

New Study on Historical Ecology of Alameda Creek Will Assist Steelhead Restoration Efforts

Report Details Transformation of Largest Bay Area Watershed

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Richmond, CA – The San Francisco Estuary Institute has published the [Alameda Creek Historical Ecology Study](#), documenting the transformation of the largest local tributary to San Francisco Bay and suggesting opportunities for steelhead restoration, wetland recovery and watershed management. The study applies a [historical ecology](#) approach to Alameda Creek, a key Bay Area watershed for recovery of steelhead trout. The project synthesizes hundreds of historical maps, photographs and documents with contemporary science to gain understanding of current environmental challenges and restoration opportunities.

The study shows changes in the natural habitats of the Alameda Creek watershed over time, a transformation from wetlands and wildflower meadows to a densely populated urbanized region. The richly illustrated report also reveals the persistence of some of the watershed's landscape patterns, processes and native species, highlighting the potential for restoration. A special section co-authored with EPA biologist Robert Leidy describes the remarkable diversity of the native fish communities found historically within the watershed; more than half of the original two dozen native freshwater fish species still persist today in Alameda Creek.

"The Alameda Creek Historical Ecology Study shows how creek, wetland and other natural systems used to work, and suggests ways that we can re-establish some of these functions to make healthier and more resilient ecosystems within the Alameda Creek watershed," said SFEI senior scientist Robin Grossinger.

"This report provides valuable historical perspective and can guide how we try to restore Alameda Creek and some of its native fish runs," said Jeff Miller, director of the Alameda Creek Alliance. "It helps us better understand how the creek, riparian areas and wetlands once functioned, how steelhead and salmon may have used these habitats, how they have changed over time, and what natural areas we have lost. Most importantly, it identifies opportunities to revitalize some of these habitats essential to cold-water fish."

The report examines historical features of the watershed such as the former Tulare Lake, a marsh complex and freshwater wetlands with a large former extent of willow groves under present-day Pleasanton; discontinuous streams in the Livermore-Amador Valley and the iodine bush and alkali wetlands of the Springtown sink in Livermore; extensive sycamore alluvial woodlands and oak savannah in Sunol Valley; and the once numerous braided channels of lower Alameda Creek as it spread across the Niles cone in Fremont and Union City.

The report concludes with map-based conceptual models showing how key ecological functions and services have changed, and identifying the persistent physical processes and historical impacts that together shape today's landscape. It provides a basis for management strategies to address the multiple challenges to making the watershed more resilient, including stream and wetland restoration, fisheries recovery, sediment management, storm water management and flood protection.

The study was funded by the Alameda County Flood Control and Water Conservation District and San Francisco Public Utilities Commission, with additional funding by the Alameda County Water District and Zone 7 Water Agency. The project was produced in partnership with the Alameda County Resource Conservation District. For copies and more information, please visit the project [webpage](#).

Background

Alameda Creek is becoming an urban stream success story after decades of restoration efforts. The watershed covers an area of about 680 square miles and once supported populations of steelhead trout and salmon. Steelhead and salmon are anadromous fish, living out their adult lives in the ocean and migrating up fresh water streams and rivers to spawn and rear their young. Construction of dams, water diversions, modifications to the Alameda Creek streambed, and urbanization made it impossible for steelhead to migrate upstream, eliminated access to favored spawning areas, and reduced suitable habitat for cold-water fish in Alameda Creek and its tributaries.

Since steelhead trout in the Bay Area were listed as threatened under the Endangered Species Act in 1997, numerous organizations and agencies have cooperated on restoration projects to allow migratory fish to reach cold-water spawning habitat in upper Alameda Creek. Water agencies are working on multiple projects to allow fish migration, improve stream flows and restore stream and riparian habitat along Alameda Creek and its tributaries. More than a dozen fish passage projects have been completed along Alameda Creek since 2001. Several more fish ladder projects in the lower creek are expected to be completed by 2014-15, which will allow steelhead trout to migrate upstream into Niles Canyon and the Sunol Valley for the first time in half a century, into nearly 15 miles of suitable spawning and rearing habitat. Alameda Creek is now considered an 'anchor watershed' for steelhead, regionally significant for restoration of the threatened trout to the entire Bay Area.