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ECOLOGICAL
RESEARCH PROGRAM

ECOSYSTEMS SERVICES RESEARCH IN COMMUNITIES: DEVELOPING TOOLS TO SUPPORT SUSTAINABILITY AND GOOD STEWARDSHIP

Issue:

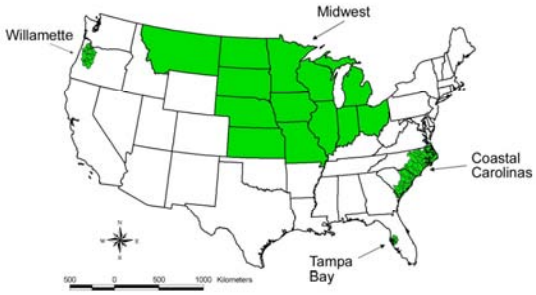
EPA's Ecological Research Program (ERP) in the Office of Research and Development (ORD) is focused on the study of ecosystem services, or the benefits to human well-being provided by ecological systems. These services provide clean air and water, productive soils, food and fiber, and other essential services from nature.

Four study sites have been selected from across the United States to improve the understanding of ecosystem services and, in turn, support sustainability efforts and good stewardship of our ecosystems. Each site is located in a geographically distinct region of the United States:

The Tampa Bay Region study area includes a handful of basins surrounding the city of Tampa Bay in Florida. Decision makers need information to help them better balance rapid urban growth while preserving unique estuarine habitats and economically important recreation and tourism industries.

The Midwest study area includes 13 "bread basket" states where agriculture is predominant. The development of biofuels produced from crops is causing rapid changes in land cover in this region. Decision makers at national, state, and local levels responsible for guiding these changes need tools to help balance the ecosystem services associated with agriculture, including food and energy production, with other services that are associated with healthy soils, streams, and wildlife habitat.

The Willamette River Basin study area is located in an Oregon river valley between the Coast Range and the Cascade Range. There is considerable local interest in sustainable economic growth. Of particular concern is maintaining and improving river conditions with targeted work focused on the riparian forests.



The Coastal Carolinas study area includes coastal North and South Carolina. Counties in the region are facing fast-paced growth that is causing continued stress to their wetlands, sensitive habitats, and protected species. Much of the coastline also is expected to be affected by future sea level rise, leaving many decision makers trying to determine what can be done to diminish impacts.

Science Objective:

The four community research projects will be integrated to create a

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transferable suite of methods and tools for evaluating ecosystem services. The characteristics of each diverse site compliment one another and enhance the ability of scientists to develop indicators to identify and assess ecoservices.

The cross location studies could enhance research on ecosystem services and human well-being by investigating questions such as:

- Do ecosystem service indicators of carbon sequestration and spread of infection disease change with study area size and location? Findings will determine indicator transferability.
- What uncertainties are associated with indicators of water supply and quality? The rural to urban gradients will determine the expected range of response to water resources.
- What ramifications does increased Midwestern biofuel production have for the other study sites? Results will provide insight into the interactions between distant geographic systems.

To address these and other complex questions successfully, ERP has developed an integrative and innovative approach to analysis, modeling, and data set development.

Application and Impact:

Decision makers in each of the four study areas need tools and information in order to make better decisions about managing their environments while maintaining valuable ecosystem services. The research will enable governments, resource managers and others to assess the trade-offs, both negative and positive, associated with different uses of ecosystem services.

The research will be used to develop crucial analytical tools and approaches that enable decision-makers to consider the value of ecosystem services. Ultimately, the science can be used to improve stewardship of the land and its valuable ecosystem services for current and future needs.

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