

What's Ahead— *Emerging Research Priorities*

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The South and Its Forests Are Changing

The South is a complex region with several important forces of change altering the sustainability of its forests. Findings from the *Southern Forest Resource Assessment* help us to anticipate and understand the forces of change and to conduct the research needed to manage in a changing environment. These findings will guide public forest management, forest research, and technical assistance efforts in the South well into the 21st Century. Some of the important things we learned are that:

- The South is an economically, culturally, and ecologically complex region. Multiple forces of change are simultaneously affecting forest

Rare amphibian species are concentrated in the Southern Appalachians, the Florida Panhandle, and central Texas.

U.S. Fish and Wildlife Service

conditions. Population is growing faster than the national average, and the social context is changing—trends that will have implications for uses of forests and the values and demands that people place on them. Urbanization will have the most direct, immediate, and permanent effects on the extent, condition, and health of forests.

- Total forest area will remain relatively stable, but the region will experience a shift in forest area, with losses to urbanization in the eastern part of the region offset by cropland conversions further west. Timber production from southern forests is forecast to expand further but not to deplete inventories below current levels—largely due to investments in pine plantations that will have ecological implications.
- Southern forests have become some of the most productive in the world, but some components are scarce and therefore at risk. Concern about biodiversity is focused on the numerous imperiled animal species and increasingly rare forest communities that have high ecological value.



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Wildfire kills trees and threatens nearby homes on the wildland-urban interface.

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- Some particular concerns include: recreation pressures and forest-health issues in the Southern Appalachians; urbanization, fragmentation, and loss of recreation opportunities on the Piedmont; and further loss of endangered animal and plant species on the lower Atlantic and Gulf Coastal Plains.

The Assessment identified a number of knowledge gaps, many of which are likely to be incorporated into work plans of existing Federal, State, and university research units. Three areas of investigation need an infusion of expertise and funding: (1) to understand and mitigate the effects of rapid urbanization and the encroachment of humans on forest ecosystems; (2) to develop prescriptions for restoring forest ecosystems in decline and maintaining ecological values in forests altered by intensive management, disturbance, and catastrophic events; (3) to develop landscape-scale analysis tools, predictive models, and simulations with respect to land use, all aspects of productivity, change, and uncertainty. ▲

Changing Demands on Research in the South

Land use patterns in the region will continue to change as the population increases. The interface of people and natural resources will shape the future research agenda for the Southern Research Station. Both public and private lands are essential for wildlife habitat, recreational uses, water, and wood products. As populations and urbanization expand in the South, the demand for economic growth, living space, and recreation are placing ever-increasing pressures on forests in and near urban areas. These increased pressures are causing new and diverse challenges in urban and suburban areas by impacting biodiversity and endangering watersheds. Many people think that the Southwest is the region with water issues, but the forestry community in the South knows that water availability will become one of their critical issues in the near future.



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A related issue is wildfire protection for people who live at the interface between forest land and urban/suburban areas. SRS is identifying ways to minimize the likelihood of wildfires by reducing fuel loads and by altering silvicultural treatments.

The lack of outdoor recreation availability for people living in and around cities is an important issue that links population growth and natural resources. New research is planned to assess the recreational needs of various population groups and identify how to make Federal forest lands more accessible to them.

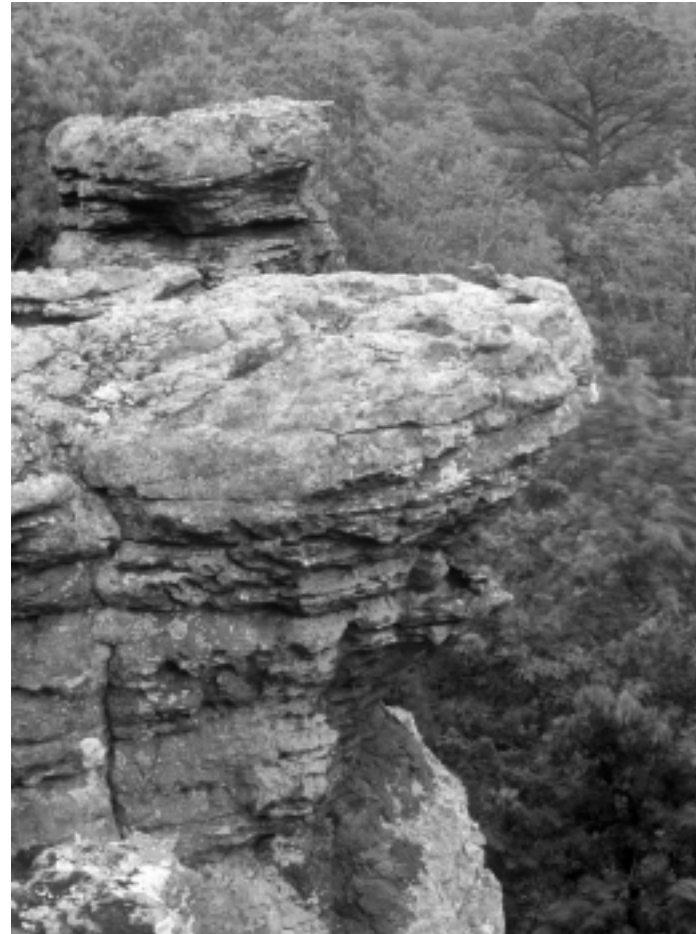
Each year southern forests are affected by a greater number of introduced insects and diseases and nonnative plant species. Because these organisms did not develop here, they have no natural biological controls. Once they gain a foothold, they often spread rapidly causing destruction and displacement of local vegetation. Sudden oak death is the newest disease of concern. A preliminary survey showed that it is spreading rapidly across parts of Arkansas and causing mortality to mature red oaks. Gypsy moth, balsam woolly adelgid, and Formosan termites are just a few of the nonnative insects that are already established in the South. Meanwhile, dozens of nonnative plants—such as kudzu, oriental bittersweet, and multiflora rose—continue their rapid spread.

All of these issues fit within the framework of the President's Healthy Forest Initiative, an important push to provide the resources needed to improve the health and sustainability of the Nation's forest and rangeland resources. After many years of declining budgets, the influx of money to study important forest-health issues will help the Forest Service and SRS make great strides in serving the people of the South. ▲



Access to recreation opportunities is becoming scarce on private land.

USDA Forest Service



Pedestal Rocks Scenic Area in the Ozark National Forest.

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Reforestation in the Mississippi Alluvial Valley

The Mississippi Alluvial Valley is the floodplain of the Mississippi River and includes most of eastern Louisiana, eastern Arkansas, northwest Mississippi, and portions of Tennessee, Kentucky, Missouri, and Illinois. More than 80 percent of the forests in this area have been cleared for agricultural and other uses. Conversion of forest lands to urban and agricultural uses results in forest fragmentation and reductions in bottomland hardwood forests, changes in floral and faunal species richness, decreases the amount of forested wetlands with attendant decreases in water availability, and reduces the amount of stored carbon.

Economic forecasts predict a 35 percent increase in real forest rent relative to real agricultural rent by 2020, rising to a 75 percent increase by 2040. As a result, economists predict that forest acreage will increase in the Mississippi Alluvial Valley. This increase, primarily from the

establishment of new plantations, will be a key factor in balancing the loss of forest acreage to urbanization further east. If left unthinned, plantations will serve as host material for infestations of southern pine beetles and other insects and diseases. Conversely, high intensity management of plantations can increase yields by 65 to 100 percent, but can result in varying ecological changes. We are working to define the major research questions that will address landowner needs. ▲

Hypertext Encyclopedia

With the hypertext encyclopedia for the Southern Appalachians nearly complete, work began in 2002 on a companion product for fire in the South. Plans are in place for other modules on wetlands, interior highlands, and pine ecosystems. This product offers great promise, both for professional foresters and for those who want a convenient way of learning more about managing and valuing the forest resources of the South. ▲

New plantations in the Mississippi Alluvial Valley will be a key factor in balancing the loss of forest acreage to urbanization further east.

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Special Forest Products

Special forest products, sometimes called nontimber forest products, are plants, parts of plants, fungi, and other biological material that are harvested from within and on the edges of natural, managed, or disturbed forests. They may include fungi, moss, lichen, herbs, vines, shrubs, or trees. Many different parts are harvested—roots, tubers, leaves, bark, twigs and branches, fruit, sap and resin, and wood—for cooking, decorating, curing, specialty furniture making, and carving. The value of the products to rural economies is in the billions.

Over the last decade, awareness about the scope and scale of collection has grown, as has concern for the sustainability of the resources from which these products originate and the people whose livelihoods depend on them. Unfortunately, information and knowledge needed to determine if special forest products collection is socially, economically, or ecologically sustainable is lacking. Research on special forest products is needed to maintain viable populations, to ensure the sustainability of markets, and to understand impacts of current and proposed regulations. ▲



Ramp harvesting is one of the special forest products that is part of the culture in rural mountain communities.

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