

## An Ecosystem Services Framework for Desert Landscapes

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Governments, tribal leaders and citizens of the deserts in North America are facing unprecedented pressures from population growth and climate change. The dominant environmental and economic issue is to ensure that people have access to clean water and sanitation while vital ecosystems are protected without undermining economic growth. The Southwest Ecosystem Services Project (SwESP) is one of five community-based research projects in US Environmental Protection Agency's (EPA) Ecosystem Services Research Program (ESRP) exploring how an ecosystem services framework might be applied to address regional and local environmental, economic and social issues. The EPA, US Geological Survey, Tohono O'odham and Pascua Yaqui Nations, University of Arizona, and other collaborators will focus on identifying the goods and services derived from natural and cultivated ecosystems in a semi-arid region and their linkages to human health and well-being. In addition, the team will develop the Santa Cruz [Arizona and Sonora] Watershed Ecosystem Portfolio Model (SCWEPM) prototype to provide a regional water- and land-use planning Web-tool combining information about the environment, economy, and society. This tool will allow users, planners, and policy makers of the Santa Cruz watershed to evaluate holistically the impacts of water- and land-use decisions across borders. The goals of the SwESP are to investigate the feasibility of using an ecosystem services approach in a decision support tool to assess the ecological, economic and social ramifications of alternative water allocation and land-use 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.

### CONTACT

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