

# Introduction and Overview

## *Background*

Early in the 20th century, the Southern Appalachian landscape reflected short sighted management practices in use at that time. Logging was done with little thought for sustaining resources for future generations. Cropland and pastures were eroding, threatening the productivity of the land. The Southern Appalachians were in big trouble, but help was on the way.

Through the leadership of such people as Theodore Roosevelt, Gifford Pinchot, and Aldo Leopold, the country began moving toward wiser use of its natural resources. National forests were established in the area to protect the headwaters of major rivers. National parks were created to preserve special places. The national forests and parks in the Southern Appalachians now make up the largest concentration of federal land in the eastern United States. During the Great Depression, the Tennessee Valley Authority was created to assist in the development and protection of the region. State officials worked closely with private landowners to restore their depleted forests and wildlife populations.

Today, the Southern Appalachians testify to the great conservation efforts of the past century. The land is once again predominately forested. There are many economic opportunities to use natural resources. Once again, the ecosystems are among the most biologically diverse in the world. Populations of deer and turkey are large and growing. People are moving to the region in greater numbers to enjoy the surroundings and to take advantage of economic opportunities. The restoration of the Southern Appalachians is a great story, but a new generation of conservationists is concerned about new threats to the region's natural resources.

In early 1994, member agencies in the Southern Appalachian Man and the Biosphere (SAMAB) program began discussions about conducting a broad-scale assessment of the Southern Appalachian region. One factor that

motivated these discussions was the recognition that ecosystem management as a principle for the planning and management of natural resources. This region is rich in natural resources, and there are many ideas about how to best manage these resources. Most national forests are approaching the time for revision of their forest plans, which guide most activities on the forests. The National Forest Management Act of 1976 requires such revisions every 10 to 15 years. SAMAB conducted a series of open meetings in the Southern Appalachians to identify major public concerns about public land management. Eight general questions related to forest health and terrestrial plant and animal resources were developed. A team of scientists and land managers was formed to address these questions.

## *Scope and Purpose*

The Terrestrial Team of the Southern Appalachian Assessment (SAA) examined the condition of two important ecosystem elements: forest health and terrestrial plant and animal resources. The study area includes about 37.4 million acres in 7 states, 135 counties, 7 national forests, and 2 national parks (fig. 1). Assessment topics included broad landscape habitat and land cover patterns, federally listed threatened and endangered (T&E) species, rare species and communities, popular game species, possible national forest old-growth forest, oak decline, exotic pests and diseases, disturbance, biological diversity, fragmentation, black bear, genetic conservation programs, and neotropical migratory birds.

The Terrestrial Team consisted of a Plant and Animal Resources Subteam and a Forest Health Subteam. Team members included wildlife biologists, foresters, ecologists, botanists, research scientists, plant pathologists, entomologists, economists, silviculturists, public information specialists, Geographic Information System (GIS) analysts, and editor/writers. Team members represented the USDA Forest Service, U.S. Fish and Wildlife Service, National Park

Service, Oak Ridge National Laboratory, and the Tennessee Valley Authority. The team members served in a part-time capacity while performing their regular duties.

The Terrestrial Plant and Animal Resources Subteam used existing spatial and quantitative information to ascertain the current status and trends of terrestrial indigenous plant and animal resources in the Southern Appalachians. The assessment of aquatic species and habitats is included in the Aquatics Technical Report (SAMAB 1996a). Included were federally listed T&E species; other rare species; underrepresented plant and biological communities, including old-growth forests; hunted, viewed, or photographed wildlife; species with high public or management interest; and species with demanding habitat needs. These categories culminated in a "short list" that includes individual species, groups of species, and plant communities. Habitat conditions meaningful to species on the short list were described. The information provides a basis for consistent planning for terrestrial wildlife resources.

The objectives of the Forest Health Subteam were to describe present conditions and to identify changes and trends in the health of the region's forests. In its simplified approach to the assessment of forest health, the subteam addressed such elements as growth and mortality, reproductive success, and distribution of trees.

With both subteams, the assessment process was open and accessible to all governmental agencies, organizations, partners, and individuals. The long-term goal was to build an information base for defining resource management objectives, desired future conditions, standards, guidelines and management directions. Results will be used in national forest plan revisions and other planning efforts.

### ***Terrestrial Plant and Animal Resource Questions***

Four questions were assigned to the Terrestrial Plant and Animal Resources Subteam:

1. Based on available information and referenced material, what plant and animal species occur within the range of the SAA area and what are their habitat associations? (Chapter 2)
2. What are the status, trends, and spatial distributions of populations and habitats in the Southern Appalachian Assessment area for:
  - Federally listed threatened and endangered species?
  - Species with viability concern?
  - Unique or underrepresented communities?
  - Wildlife species that are hunted, viewed, or photographed?
  - Species for which there is high management or public interest?
  - Species having special or demanding habitat needs?
  - Species considered true ecological indicators?

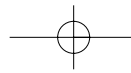
The answer to this question is provided in Chapter 3.

3. What habitat types, habitat parameters, and management activities are important in providing the distribution and types of habitats to sustain viable populations and/or desired habitat capability for the "short list" of wildlife and plants?

and

4. Based on current knowledge of ecological unit land capabilities for the Southern Appalachians, what are the general habitat mixes and conditions needed to:
  - Recover federally listed threatened and endangered species?
  - Conserve populations of species with viability concern?
  - Maintain the existing species and community diversity that will not result in the loss of viability of any plant or animal species (in the context of the entire Southern Appalachian region)?
  - Provide sustainable levels of species populations at desired levels on national forests?

The answers to these questions are provided in Chapter 4.



## ***Terrestrial Forest Health Questions***

Four questions were assigned to the Terrestrial Forest Health Subteam:

5. What changes and/or trends in forest vegetation are occurring in the Southern Appalachians in response to human-caused disturbances or natural processes? (Chapter 5)
6. What are the potential effects of the presence and absence of fire on forest health? (Chapter 5)
7. How is the health of the forest ecosystem being affected by native and exotic pests? (Chapter 6)
8. How are current and past management practices affecting the health and integrity of forest vegetation in the Southern Appalachians? (Chapter 7)

## ***Data Sources***

Sources of data on the current status and past trends for broad land cover/vegetation types, communities, habitats, populations, and components of forest health were:

- LANDSAT Thematic Mapper Spectral Data
- Forest Inventory and Analysis (FIA) – Southern Research Station, USDA Forest Service
- Southern Forest Health Atlas – Southern Region, USDA Forest Service

- Continuous Inventory of Stand Conditions (CISC) – Southern Region, USDA Forest Service
- Species Element Occurrence (EOR) data – state natural heritage programs
- Forest Health Monitoring Program – Southern Research Station, USDA Forest Service
- County density estimates for game species – state fish and wildlife agencies
- 1:250,000 Digital Line Graph (DLG) ownership coverage – U.S. Geological Survey
- 1:100,000 DLG water/stream reaches – Environmental Protection Agency
- 1:100,000 DLG road coverage – U.S. Geological Survey
- 1:100,000 Digital Elevation Model (DEM) – Department of Defense Mapping Agency
- Natural Resources Inventory (NRI) – Natural Resources Conservation Service
- Ecological Mapping Units – Southern Region, USDA Forest Service
- National Interagency Fire Management Integrated Data Base (NIFMED) – participating state and federal agencies

These data sources are described briefly in appendix A. Data analysis and interpretation relied heavily upon a GIS for data storage, retrieval, analysis, and display. Scientists and experts reviewed selected analyses and narratives throughout the assessment.

