

The Value of Protecting the Sonoma Baylands

THE HEALTHY LANDS AND HEALTHY ECONOMIES INITIATIVE

CASE STUDY



**AG +
OPEN
SPACE**
SONOMA COUNTY

CONTEXT

At the south end of Sonoma County, the Petaluma River and Sonoma Creek meet San Pablo Bay in an expanse of tidal wetlands – the Sonoma Baylands. Wetlands protected by Ag + Open Space total almost 3,000 acres, much of which is connected to the Baylands.

San Francisco Bay once included more than 200,000 acres of tidal marsh and wetlands. Less than a quarter of that remains, making large, relatively intact areas like the Baylands and the adjacent Napa–Sonoma Marsh especially precious.

Tidal wetlands are among the world’s most vigorous ecosystems. They store carbon, remove pollutants and excess

nutrients, provide habitat and nursery services for waterfowl and aquatic species, and support hunting, fishing, and birdwatching in the region.

METHODS

The researchers conducted a literature review of natural capital services provided by wetlands. They cited local studies where possible, supplementing those references with information from studies conducted in other locations as well as from review papers, which integrate information from a number of published studies on wetlands. Additional detail and all references are

FINDINGS

Value: CARBON SEQUESTRATION

Tidal wetlands in and near the San Pablo Bay sequester 0.6 to 3.5 tonnes carbon dioxide equivalent (tCO₂e) per acre per year. At current prices on California’s carbon market, this carbon storage would be worth \$8 to \$46 per acre each year. Another common measure, the social cost of carbon – an estimate of the long-term costs that the release of each ton of climate-warming emissions imposes on global society – would put the annual value much higher, at up to **\$147 per acre.**

Value: WASTEWATER TREATMENT

Wetlands take up nitrogen, a common water pollutant with both agricultural and urban sources. Based on a representative figure for nitrogen removal of 29 kilograms per acre per year, and an economic value for nitrogen removal of \$14.27 per kilogram, the nutrient removal service provided by each acre of the Sonoma Baylands can be valued at roughly **\$400 per year.**

Value: MODERATION OF EXTREME EVENTS

As sea level rises, storm surges are more likely to cause flooding along the shores of San Francisco Bay. Studies along San Pablo Bay have found that tidal wetlands attenuate the energy of waves, providing flood protection at a lower cost than levees alone. In this way, wetlands serve as “natural infrastructure” for flood protection.

Value: HABITAT AND NURSERY

The Sonoma Baylands are part of a habitat complex that supports hundreds of species of waterfowl, shorebirds, and fish. The area is a major stop on the Pacific Flyway, with more than one million birds stopping in the Sonoma Baylands during their annual migration. A case study in San Francisco Bay estimated the value of wetlands that support food and nurseries for halibut, rockfish, and striped bass at **\$21 to \$27 per acre per year.**

Value: RECREATION AND TOURISM

The Sonoma Baylands provide recreational opportunities for hunting, fishing, and birdwatching, all of which bring economic activity. The average birdwatcher spends about \$850 on trips and equipment each year, for instance. Annual spending on waterfowl hunting in the Bay Area has been estimated at more than **\$4 million.**

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**Restored areas of tidal marsh
can reduce wave action on the coast
and help levees provide
flood protection at a lower cost**





**AG +
OPEN
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SONOMA COUNTY

Sonoma County Ag + Open Space permanently protects the diverse agricultural, natural resource and scenic open space lands of Sonoma County for future generations. We are responsible for the perpetual protection of over 116,000 acres of land throughout our region. These agricultural and open space lands are protected through a quarter-cent sales tax approved by voters in 1990 and reauthorized in 2006. For more information, please visit www.sonomaopenspace.org.



THE HEALTHY LANDS AND HEALTHY ECONOMIES INITIATIVE

The Healthy Lands and Healthy Economies Initiative documents the economic value and community benefits of natural and working landscapes. This research helps to show that Sonoma County's investments in land conservation pay real dividends, now and into the future. This Initiative would not have been possible without contributions from the Gordon and Betty Moore Foundation, the S. D. Bechtel, Jr. Foundation, and the California State Coastal Conservancy.

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