



Sierra Nevada, California Demonstration Site

Aligning economic forces with conservation

Ecosystem services are as vital to the world's largest economies as they are to developing nations. It is important in both symbolic and practical terms that The Nature Conservancy of California demonstrates the power of this project's new approach to conservation in the United States. The Sierra Nevada region, along the eastern edge of California, is globally significant for its biodiversity, grandeur, and natural resources. Providing water resources, agricultural products, timber resources, ranching, mining, tourism and recreation, the Sierra Nevada region is a major contributor to the state's economy, yielding 65 percent of California's developed water supply.

Conversion to residential and industrial land use threatens ecological functions

The human population of the region has tripled since 1970 to over 664,000, threatening biological diversity and ecological connectivity, especially in the western foothills of the northern and central Sierra Nevada. By 2040, almost 20 percent of the Sierra's current private forests and rangelands could be affected by projected development.

Over the past forty years, nearly 800,000 acres of oak woodlands have been converted to other land uses and vegetation types with the major losses since 1973 due to conversion to residential land use. This shift represents the largest threat to the continued sustainability of ecological functions in the Sierra.



California's Climate Change legislation may provide opportunities for investments in land-based carbon sequestration

While the Sierra Nevada ecosystem already produces approximately \$2.2 billion worth of commodities and services annually (water resources, agricultural and timber products, ranching, mining, tourism, and recreation), carbon sequestration is likely to play an increasingly important role in this forested region's economy. The California legislature passed Assembly Bill 32 into law in September 2006, setting an aggressive target of reducing the state's greenhouse gas emissions to the 1990 levels by 2020.



Early Results

- Compiled relevant data to map and model ecosystem service production and human dimensions in the Sierra Nevada.
- Applied Tier 1 InVEST (Integrated Valuation of Ecosystem Services & Tradeoffs) to map multiple services and analyzed the overlap and correlation among them.
- Working with various infrastructure and resources agencies, joined a Regional Advanced Mitigation working group to establish ecosystem service-related mitigation requirements for upcoming transportation and water development projects in California. We will guide a mapping pilot project that relates infrastructure projects to biodiversity and ecosystem service value.
- Conducted extensive outreach with stakeholders internal and external to the region, presenting our approach in small group meetings and at conferences and receiving valuable feedback on the approach.
- Initiated a market assessment of ecosystem service opportunities for the region.



Sierra Nevada Region's Life-Support Systems

- **Drinking and Irrigation Water:** The Sierra Nevada snowpack is the source for 65 percent of California's water supply.
- **Recreation and Tourism:** Several well-known natural features and recreational activities account for more than 50 million visitor days per year. The recreation industry is the largest employer in the region.
- **Biodiversity:** Half of California's 7,000 vascular plant species occur in the Sierra Nevada. More than 400 of these species are found only in the Sierra and 200 are rare.
- **Carbon Sequestration:** Most of the region is covered with dense conifer forest, a significant carbon sink. Yet with climate change, the extent of these forests is projected to shrink.
- **Timber & Forage Production:** Agricultural land uses maintain open lands and provide an economic base for rural lands.
- **Size of Sierra Nevada Region:** 25 million acres
- **Population Affected:** 10-30 million people

To learn more contact:

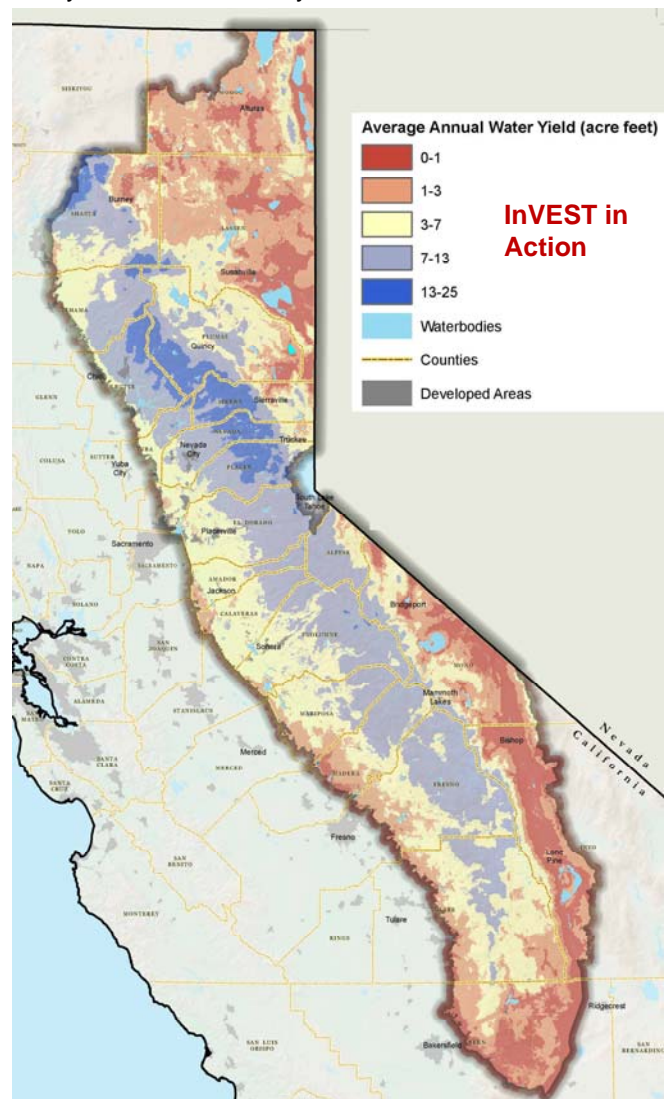
Rebecca Shaw
Sierra Nevada Site Lead
Director of Science
California Field Office
The Nature Conservancy
rshaw@tnc.org

Mapping and valuing the Region's Natural Capital

We are applying analytical tools being developed by the Natural Capital Project and partner organizations in the state to map the production and consumption of relevant ecosystem services. By putting ecosystem services in an analytical context where specific land use and management decisions can be explicitly mapped, decision-makers will be able to identify and properly value ecosystem services and assess the costs and benefits of their protection.

Analyzing policy options at broad scales

We are conducting an analysis of current ecosystem markets in the state so that we can identify areas and services for which there is significant opportunity to advance ecosystem conservation or restoration. Additionally, we are developing a typology of financial and policy levers—licenses, fees, taxes, subsidies, regulations, investment incentives—to clarify options of appropriate levers for each service.



Refining our tools with partners locally

Working with the various partners in the region, including the newly-formed Northern Sierra Partnership, we will highlight specific areas and services that represent ecosystem service conservation opportunities. Applying our mapping tools at a specific site with real conservation needs will help to further refine the broader efforts of the Natural Capital Project.