



Science for Tomorrow's Forests

<i>Southern Forest Resource Assessment</i>	<i>53</i>
<i>Ozark-Ouachita Highlands Assessment..</i>	<i>53</i>
<i>Encyclopedia of Oak Cover-Type Ecosystems</i>	<i>54</i>
<i>Assessing the Urbanization of Forests in the South</i>	<i>55</i>
<i>Fire in Florida's Ecosystems Educational Program</i>	<i>56</i>
<i>Conservation and Management of Southern Bats</i>	<i>57</i>
<i>International Activities</i>	<i>58</i>

Science for Tomorrow's Forests

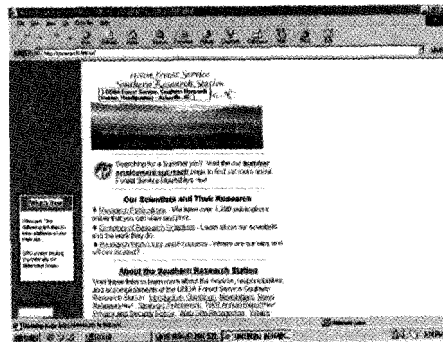
The SRS is providing strong leadership toward the Forest Service Natural Resource Agenda-espe-



cially in pursuit of sustainable forest management. Of particular note is the effort in restructuring Forest Inventory and Monitoring systems and in addressing special problems of the wildland-urban interface in the South. The SRS, with the Southern Region of the National Forest System, has initiated a region-wide assessment to determine the conditions and dynamics of rapidly urbanizing forest lands, and identify threats to and opportunities for enhancing the sustainability of healthy human and natural communities there. We are contributing much research information to the development of national forest plan revisions in the South: findings about the rare Louisiana pine snake and the endangered red-cockaded

woodpecker that will reduce negative impacts of forest management on these species, sideboards for new riparian area management guides for the Appalachians, and a new understanding of the value of prescribed fire to understory vegetation and biological diversity of southern pine forests, especially in longleaf pine forest ecosystems. The SRS has developed a national assessment method for estimating recreation use on national forests.

We continue to lead the Nation in the transformation of the Forest Service's traditional periodic forest inventory process to a new continuous, annual inventory (SAFIS). Eight States have collaboratively implemented annual inventory techniques developed by SRS. They are contributing funding and personnel to assist the Agency's program to implement the annual inventory. The SRS Web site is reaching incredible numbers of customers globally with more than half a million hits a year by 100,000 individual visitors. The Web site contains hundreds of publications that can be downloaded as well as other research products, such as GIS-based models, hypertext, and decision-support systems.



Caring for the Land and Serving People

Science for Tomorrow's Forests

Southern Forest Resource Assessment

The over 200 million acres of forested lands in the Southern United States are among the most productive and diverse in the world. They contain a rich mixture of plants, wildlife, and aquatic species and provide a wide variety of products and benefits for people. Pressures being placed on them are increasing rapidly as population in the region expands and the world's demand for forest products continues to grow.

In order for public and private policy- and decision-makers to respond appropriately in the new millennium when faced with the challenge of ensuring long-term forest resource vitality, they must be equipped with the best information available regarding the forest

ecosystem's status, diversity, and sustainability. Assessment models along with data sets from throughout the SRS provide the broadest complement of knowledge for evaluating southern forest resources. Under the leadership of the Southern Region and SRS of the USDA Forest Service, several Federal agencies, and southern State forestry agencies, are initiating a 2-year assessment of the forest resources of 13 southern States. This effort is due to be completed in 2001 and is designed to organize the best available knowledge regarding southern forest for the general public and policy makers. It also will provide an excellent opportunity for informed ongoing public debates regarding research and forest ecosystems in the South.

Ozark-Ouachita Highlands Assessment

The Ozark-Ouachita Highlands Assessment was completed in 1999 and is scheduled to be released in early spring, 2000. Federal and State natural resource agencies and university cooperators worked together to produce four technical reports and a summary that examine air quality, aquatic conditions, social and economic conditions, and terrestrial vegetation and wildlife. The USDA Forest Service, including the SRS, initiated the assessment and worked with other agencies to develop a synthesis of the best information available on conditions and trends in the Ozark-Ouachita Highlands of Arkansas, Oklahoma,

and Missouri. While the reports are of most relevance to planning for the management of the national forests in the area, people who are interested in the future of the area's other public lands should also find the assessment to be of interest and value. The assessment reports themselves do not contain any decisions about land management in the Highlands, or about future research, but they do provide decision-makers with an invaluable compilation of background material.

Web site: <http://www.fs.fed.us:80/oonf/ooaha>.

Science for Tomorrow's Forests

Encyclopedia of Oak Cover - Type Ecosystems

Many social and economic institutions in the Southern Appalachians depend on benefits afforded by upland oak forests that predominate here. Traditional rural economies rely on abundant, high-quality timber; plentiful, diverse wildlife and fish; extensive recreational opportunities; and several special forest products. Public and private managers of these ecosystems are challenged by an increasingly complex set of benefits, but continue to rely on traditional ad hoc management practices. A gap remains between what scientists have learned about sustainable upland oak ecosystems here and what land managers can apply.

Currently, an overwhelming body of information about these ecosystems is not easily accessible nor readily useable, because it has not been synthesized and integrated into a coherent, meaningful knowledge structure that is useful for problem solving. A project to synthesize and integrate the past 65 years of Southern Appalachian research on upland oak ecosystems, and to

translate it into an intelligent, hyperdocument-based encyclopedia system that is accessible over the Internet has been proposed. Scientists will determine pertinent research knowledge to identify its content and structure, and codify that content and structure into hypertext format. More than a Web site, the encyclopedia will incorporate programmed intelligence in knowledge-based systems and simulation models for problem solving and decision support and will integrate data base access. It will be dynamic, making future updates easier and nonlinear, allowing a greater level of knowledge integration than print media can accommodate. Additional objectives include: (1) answering scientific questions such as whether the encyclopedia is an effective way to identify knowledge gaps, and (2) determining whether the encyclopedia can enhance the decision-making abilities of land managers.

Web site: <http://www.srs.fs.fed.us/bentcreek/>.

Caring for the Land and Serving People

Science for Tomorrow's Forests

Assessing the Urbanization of Forests in the South



Urban sprawl and its effects on forests is not a new issue in the United States. Population growth is an important factor in land-use change. The South is experiencing the biggest leap in population growth in the country. Between 1980 and 1990, population increased by 17 to 18 percent and is expected to increase another 23.7 percent between the years 2000 to 2020. These changes are most evident on the fringes of towns and cities in the wildland-urban interface- the zone where human influences, land-use conversion, and habitation are increasing impacts to natural resources and the benefits that they provide to humans. Although population growth and land-use change are major drivers for change to the forest landscape in the interface, there are also many other social, economic, and policy factors. Some examples are changing landowner objectives, changing perceptions

and values, lack of comprehensive planning, and changes in market land values.

The SRS and the Southern Region of the USDA Forest Service recently began an assessment of the wildland-urban interface and the factors that contribute to the urbanization of forests in the South. It will examine resulting ecological and social impacts including: changes to ecosystem structure and function, changes in natural resource management practices, and human quality of life issues. Examples of individual wildland-urban interface issues to be addressed are habitat fragmentation, loss of biodiversity, fire management in a mixed urban/rural setting, and loss of green space. The assessment will include spatial, temporal, and historical aspects of these factors including current and future trends and GIS analysis. Its focus is region-wide, covering 13 Southern States. Web site: <http://www.interfacesouth.org>.

Caring for the Land and Serving People

Science for Tomorrow's Forests

Fire in Florida's Ecosystems Educational Program



National Resource Conservation Education and Environmental Protection Agency grants, with other help from The Nature Conservancy and Tall Timbers Research Station, provided resources necessary for the Fire Protection Bureau, Florida Division of Forestry (FLDOF), in cooperation with the SRS to develop materials for a program titled "Fire In Florida's Ecosystems." To date an "Educators Guide," "Student's Guide," and accompanying posters have been developed to introduce the subject of wildland fire to public school children in grades 4 through 8.

Additional funding from the Federal Emergency Management Agency and FLDOF in the aftermath of the 1998 Florida wildfires enabled the FLDOF to fund, through a grant, the

development of a curriculum they will use to conduct a minimum of 42 teacher workshops across Florida within the next 2 years. The goal is to train the trainers to effectively institute the Fire In Florida's Ecosystems program on a Statewide basis. Many land managers believe 1998 and 1999 wildfires were severely exacerbated by the lack of an adequate level of prescribed burning in the State, due to public resistance. Many land managers also recognize that the public's support is essential to any land management strategy. Abraham Lincoln aptly stated it ". . .with public support anything is possible, without it nothing can succeed." The underlying premise of this whole effort is that a better-informed electorate will make wiser choices.

Caring for the Land and Serving People

Science for Tomorrow's Forests

Conservation and Management of Southern Bats

Nearly one-quarter of all mammals inhabiting southern forests are bats. They are among the most diverse, specialized, and fascinating groups of vertebrates and many of their activities contribute to ecosystem health and benefit humans. For example, bats consume huge amounts of insects per night, many of which are detrimental to forestry and agriculture. Furthermore, because bats fly large distances between their feeding and roosting areas, they play an important role in redistributing nutrients across the landscape.

Bat populations throughout the world have been declining for decades and it is estimated that at least half of all North American bat species are in severe decline. Four of the seven species of Federally endangered bats in the United States are found in the South and four additional species are considered to be species of special concern by the U.S. Fish and Wildlife Service and Bat Conservation International. Disturbance of hibernation and maternity caves were the major factors leading to the endangered status of species such as the Indiana bat and the gray bat; however, loss or degradation of forest habitat may be contributing to further declines. Worldwide, loss of forest habitat is the major factor contributing to the decline of bat species and is probably the most important factor leading to the decline of southern species such as Rafinesque's big-eared bat and the southeastern bat, both of which are species of concern. These and many other species use the hollows, cavities, and loose bark of large trees for roosting and

maternity sites. However, we have little knowledge of forest bat habitat relationships and the factors, including forest management, that affect bat populations. The need to develop effective forest management strategies to conserve and recover the southern bat fauna is crucial because of the ever increasing demands on southern forests for timber products and the rapidly growing human population, which is resulting in further destruction and fragmentation of southern forests.

Because managers of public and private lands lack the needed information to develop effective management strategies for bats, we proposed a comprehensive research program on the biology and ecology of southern forest bats. Projected outcomes of this research program, while not yet funded, include:

1. Information on the status and distribution of forest-dependent bats including the Indiana bat, Rafinesque's big-eared bat, and the southeastern bat.
2. Forest management strategies that can be used to conserve and recover endangered and sensitive bats.
3. Determination of forest species composition, structure, and landscape configurations that satisfy the roosting and foraging requirements of southern bats.
4. An understanding of forest bat community structure and dynamics and the factors, including forest management, that affect bat communities.

Science for Tomorrow's Forests

International Activities

Much of the research and development carried out by the SRS has value far beyond the South, both nationally and internationally. The needs and demands of the American public for the benefits from forested lands are met, in part, by resources from many other countries. It is critically important that sustainable forest management science and practices be advanced throughout the world. Our scientists continue to increase their participation in the worldwide science community through many avenues. They participate in international conferences and workshops that are held here and in other countries, making presentations, displaying posters, displays, and publishing papers. They host scientists from other areas and travel to other places to provide expert advice on a wide range of subjects; for example, controlling invasive species of plants, insects, or disease. Ongoing cooperative research studies result in collaborative publications that benefit both countries involved.

The following examples illustrate the range of SRS international activities:

1. Organized and hosted International Union of Forestry Research Organizations meeting-exchanging information on decision making in forest ecosystem management with 65 attendees from 11 countries.

2. Developed collaborative research program with Chinese scientists on potential for biocontrol of kudzu as part of an integrated pest



management program for kudzu control.

3. Served as soils consultant to the Center for International Forestry Research in Jakarta Indonesia, for project on long-term productivity of short-rotation tropical plantations.
4. Participated in a joint project with the International Centre for Agroforestry in Kenya to increase knowledge of impacts of management on soil process.
5. Served as Associate Editor for Canadian Journal of Forest Research, an international journal.
6. Presented an invited lecture and participated in collaborative research in Canada on

Caring for the Land and Serving People

Science for Tomorrow's Forests

International Activities

- current status of Cerulean warblers and factors affecting their habitat viability to improve understanding of threatened and endangered species conservation.
7. Invited to tour Japanese research laboratories to develop a collaborative approach to measuring forest ecosystem carbon cycles and determining impacts of land-use change on carbon sequestration.
 8. Gave invited seminar at El Colegio de la Frontera Sur (ECOSUR), Chiapas, Mexico, on interactions of mites and fungi associated with the southern pine beetle and their ramifications to control these forest pests in Mexico and the Southern United States.
 9. Consulted with the Chinese Academy of Forestry and developed a collaborative research program on the assessment and utilization of plantation wood resources toward comprehensive end-use products.
 10. Conduct research on the economic feasibility of reduced-impact logging technology in the Brazilian Amazon.

Caring for the Land and Serving People

