

Abstract for Promotional Presentation to be available as needed.

Southwest Ecosystem Services Project

N. Tallent-Halsell

US Environmental Protection Agency, Landscape Ecology Branch, Las Vegas, NV 89119

The Ecosystem Services Research Program (ESRP) is a multi-year research initiative of the U. S. Environmental Protection Agency's (EPA) Office of Research and Development (ORD) to study ecosystem services and the benefits they provide to human well-being. These benefits include water supply and protection of water quality, flood protection, wildlife habitat support, and food and fiber. The landscape of the Southwestern United States, particularly that of California, Nevada, and Arizona, is highly diverse with significant portions of desert, shrub- and grasslands, forest, agriculture, and urban development. This area is facing unprecedented pressures from population growth and climate change. Based on US Census data, over the past 90 years the population in the southwestern United States has increased 1,500 percent. Changes in climate are projected to increase in the frequency and intensity of drought. The sustainability of basic ecosystems services vital to human health and well-being may become compromised. The Southwest Ecosystem Services Project (SwESP) is one of five community-based research projects in ESRP. Earth, life, and social scientists are collaborating with other federal agencies, communities, tribes and organizations to develop and implement the methods, models and tools to map, and assess the expected changes in quality and magnitude of ecosystem services under a variety of alternative future scenarios. Specific research areas are:

- Identify critical knowledge gaps in the ecological processes underlying ecosystem services.
- Map ecosystem services (e.g., water provisioning, food and fiber provisioning, erosion regulation, and cultural services) in the arid and semi-arid ecosystems based on current condition and available data.
- Quantify the response of ecosystem services to current and projected conditions and stressors (e.g., climate change, increased human development).
- Determine the linkages and trade-offs among bundles of ecosystem services in response to land use, climate and other variables.
- Model future response of ecosystem services to probable future condition.
- Determine how changes in ecosystem services affect human well-being.

Research will be conducted through several, integrated, multi-disciplinary, multi-agency partnerships:

The interagency project, Assessment of Goods and Valuation of Ecosystem Services (AGAVES), will conduct an ecosystem services assessment of the San Pedro River Basin and adjacent watersheds in southeastern Arizona. The Santa Cruz Watershed Ecosystem Portfolio Model Project, an interagency effort, will develop a geographic information system based

decision support tool that will integrate natural science and economic information in order to conduct a cost-benefit analysis of climate change and urban growth impacts on the U.S. and Mexico Border. The Southwest Wetlands Ecosystem Services Study (SWESS), a component of the nationwide Wetland research project by EPA's Ecosystem Services Research Program, will investigate the services of southwestern coastal and inland wetlands and compare them with wetlands of North America. In addition, a collaborative study will be undertaken in partnership with Native American Tribes located in EPA's Region 9 to determine how an ecosystem services assessment can be linked with traditional knowledge to improve natural resource management and to identify decision support options. Ultimately, these efforts will be integrated with other community-based ecosystems services projects by EPA to create a transferable suite of methods and tools for evaluating ecosystem services. Using these tools, decision makers can implement proactive policy and management decisions to conserve and enhance ecosystem services vital to human health and well-being and support sustainable planning for current and future generations.

CONTACT

Nita Tallent-Halsell, Ph.D., National Exposure Research Laboratory, EPA's Office of Research and Development, 702-798-2567, tallent-halsell.nita@epa.gov