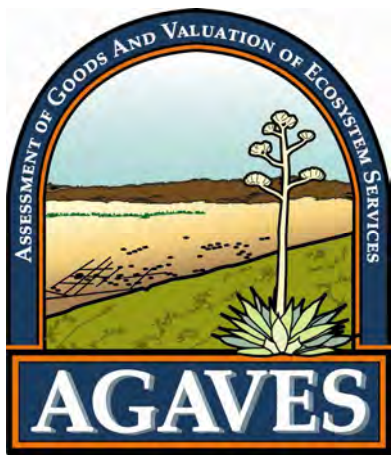


Assessment of Goods And Valuation of Ecosystem Services (AGAVES) San Pedro River Basin, U.S./Mexico



A consortium of federal, academic, and non-government organizations (NGO) partners have established a collaborative research enterprise in the San Pedro River Basin to develop methods, standards, and tools to assess and value ecosystem goods and services. The central premise of ecosystem services research is that human condition is intrinsically linked to the environment and that human health and well-being (including economic prosperity) depends on important supporting, regulating, provisioning, and cultural services that we derive from our surrounding ecosystems. The AGAVES project is intended as a demonstration study for incorporating ecosystem services information into resource management policy and decision making. Accordingly, a nested, multi-scale project

design has been adopted to address a range of stakeholder information requirements. This design will further facilitate an evaluation of the degree to which methods can be transferred to other areas.

The San Pedro River originates in Sonora, Mexico and flows north into southeastern Arizona. In 1988, Congress designated portions of the San Pedro River Valley as the San Pedro Riparian National Conservation Area (SPRNCA), the first designation of its kind in the nation. The legislation directed the Interior Secretary to conserve, protect, and enhance the riparian, wildlife, archaeological, paleontological, scientific, cultural, educational, and recreational resources of the conservation area. The SPRNCA, managed by the Bureau of Land Management (BLM), hosts a rich riparian community with vital habitat for resident and migrant species.

Decades of groundwater overdraft have significantly reduced base flows in the San Pedro River. Rapid urbanization and forecasted climate change both serve to exacerbate this problem. The Upper San Pedro Partnership (USPP) was formed in 1998 as a consortium of 21 federal, state and local agencies and organizations that were to assist in meeting the long-term water needs of the SPRNCA and of the area residents. In November 2003, the U.S. Congress passed legislation requiring the Secretary of the Interior, in consultation with the Secretaries of Defense and Agriculture, and in cooperation with the USPP, to restore and maintain sustainable yield of the regional aquifer by and after September 30, 2011.

The San Pedro's unique combination of existing data, previous research, established partnerships, and stakeholder commitment, together with a serious management challenge, creates the perfect test bed for ecosystem services research, as well as an evaluation of the efficacy of the approach for facilitating decisions by resource managers.



Photo Credit: Jerry Jacka

Ecosystem Services derived from the San Pedro River Basin

Ecosystems provide society with a range of natural services and functions, collectively known as **ecosystem services**. Some of the services provided by the urban, riparian, riverine, agricultural and rangeland ecosystems in the San Pedro Basin are illustrated in the photos below. They include providing clean drinking water, shelter and food for wildlife, birds, and humans, clean air, recreation opportunities, stable soils, and regulating the climate by removing greenhouse gases from the atmosphere. Several of these services or processes produce benefits that have utility or satisfy want and can be translated into goods that can be accounted for by society through market trading (e.g., carbon offsets, reforestation subsidies). Often, however, the means to values and market trade have not been determined (e.g., conserving rare species and open spaces). In addition, we often have a poor understanding of the tradeoffs and synergies among bundles of ecosystem services. AGAVES seeks to determine how to quantify, value, and account for goods, some of which may be amenable to trading directly in markets. By understanding the value of ecosystem services, decision makers (e.g., city managers) will be better prepared to accurately weigh the benefits of policies and management actions designed to meet stakeholder objectives. The aim of AGAVES is to develop computer-based tools to explore the impact of management decisions. Realizing that water is fundamental for the generation of most ecosystem services, AGAVES will concentrate initially on the benefits and tradeoffs associated with protecting, restoring, and managing ecosystems under the stress of drought which could result from changes in our climate brought on by the build up of greenhouse gases (e.g., carbon dioxide and methane) in our atmosphere.



A prolonged drought in the San Pedro could force policy makers to have to choose how to allocate precious ground and surface waters among urban, agricultural, ranching, cultural, and ecological interests. AGAVES will develop a computer based decision support tool that enables the consideration of alternative versions of the future based on different approaches for allocating waters, managing ecosystems under a changed climate and growing human demands.

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