



## ECOSYSTEM SERVICES RESEARCH PROGRAM

### TAMPA BAY STUDY FOCUSES ON ECOSYSTEM SERVICES IN AN INCREASINGLY URBANIZED WATERSHED

**Issue:**

The Ecosystem Services Research Program (ESRP) in EPA’s Office of Research and Development is studying the benefits of nature or “ecosystem services” to human health and well-being in the Tampa Bay Estuary and associated watershed. The research is part of a larger national effort to better understand the value of ecosystem goods and services.

Tampa Bay is Florida’s largest open-water estuary, supporting one of the world’s most productive natural systems and is home to a large and growing urban center. With the success of much of the population’s activities depending on the quality of the Tampa Bay ecosystem, it is vital that planners incorporate accurate values of ecosystem goods and services into future land-use planning for the area.

Humans receive many benefits from ecosystem goods and services. Wetlands protect us from floods and recharge aquifers; estuaries, rivers, and lakes produce catchable fish; bees pollinate our crops and forests and beaches provide recreation and relaxation.

There is growing recognition that the contributions of nature’s services are not being fully considered by policy makers and planners, largely because of a lack of scientific and socioeconomic knowledge about these services. The full range of benefits derived from ecosystem services needs to be considered if we are to manage their continued use. Without this understanding, the true cost or benefit of our environmental decisions remains unpredictable.



Figure 1 Tampa Bay, Florida

**Science Objective:**

Scientists are partnering with local governments, planning organizations and citizen and business groups to identify and assess the ecosystem services in Tampa Bay. They are focused on how current and proposed population growth and development may impact ecosystem services in the context of climate change.

Because the study of ecosystems falls into many different scientific

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disciplines, experts from many fields will participate in this transdisciplinary study.

The research objectives of the Tampa Bay study are to:

- Delineate and quantify ecosystem services provided by the Tampa Bay ecosystem
- Assess the likely changes in environmental stressors and land use patterns through 2050
- Model the relationships among stressors, ecosystem structure and functioning, and ecosystem services
- Associate values of Tampa Bay's ecosystem services with human well-being
- Model multiple future scenarios of different land-use changes and projected impacts on ecosystem services and human well-being
- Develop a Web-based tool to characterize effects of land use changes on ecosystem services and human well-being

Scientists are estimating the ways that the landscape will change from 2005 through 2100 as a result of projected development and climate change and how ecosystem services would respond to these stressors.

They are working with ecological economists to assign monetary and non-monetary values and measures of human well-being to the ecosystem goods and services provided by the Tampa Bay ecosystem.

The study team is developing multiple maps of ecosystem goods and services production, delivery, and demand using existing scenarios of possible future land use, based on projected development and land-use changes. They are producing a quantitative assessment of ecosystem goods and services under various management plans.

Scientists are producing an atlas of the region that links various management plans to the locations where changes in ecosystem services have occurred. They also are beginning to develop an interactive simulation model of the ways land-use change affects ecosystem services.

### **Application and Impact:**

Researchers will provide resource managers, planners, government decision makers and others with the tools and information they need to best manage growth and development while maintaining valuable ecosystem services.

Ultimately, the science will enable regions, states, and local communities to make informed decisions to support sustainable planning for current and future generations.

### **REFERENCE:**

Environmental Protection Agency, Ecological Benefits Assessment Strategic Plan, EPA 240/R06/001, 2006. <http://www.epa.gov/economics/>.

Millennium Ecosystem Assessment. 2005. Ecosystems and Well-Being: Wetlands and Water synthesis. World Resources Institute, Washington DC.

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