

# PROPOSED ASSESSMENT QUESTIONS

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**December 7, 1999**

The Southern Forest Resource Assessment will address a set of questions regarding the sustainability of the South's forests. This document contains a list of twenty-four questions that are now proposed to organize the analysis. These questions address broad issues so to provide additional detail, we include an average of five specific points that will be addressed as each question is answered. A total of one hundred and twenty seven specific points are listed here.

The notes from ten public meetings and written comments were used to refine this set of proposed assessment questions. The one hundred and twenty seven specific issues listed here represent the review and synthesis of all of these comments. The complete set of public comments will be posted on the Assessment's web site in the near future.

Additional review of these questions is encouraged as we prepare for the next step of the Assessment. Please submit comments by January 15, 2000.

## **I. Landscapes/Terrestrial Ecosystems**

1. What are the history, status and projected future of terrestrial wildlife habitat types and species in the South?
  - a. Evaluate changes in species diversity.
  - b. Measure changes in the distribution and amount of mast-producing species.
  - c. Address how different intensities of logging, fire and other forest management practices influence various wildlife habitat types
  - d. Describe how land use changes have and are likely to influence habitats.
  - e. Describe the critical and emerging habitat needs in the region.
  - f. Consider the contribution of areas set aside on public lands and by NGO's in providing habitats.
  - g. Describe lost or degraded habitats that could be restored.
  - h. Describe the history of wildlife habitat types as far back as can be documented.
  - i. Link discussion of all of the above to animal species populations and ecological communities.
  - j. Evaluate implications of fragmentation and its' causes.

2. What are the history, status and projected future of native plant communities in the South?

- a. Determine and describe the character and distribution of the (major) historic native plant communities in the southern U.S.
- b. Ascertain the historic indigenous structure, composition and functional dynamics of the major native plant communities of the region.
- c. Evaluate how changes in native forest structural attributes, plant species composition, and landscape distribution patterns have changed native plant community dynamics and plant species diversity.
- d. Measure changes in plant biodiversity in various ecological regions.
- e. Evaluate the effects of anthropogenic influences (fire regimes and exotic species) on native plant communities.
- f. Determine the probable future of plant communities in the South if current trends continue.
- g. Evaluate the contributions of cooperative conservation efforts on plant communities.
- h. Address the effects of exotic species on habitats.
- i. Evaluate the role that various forest types and successional stages (including monotypic stands) play in providing native plant habitats.

3. What are the likely effects of expanding human populations, urbanization and infrastructure development on wildlife and their habitats?

- a. Evaluate the current and potential impacts of exotic plants and animals.
- b. Evaluate the impacts of land use changes and distinguish between permanent (i.e., forest to urban) and possibly transitory changes (i.e., forest to pasture, cropland to forest).
- c. Describe historical changes and their known impacts.
- d. Evaluate the effects of forest users (e.g., roads, trails, etc...).
- e. Identify which wildlife species are favored and which are adversely affected by these factors.

4. What are the historical and projected future impacts of forest management and access on terrestrial ecosystems in the South?

- a. Assess how the increase in pine plantations has and is likely to influence wildlife habitat and associated wildlife species, populations and communities.
- b. Address how fire exclusion and management has shaped the structure of wildlife habitat.
- c. Address how forest management practices (i.e. harvesting, site preparation, regeneration) have influenced the distribution of tree

- species, including species that produce hard mast and the resultant effects on wildlife.
- d. Evaluate how forest-based recreation influences the structure and function of terrestrial ecosystems.
  - e. Evaluate the impacts of various corridors, including power lines, pipelines, roads, and canals, on terrestrial ecosystems.
  - f. Identify the causes and impacts of forest fragmentation on the structure and function of terrestrial ecosystems.
5. What conditions will be needed to maintain plant and animal species associations in the South?
- a. Evaluate the role that various forest types and successional stages (including monotypic stands) play in providing wildlife habitat.
  - b. Include all species—i.e., game, non-game and Threatened and Endangered species.
  - c. Describe habitat characteristics necessary to sustain viable populations of forest wildlife.
  - d. Evaluate the role of coarse woody debris and snags and address their availability.
  - e. Include the effects of vertical structure of forests in this analysis.
  - f. Identify current and anticipated threats to these habitat associations.
  - g. Evaluate native forests, corridors and linkages, diversity of types and interior Forest “core areas”, fire dependent communities, managed forests, mature forests and fragmentation.

## **II. Social/Economic Factors**

1. How have land uses changed in the South and how might changes in the future affect the area of forests?
  - a. Evaluate the influence of various driving factors behind land use change including population growth, urban sprawl, and markets for various goods and services produced from land.
  - b. Definitions of forestland need to be evaluated to address different capabilities of lands. This is especially important with regard to the continuum of forest conditions between suburban areas and remote forests.
  - c. Analysis should address not only the amount of forestland but also its spatial arrangement. Most notably, examine the fragmentation of forests.
  - d. Evaluate how forest policies could influence forests and land use.
  - e. Address linkages between the answer to this question and the impacts on terrestrial ecosystems.

2. What is the demographic profile and attitudes of southern citizens toward forests and their management and how have they changed?
  - a. Distinguish between public attitudes toward private and public forests.
  - b. Address differences in attitudes between various segments of the population. Especially important are the differences between urban and rural citizens. Also evaluate the effects of: (1) intergenerational differences, (2) residency and length of residency, (3) landowners versus non-landowners, and (4) different regions within the South.
  - c. Evaluate general differences in the attitudes toward environmental protection and private property rights.
  
3. How do current policies, regulations, and laws affect forest resources and their management?
  - a. Examine the implications of tax code (income, estate, and property) on the structure and management of forests. Especially important is the influence of inheritance taxes on fragmentation of forests.
  - b. Examine the impacts of programs that are designed to encourage forest management and forest cover. These include cost-share programs for afforestation and reforestation and private-sector programs for forest management.
  - c. Examine incentives and disincentives to keeping land in forest cover.
  - d. Examine the full breadth of policies, regulations, and laws that influence forests. This includes, local and state regulations, zoning, agricultural regulations, and environmental regulations, in addition to specific forest policies.
  
4. What motivates private forest landowners to manage their forestland and how are their management objectives formed?
  - a. Look at how landowners might respond to different incentives regarding the management and use of their land.
  - b. Examine the differences in motivation/management between landowner groups (public, large industry, nonindustrial private).
  - c. Address the role of education and access to information on the management behavior of private landowners.
  - d. Describe landowner perspectives on the use of their forests for recreation and other uses.
  
5. What role do forests play in employment and local economies in the South?
  - a. Include all sectors of the economy related to forests when answering this question (e.g., timber products and recreation and tourism).

- b. Define sub-regions for economic analysis so that they correspond with fine scale economies.
  - c. Examine the history of change in economies and the relative contributions of different forest-based sectors.
  - d. Address the effects of forests and forest uses on the quality of life in sub-regions.
6. What are the supplies of and demands for forest based recreation and other uses of forests in the South?
- a. Evaluate the relationships between forest management and forest types and recreation opportunities (e.g., does certain kinds of forest management complement recreation supplies?)
  - b. Evaluate opportunities for developing new sources of recreation supply.
  - c. Evaluate the potential for conflicts between different forms of recreations.
  - d. Address the roles of different landowner groups in providing recreation.

### **III. Timber Markets and Forest Management**

1. What are the history, status and projected future demands for and supplies of wood products in the South?
- a. Evaluate supply and demand for specific species groups and commodity classes.
  - b. Examine the effects of population growth and land use change on timber supply—e.g., with more people, how is the “availability” of timber different?
  - c. Evaluate the linkages to international markets and consider implications of increasing exports.
  - d. Address the impacts of changing management intensity and productivity on supply and the resulting composition of forests.
  - e. Evaluate market linkages with other parts of the United States.
  - f. Address how changing technology and the emergence of new products (change in product mix) could affect all markets.
2. What are the status and trends of forest management practices in the South?
- a. Examine the impact of federal incentive programs for forestry on management practices.
  - b. Examine status and trends of forest management for each ownership class.

- c. Compare the production/productivity implications of various management intensities.
3. How might existing and new technologies influence timber harvesting and resultant conditions of forests?
    - a. The evaluation of technologies should address: harvesting and processing technologies, and genetic engineering.
    - b. Describe how technology changes influence productivity, management choices (including rotation length), and resulting forest conditions.
    - c. What are the environmental implications of changes in harvest technologies?
    - d. Address the accessibility of technologies to various forest ownership groups.
  4. What is the history of forest management and how do management approaches differ across forest ownership groups?
    - a. Examine the dynamics of ownership. How have ownership patterns changed?
    - b. Recognize the great variety of ownership types in the South.
    - c. Include consideration of new forest investment groups as an ownership group.
    - d. Describe the multiple-use intentions and outcomes of forest management on private lands.
    - e. Recognize all approaches to management including “no active management.”

#### **IV. Forest Extent, Conditions, and Health**

1. What are the history, status, and projected future of southern forests (in terms of their area, ownership, landscape patterns, and location)?
  - a. Discuss the history of forest conditions back as far as can be documented.
  - b. Be explicit about definitions, for example the definition of a forest, and report data by forest species group wherever possible.
  - c. Disclose data compilation procedures, assumptions made, and the limits of the data. For example, define the age of the FIA data for every state; recognize that tree volume estimates do not include small trees.
  - d. Evaluate changes in patterns of ownership and their potential implications for forest management.

2. What are the history, status, and projected future of the characteristics of forests in the South (age, species composition, stand size, stand origin,)?
  - a. Evaluate the rates of change of the above characteristics and between forest types—e.g., between hardwood types and pine plantations.
  - b. Discuss the implications of potential fragmentation on forest structural characteristics.
  - c. Describe the history of forest structure as far back as can be documented.
  
3. How have insects and disease influenced the overall health of the South's forests and how will they likely affect it in the future?
  - a. Evaluate whether forest insect and disease impacts are related to forest management intensity.
  - b. Evaluate whether forest insect and disease impacts differ or is likely to differ by forest type and by forest ownership group.
  - c. Evaluate the pros and cons of chemical control options.
  
4. How have environmental stressors such as air pollution influenced the overall health of the South's forests and what are future effects likely to be?
  - a. Evaluate the impact of acid precipitation on overall forest health, i.e. vegetation, soils, water.
  - b. Evaluate the impact of ozone pollution on forest vegetation.
  - c. Define which forest types are at risk and how these risks are distributed spatially.
  - d. How might climate change influence forest conditions in the future?

## **V. Watersheds, Aquatic/Riparian Ecosystems, and Forested Wetlands**

1. What are the history, status, and likely future of water quality in southern forested watersheds?
  - a. Evaluate the relative impact of different land uses on water quality.
  - b. Evaluate how both point and nonpoint sources of pollution have shaped water quality.
  - c. Discuss the influence of land use history on water quality.
  - d. Address how water quality impacts have and could differ among ecological regions.
  - e. Discuss known and likely effects of forest management practices on water quality.

2. What are the history, status, and likely future of forested wetlands in the South?
  - a. Document the extent and effects of wetland restoration efforts.
  - b. Evaluate the impacts of incentive programs used to restore wetlands.
  - c. Evaluate the fate of wetlands that have been converted to other uses in the past.
  - d. Define which wetland types are especially at risk.
  - e. Measure the distribution as well as the extent of all wetland types.
  - f. Evaluate the quality of current forested wetlands and how quality might change.
  - g. Disclose the limitations and degree of accuracy of data sources.
  - h. Address the effects of exotic species on the structure and function of wetlands.
  - i. Evaluate the land ownership patterns of forested wetlands.
  - j. Describe past and potential shifts among forested wetland types, i.e. mixed pine/hardwood to pine or hardwood.
  
3. How have forest management activities and other forest uses influenced water quality and aquatic habitat in forested watersheds?
  - a. Evaluate how these activities have and can influence peak flows.
  - b. Include a consideration of all relevant water quality parameters: biological, chemical and physical.
  - c. Examine effects of pesticides, sediment, and fertilizer.
  - d. Examine the influence of these activities on municipal water supplies.
  - e. Discuss how impacts may differ depending on the size and intensity of harvest and other treatments.
  - f. Evaluate how historical land uses and practices have influenced water quality and aquatic habitat.
  - g. Identify any differences in water quality impacts of hardwood versus pine management.
  
4. What are the implementation rates and effectiveness of BMP's in the South?
  - a. Document the implementation/compliance rates for BMP's by state.
  - b. Evaluate factors influencing sediment production and effective measures for reducing sedimentation.
  - c. Define the full range of benefits deriving from BMP's.
  - d. Document implementation rates for BMP's by ownership class.
  - e. Address the effectiveness of regulatory and non-regulatory state programs for protecting water quality.

5. What are the history, status, and likely future of aquatic habitats and species in the South?

- a. Discuss impacts of forest management practices on mussels, fish, reptiles and amphibians.
- b. Define “hot spots” (i.e., where species are imperiled) for aquatic species.
- c. Define and evaluate aquatic species diversity.
- d. Evaluate the effects of exotic species on the structure and function of aquatic ecosystems.
- e. Describe how land use and management history have influenced aquatic habitats and species.
- f. Address the impacts of dredging, channelization, and dams on aquatic habitats.
- g. Define the extent and distribution of aquatic threatened and endangered species.