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Oral Presentation

Investigating Ecosystems Services in the Arid Southwest

The Southwest Ecosystem Services Project (SwESP) is an integrated, multi-disciplinary, multi-agency project focused on how to identify, characterize, and quantify the ecosystem services in the southwestern United States and northern Mexico. The southwestern landscape is highly diverse with substantial portions of shrub- and grass-lands, agriculture, urban, forest, and deserts (i.e., Great Basin, Mohave, Chihuahuan, Sonoran, and Colorado Plateau). Over the past 90 years, urban areas in the Southwest

have increased in size by 1,500 percent, placing pressure on the region's ecosystem services. The provisioning of clean water is the dominant ecosystem service explored within SwESP. Due to prolonged drought, rapid human population growth, and economic destabilization, the continued availability of water is at risk. Reduced water availability will have significant negative impacts on natural and human-dominated landscapes. Other ecosystem services such as climate and water regulation, food, forage and fiber production, recreation and cultural lands provisioning will also be investigated. In the early stages of implementation, SwESP has focused on identifying and quantifying ecosystem services and their indicators drawing from past and current land cover, vegetation, soils, and other data. The project is evaluating two model frameworks to facilitate decision-making: 1) Ecosystem Portfolio Model framework – a geographic information system based multi-criteria decision support Internet-based tool and 2) the InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs) Tool framework – a spatially explicit modeling tool that predicts the consequences of land-use and land-cover change on the production of multiple ecosystem services. SwESP is a starting point for developing a suite of procedures and tools to be used in the assessment of the benefits humans derive from ecosystem function and structure in arid environments.