagation system generally is not present.

Solutions for resident exotic pest problems are long-term in nature and very costly, as inferred by the above narrative. Overall, the ability to respond to resident exotic pest problems is diminishing in the face of declining federal and state budgets. Introductions of exotic pests, however, still occurs as evidenced by the current struggle against the permanent establishment of the European bark beetle (Tomicus piniperda), the European spruce bark beetle (Ipstypographus), and the Asian cerambycid or long-horned beetle (Anoplophora glabripennis). The establishment of any new exotic pests in our Nation's forests will further stretch thin resources for effective control and thereby, lower the probability for success in controlling all resident exotic pests. As lawmakers deliberate strategies for managing forest ecosystems to provide the greatest amount of positive values, as outlined in the Forest Health Science Panel's report, they should careful consider policy alternatives that will provide a higher probability of introducing new exotic pests. An increase in importation of logs from temperate climates will increase the risk of introducing new exotic pests as shown by three Forest Service risk assessments. The safest course for protecting United States forests from new exotic challenges is to become self-sufficient in wood and fiber production to meet our society's growing needs.