

PROTECTING RENEWABLE RESOURCES—AN INVESTMENT WITH ENDURING RETURNS



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California's oak woodlands and oak forested lands form an ecological backbone that sustains the economy and environment. These lands are a public trust resource—they provide habitat for diverse plants and wildlife, sequester carbon, and sustain healthy watersheds. Cumulative threats to oak landscapes—including conversions for real estate and agricultural development, overgrazing, fire, disease, drought, and climate change—are fragmenting and degrading California's primary old growth oak resource.

The protection and stewardship of natural resources—especially protection of critical habitat of sufficient scale—builds resilience to cumulative impacts, thereby yielding enduring ecosystem and economic benefits. Public support for investments in the environment, emerging approaches for assigning economic value to

California's natural capital and ecosystem services provided by the environment, and laws that protect natural resources are tools available to those who seek to conserve the oak ecosystems that cover approximately ten percent of the state.

Valuing the Natural Environment at the Voting Booth: California voters have consistently passed bond measures that collectively have provided billions of dollars for environmental conservation and restoration. Voters have funded public open space acquisitions, restoration projects, conservation easements, and watershed protection. For example, Measure AA, passed by voters in 1988, provided 20-years of funding for the East Bay Regional Park District's acquisition and protection of 34,000 acres in Alameda and Contra Costa counties—including vital oak ecosystems—and leveraged over \$88 million in matching funds. Measure WW, which continued this funding in 2008, received overwhelming voter support for \$500 million in additional ecosystem expenditures, resulting in 120,536 acres protected to date and more than 1,000 miles of trails in the District.

Valuing Nature: The concepts of *natural capital* and *ecosystem services* were developed as a means to designate monetary worth to the natural systems and resources that sustain our economy. The Open Space Authority of Santa Clara Valley and Earth Economics published *Healthy Lands and Healthy Economies: Nature's Value in Santa Clara County* in 2014 to use available data to calculate the economic contributions of natural infrastructure to the county's economy. Approximately 27.7 percent of the county is protected, providing recreational opportunities for residents and visitors, agricultural products, habitat—including critical habitat for rare, threatened, and endangered species; habitat for pollinators; wildlife corridors; carbon sequestration; groundwater recharge; flood protection; water and air quality enhancements; sediment control; and nutrient cycling.¹ The report calculated the county's forests and woodlands, wetlands, agricultural landscapes, and aquifers as natural capital worth at least \$45 to \$107 billion. Further, unlike built infrastructure that depreciates, intact regenerative resources continue to provide ecosystem services over time.

The Coyote Valley Open Space Preserve, composed of oak woodlands and grasslands, was acquired by the Authority in 2010. The valuation report analyzes the Return on Investment (ROI) of the 352-acre preserve, which was identified as *one of top ten priority natural landscapes remaining in Santa Clara County...critically important to protect from development*. The ROI calculated the non-market recreational benefits preserve visitors enjoy, the economic value of the preserve's ecosystem services, and revenue earned from grazing on the preserve's land against purchase, capital improvements, and annual stewardship costs, arriving at a 3-to-1 ratio

¹ Batker, D., Schwartz, A., Schmidt, R., Mackenzie, A. Smith, J., Robins, J.



of benefits over costs after 10 years and a 6-to-1 ratio after 20 years.² ROI calculations in other counties have found similar benefit ratios.

The majority of California's oak woodlands are under private ownership, yet many of their ecosystem services extend beyond property lines. An economic justification for keeping ecosystems intact is that watersheds on these landscapes sustain greater than two-thirds of California's drinking water supply.³ New York City's water system provides an example of a clearly delineated relationship between upstream and downstream interests through which ecosystem stewardship results in considerable cost savings. New York's investment of approximately \$1.5 billion in protections for the watersheds that supply the city resulted in savings of \$6-\$8 billion in capital costs for water treatment and an estimated \$200-\$300 million in annual operating costs.⁴

Local, State, and Federal Protections: Ecological value is also upheld by laws, which provide protections or measures to mitigate damages to environmental resources. Senate Bill (SB) 1334, passed in 2004, brought the conversion of oak woodlands, with a few exceptions, under the purview of the California Environmental Quality Act (CEQA).⁵ Mitigation measures specified in SB 1334 include conservation of oak woodlands through the use of easements, planting and maintenance of oak trees for a seven-year period, contributions to the state's Oak Woodlands Conservation Fund, and other mitigation approaches developed by counties. CEQA slows, but often does not halt the destruction of oak woodlands. Further, CEQA's reliance on local governments results in uneven enforcement. Nonetheless, SB 1334 brings regulatory oversight that confers monetary value on oak woodlands. For example, the Council of Tree and Landscape Appraisers' value for a mature, healthy coast live oak tree in an oak woodland can be as high as \$100,000. Further, CEQA requires the analysis and mitigation of greenhouse gas emissions associated with a proposed oak woodland conversion, thereby valuing the considerable ecosystem services associated with carbon sequestration in the woodlands.^{6,7}

The Oak Woodlands Conservation Act of 2001, Assembly Bill 242, established the Oak Woodlands Conservation Fund to advance the protection and promotion of biologically functional oak woodlands. The legislation defined oak woodlands as oak stands (for any species in the genus *Quercus*) with greater than 10 percent canopy cover, or a stand that may have historically supported greater than 10 percent canopy cover. Cities or counties are required to prepare, or demonstrate that they have prepared, an oak woodlands management plan in order to qualify for a grant from the fund and to certify that the proposal is consistent with the management plan. Further, proposals for projects in the jurisdiction of more than one county or city must certify that the proposal is consistent with the respective oak woodlands management plans of each county or city.

Two types of oaks are commercial species in some situations, and are thus subject to protections afforded by the Forest Practice Act and the Forest Practice Rules.⁸ Further, governmental protections for water and for species that are listed as threatened, endangered, or of special concern confer protections on associated oak woodlands or oak forested lands in some circumstances.

² See: <http://www.openspaceauthority.org/trails/coyotevalley.html>.

³ O'Geen, A., Dahlgren, R., Swarowsky, A., Tate, K., Lewis, D., Singer, M. Research connects soil hydrology and stream water chemistry in California oak woodlands, *California Agriculture*, Volume 62, Number 2, April-June 2010.

⁴ Postel, S.L. and Thompson, Jr., B.H., Watershed protection: Capturing the value of nature's water supply services, *Natural Resources Forum* 29 (2005) 98-108. Also see UC Davis Information Center for the Environment (<http://ice.ucdavis.edu/node/133>).

⁵ Projects not subject to CEQA under SB 1334 are those on agricultural lands; affordable housing development for low income households located within an urbanized area, or within a sphere of influence as defined pursuant to Section 56076 of the Government Code; and projects undertaken pursuant to an approved Natural Community Conservation Plan (NCCP) or approved subarea plan within an approved NCCP that includes oaks as a covered species or that conserves oak habitat through natural community conservation preserve designation and implementation and mitigation measures that are consistent with SB 1334.

⁶ Dagit, R., Carlberg, C., Cuba, C., Scott, T. *Economic Incentives for Oak Woodland Preservation and Conservation*. Presented at the Seventh California Oak Symposium: Managing Oak Woodlands in a Dynamic World, US Forest Service, Pacific Southwest Research Station, held in Visalia, CA November 2014.

⁷ Gaman, T. *An Inventory of Carbon and California Oaks*. California Oak Foundation, 2008.

⁸ Oregon White Oak (*Quercus garryana*) and California Black Oak (*Quercus kelloggii*) are classified as group B commercial species on lands where group A commercial species grow naturally or have grown naturally in the Coast Forest and Northern Forest districts, and California Black Oak is classified as a group B species on lands where group A commercial species grow naturally or have grown naturally in the Southern Forest District. See the *California Forest Practice Rules* for more information.