Natural Resources Management

Successful management, conservation and restoration of natural resources must integrate complex, time-dependent ecosystem processes with human dynamics and decision-making.

Resource Dimensions is at the national and international forefront of fields such as ecological economics, planning, land conservation, and the human dimensions of resource management that have long advocated and advanced integration of quantitative and qualitative analytical methods at the community and landscape levels. Employing ecological principles, our work takes a whole systems approach to addressing natural resource management issues and related policy-making. As a result, we have coupled varied topics such as assessment of ecosystem service values and evaluation of landscape change trends to include ecosystem dynamics into our other service area specialties.

Across our history, we have worked to develop solutions such as cutting-edge GIS analytical models that facilitate land conservation, recreation, and community planning decisions. We are also building comprehensive resource management plans, and addressing biological resources such as threatened and endangered species and wildland fire.

Selected Projects

Biological Resources Management Plan. *Los Alamos National Laboratory and U.S. Department of Energy.* The objectives of this project were to facilitate and ensure regulatory compliance, reduce risk to mission and operations, and meet the agency's responsibilities as a natural resources trustee. Resource Dimensions were members of the team that developed the comprehensive Biological Resources Management Plan. A prominent plan component was a GIS-based biological values analysis of the 45 square mile site and an associated map of potential adverse impacts of future development. These tools aided the planning process by providing improved quantification of development-related environmental impacts and by defining methods to minimize impacts and support the NEPA process.

5720 144th Street NW · Gig Harbor, WA 98332 · phone 253.265.2054 · toll free 877.362.3266 · www.ecologicalecon.com

Resource Dimensions, LLC

Natural Resources · Economic Analysis · Sustainability Planning · Land Use · Policy Analysis · Regulatory & Litigation Support

Natural Resources Management

Selected Projects

Washington State Grazing Lands Program: Beneficiary Performance Analysis, Cost-Benefit Model and Incorporated Ecosystem Services Assessment. *Washington State Joint Legislative Review and Audit Committee.* This performance assessment of the Washington State Department of Natural Resources (DNR) grazing lands program evaluated program performance relative to net proceeds distributed to trust beneficiaries. The DNR is responsible for managing about 5-million acres of public lands in the state, 2-million acres of forest lands, and about 1-million acres of agricultural and grazing lands. These lands are managed for multiple uses, and generate income to support school construction, colleges, counties, state institutions and other beneficiaries. Budgets were developed for grazing operations in primary DNR grazing regions to estimate economic impacts to ranching operations and likely impacts on funds generated. In addition, an input/output analysis was conducted to estimate likely regional and state-wide economic impacts of the status quo against three possible alternative scenarios. Data collection and on-site investigation took place through field interviews conducted with ranchers, DNR land managers, appraisers, and real estate agents specializing in ranch and agricultural properties. In addition, county assessors and/or appraisers in counties with State grazing lands were interviewed to assist in the development and validation of an estimated average fair market value for the lands under study. An interactive cost benefit analysis model was developed to estimate impacts of future program alternatives. The DNR is currently using the model to aid in planning efforts for State grazing lands. The analysis also included a preliminarily valuation of certain ecosystem services and other non-market goods and services provided by State grazing lands that may affect beneficiary distributions and associated communities under future program alternatives (e.g. recreation, resource stewardship, conservation, habitat restoration, invasive species control, illegal activities and trespassing, wildfire control, job creation, etc.).

Land Use and Land Cover Change Impacts on the Jornada Long-term Ecological Research (LTER) Site. *National Science Foundation.* For this project, part of a long-term study for the Jornada LTER site that began in 1997, Resource Dimensions is working to analyze landscape change trends from 1960 until the present in the vicinity of the site. Project focus is on environmental effects of urban development on Chihuahuan Desert ecosystems. Special attention is being placed on the viability of the Jornada LTER. The interest lies in spatial and temporal variation in desertification dynamics, and how historic legacies, the geomorphic template, transport vectors (wind, water, animals), and environmental drivers (climate, land use, disturbance) interact with the patch structure of the vegetation to determine past, present and future ecosystem dynamics across scales.

Linking Heritage Landscapes and Ecosystem Management. *USDA Forest Service.* Resource Dimensions analyzed the integration of ecosystem management and heritage management, with regard to Native Americans in Mount Hood National Forest. Four fundamental principles of ecosystem management were used to guide the heritage resources management process including the use of an ecological perspective, forming partnerships, promoting grass-roots participation, and using scientific knowledge learned over the course of the project. A technical report was prepared for the Mount Hood National Forest, Zig Zag Ranger District.

5720 144th Street NW · Gig Harbor, WA 98332 · phone 253.265.2054 · toll free 877.362.3266 · www.ecologicalecon.com