

## Appendix B: Research Work Unit Charters

### RESEARCH WORK UNIT CHARTER

#### SRS-4952—Integrating Human and Natural Systems in Urban and Urbanizing Landscapes

Locations: Gainesville, Florida and Athens, Georgia

Project Leader: Vacant

**Mission:** To improve an understanding of how people living in urban and urbanizing landscapes both influence and are influenced by natural environments; and to develop and communicate technology transfer guidelines, models, and tools to natural resource managers, policymakers, planners, and citizens to address associated challenges and risks, while maximizing the goods and services provided by these natural resources in urban and urbanizing places.

**Introduction:** There are critical information gaps on the effects of urbanization on human and forest communities, particularly from a multi-disciplinary view that incorporates both social and ecological aspects. Some specific questions that remain largely unanswered are: How do humans influence forest ecosystems in urban and urbanizing landscapes? (Problem 1) How do human influences, in turn, affect human-derived benefits from forest ecosystems? (Problem 2) How does public policy influence changes to ecological processes, disturbances, and services? (Problem 3) How do we ensure that the best scientific information about interface issues reaches decision makers, natural resource professionals, and citizens? (Problem 4) These four problem areas provide a hierarchical framework for addressing the changes, challenges, trade-offs, and risks to forest and human communities from increased urbanization in the South.

**Problem 1. Assess human influences on natural ecosystems in urban and urbanizing landscapes:** The South is the fastest growing region in the Nation. Current estimates place population growth at 815,000 individuals annually. By 2020, over 12 million acres of forestlands are projected to be lost to growth-induced urban land-uses. The consequences of this land use change will have far reaching consequences for the sustainability of southern forests and community well-being.

Problem 1a. Assess how landscape change alters natural environments, disturbance regimes, and ecosystem services. The unit will address critical knowledge gaps related to how urbanization alters landscapes and ecosystem patterns and processes, and how to better predict effects.

Problem 1b. Examine the impact of population increase and diversification on urban green space. This problem addresses growing population pressure on natural resources in the South, particularly in urban environments with limited resources. Very little information exists on the relationships of migrant or immigrant populations to urban ecosystems, yet these groups comprise increasing population proportions in the region.

Problem 1c. Identify linkages among ecological and social components of urban and urbanizing landscapes. The unit will assess how ecological and social components are interrelated to enhance best management practices for sustaining the urban forest.

**Problem 2. Assess how human influences on natural ecosystems affect human-derived benefits from those ecosystems:** With the conversion of natural ecosystems through

## Appendix B: Research Work Unit Charters

urbanization, the type and amount of ecosystem goods and services used by humans are altered. These changes directly affect community well-being. Research is needed to understand how benefits change with urbanization and to develop best management to optimizing services in urban and urbanizing landscapes.

Problem 2a. Examine how the urban forest (vegetation on both public and private lands) responds to the urban environment and the urbanization process, and how this response affects the availability of ecosystem goods and services. By understanding how the altered environments of urban landscapes directly and indirectly affect urban forest and its goods and services, policy makers and resource manager can better manage the resource for human benefit. This problem area also examines how the changing availability of ecosystem goods and services produces implications at the landscape, region and national scale, and what those implications mean from a resource management and policy perspective.

Problem 2b. Quantify the economic value of goods and services provided by urban ecosystems and how this value may change as landscapes are urbanized. By quantifying ecosystem service values through market and nonmarket methods, one can begin to assess the ecological costs of urbanization in conjunction with economic growth from development.

Problem 2c. Examine the social psychological impacts of landscape change on community identity by assessing sense of place response to landscape change. Central to this objective is the recognition of cultural services provided by ecosystems, one of which is sense of place. Rapid changes in rural landscapes can have both physical and emotive consequences for individual and collective identity. This problem considers the impact of such change on total community well-being and also the differential impacts to specific sub-cultural groups.

Problem 2d. Examine environmental justice implications of minority group access to and interaction with recreation and other natural resources in urban and urbanizing landscapes. The problem addresses environmental justice issues as they are created when landscapes are urbanized.

Problem 2e. Evaluate the importance of wild land recreation and examine the primary users of urban national forests and public lands in the South. With urbanization, available private lands for recreation declines, thus putting greater pressure on public lands for recreation. Understanding how public wild lands are being used and by whom will improve our ability to manage them for recreation while sustaining ecological integrity.

**Problem 3. Define the relationship of land use policies to ecological and social patterns and processes and how they influence natural disturbances in urban and urbanizing environments:** Public policies are often developed independently and often in the absence of full understanding of natural resource and ecological implications. Research is needed to assess how state and local land use policy and decision making alter ecosystem services and natural disturbance regimes often resulting in subsequent risks to human and forest communities.

Problem 3a. Determine factors leading to various land-use patterns. The unit will assess land-use policies and their institutional structures across different jurisdictions and scales to evaluate

## Appendix B: Research Work Unit Charters

how these policies and institutions influence ecological and social fragmentation, ownership parcelization, and the sustainability of ecosystem benefits.

Problem 3b. Identify different human-network policy scenarios that reduce or increase deleterious risk to ecosystems and human communities. The unit will evaluate how current land-use policies alter natural disturbance regimes and the synergy of natural and anthropogenic disturbances (e.g., climate change) on risk to the environment and humans.

Problem 3c. Assess how public policies and socioeconomic contexts influence ecosystem function and subsequently the availability of goods and services. The unit will evaluate the links between environmental health and community well-being.

**Problem 4. Develop technology transfer models, tools, and guidelines for natural resource professionals, policymakers and citizens to address and minimize risk due to changes from urbanization and other human influences on forest ecosystems:** An integrated, multidisciplinary approach to understanding the social and ecological aspects of urban and urbanizing landscapes is critical, as well as is the dissemination of both new and existing information. This approach will provide information and tools for policy makers and natural resource professionals challenged with managing resources in these changing landscapes. It will also provide information for policymakers and homeowners who often have limited understanding of the benefits that ecosystems provide and how their land use decisions affect ecological processes and disturbance regimes.

Problem 4a. Explore the efficacy of different methods of information exchanges to meet the diversity of audiences in urban and urbanizing landscapes. To be effective in providing information, a variety of methods will be needed to be identified and linked with user groups.

Problem 4b. Create training modules, on-line resources, decision-making tools and models, guidelines, and distance learning opportunities for both the urban forest and the wildland-urban interface. Tools and guidelines needed by natural resource managers, policymakers, planners, and citizens to address the complexity of management needs and land-use decisions.

Problem 4c. Develop inventory and survey methodologies for communities to assess their natural resources and the importance of those resources. Most inventory protocols have been developed for northern regions. These protocols need to be adapted for southern species and environments.

Environmental Consideration: The work described under these problem areas will have no significant effect on the human environment; use hazardous materials, nor present potential environmental problems. To collect data, the research work will use standard and established field methodologies or through collection of primary data using standard survey and interviewing techniques. Thus, the research described in this Research Work Unit Description (RWUD) falls under one of the categories of actions that do not normally have significant effect on the natural environment and are therefore excluded from the need for documentation in an EIS or EA (ref: FSH 1909.15, Chapter 30). Should extraordinary circumstances arise regarding a particular

## **Appendix B: Research Work Unit Charters**

study described in this RWUD; these concerns will be evaluated within individual study plans or by EIS or EA prepared with and approved by relevant Station, District or Forest Staffs.

Primary beneficiaries of the research described in this RWUD will be federal, state, county and city natural resource managers; university researchers; community and regional planners; rural development specialists; local community leaders; and various user groups including watershed associations, national and local non-governmental organizations, and citizens.