Lessons from history for *revitalizing the Bay*

by Robin Grossinger and Peter Baye • design by Ruth Askevold

How relevant is the historical South Bay landscape to modern wetlands management and restoration? Are the Bay’s native habitats simply like the Pleistocene megafauna—museum display material, interesting perhaps, but gone for good, with no place in a modern urbanized estuary? Or are they a key to true restoration of natural estuarine communities and ecosystems, the clues to a diverse South Bay landscape, the habitats that will make our restoration efforts produce more than generic, monochromatic parcels of pond or pickleweed? Do they even perhaps provide practical models for reconnecting human culture to the Bay waters lapping at the feet of our cities?

In the following pages, we illustrate a former and hidden landscape, concealed from view by its rarity yet in many ways poised to return. These subtle patterns are revealed through a combination of historical research—analysis of early maps, photographs, written materials—and present-day field observation. Together, these lines of investigation confirm both remnants and reassertions of the historical landscape. Most important, this perspective reveals natural, persistent relationships between habitats and physical processes—salinity gradients, tides, wave energy, groundwater emergence—most of which remain intact in some form today, ready to reassert themselves with a little help. In effect, these patterns “fit” the South Bay landscape into its physical setting, creating the context for diverse plant and animal species and for the human activities that have shaped Bay Area culture for several thousand years. 

**FRESHWATER ECOTONES**

It’s easy to forget that the saltwater tides weren’t the only source of water to the bayshore marshlands. In fact, one of the major causes of the diversity of the historical South Bay landscape was the influence of local freshwater creeks. Major creeks delivered sediment from local watersheds for marsh development and created ecological gradients of fresh-to-brackish-to-salt marsh at creek mouths—habitats that have been almost completely lost. Away from the larger creeks, fresh water entered the marshlands through seeps, springs, and overland flows during floods, creating dramatic variations in marsh form and ecology. While the freshwater flows from the local watersheds have been heavily constrained, there are still numerous sources of fresh water to the South Bay—from flood control channels to treated sewage effluent—that could be redesigned to support natural ecotones.

**BEACHES**

Variations in wave energy, shoreline orientation, and subtidal substrate led to discrete patterns of sand beaches, sandy marsh edges, and oyster shell beaches around the South Bay. The sandy beaches at the northern end of the South Bay were habitat for many plants specific to sandy marsh edges, including several that are now regionally extinct along the Bay shore, such as the dune strawberry (see right). Commonly located at the bayward edge of wide marshes, the beaches provided safe haul-out sites for harbor seals and may have been important nesting habitat for the now-endangered snowy plover. One South Bay beach, at Coyote Point, is still popular with swimmers today. And the beaches continue to come back, re-forming themselves at the Bay’s edge.

*Map of Alameda Creek from U.S. Coast and Geodetic Survey T-2353, 1896, courtesy NOAA; photo by George E. Russell, circa 1920, courtesy California State Lands Commission; photo by Peter Baye.*
Toward the mouths of large creeks, the South Bay marshes supported big ponds with distinct edges and perennial water, such as this residual pond still present at New Chicago Marsh in Alviso.

At the natural, gradual tidal marsh—grassland edge, spring wildflowers like smooth goldfields (Lasthenia glabrata, shown above from Petaluma) were historically abundant.

**The Diversity of the Marsh Plain**

While we tend to envision vast, monotypic plains of pickleweed fringed by cordgrass—and have largely aimed for such in restoration efforts to date—both historical and present-day evidence suggests a much more diverse plant community once covered the bay-side marsh plain. Pickleweed and cordgrass are major—but not the only—components of a robust tidal marsh landscape.

**Grassland/Marsh Ecotone**

Because the landward edge of the marsh was impacted by Euro-American development so early and extensively, its characteristics have largely been erased from local memory. A rich plant community was found at the terrestrial edge of the South Bay, where tidal marshes graded into low-gradient grasslands and seasonal wetlands.

**Sausal/Marsh Ecotone**

Sausals constitute an important ecological node in the South Bay landscape. These were dense groves of willow trees up to 30 feet high, situated around seeps and springs at the landward edge of the marsh. These groves ranged in size from 10 to 200 acres. Amid wide grasslands and marshes, the sausals provided valuable tree cover and riparian habitat for songbirds and amphibians. Today, one of the few residual sausals is located near Coyote Hills, where it occupies a small fraction of its historical extent but has expanded in recent years with the return of near-surface groundwater.

**Forgotten Habitats of the South Bay**

More than pickleweed and cordgrass

**Salt Ponds, Salinas, and Marsh Pannes**

A dominant feature of the South Bay marshlands was the thousands of shallow ponds and salinas gracing the vegetated plain. Salinas were the largest of the natural pondlike features, smaller ponds were found in the marsh interior. Together these features supported waterfowl, shorebirds, and, at their edges, distinctive plant communities—sometimes in the same place at different times of year.

**Channel Networks**

Twice each day the tides pulsed water through 3,000 miles of sinuous South Bay sloughs, ranging from 1 to 1,000 feet wide. Estuarine fish followed the tides to feed in the marsh sloughs. At the highest tides, water spilled onto the marsh plain and refilled the ponds.
Throughout history, people have interacted with the Bay largely through the diverse wetland habitats along its edge. These transitional environments of mudflat, marsh, channel, pond, and beach provided the practical and functional connection between the adjacent valleys and plains—where people live—and the Bay’s waters. More recently the Bay has become primarily an open-water landscape, with relatively few of these transitional, human-scale gradients between background image for tourist postcards, picture-perfect views, and “splash-ball” home runs. With these changes and little in the way of locally consumed resources, the Bay no longer sustains a tangible connection to most of the surrounding population. Restoring the South Bay landscape is also about restoring the connections between people and the Bay.

Shellmounds reflect the value of South Bay habitats and species.

These massive mounds of shell, bone, soil, and artifacts were often several stories high, constructed by native peoples largely from Bay resources. Shellmounds tend to be located at the Bay’s edge in areas of high ecological diversity, native peoples likely enhanced that diversity through land management practices. The distribution and contents of the South Bay shellmounds provide valuable long-term evidence of how the local indigenous people incorporated the bountiful resources of the Bay into their diet, commerce, and spiritual practices. While ongoing development continues to threaten these historic features, the salt pond restoration process provides an opportunity to reappropriate an understanding of these cultural and ecological landmarks into a restored landscape. Below, a person standing on a shellmound near Coyote Hills in 1935 gives an indication of how vast these features were.

Roads follow landings to the Bay.

Historically, and the broad marshlands of the South Bay moved vast amounts of water in and out of their channels each day, sustaining large tidal channels that sourced access to the deeper bay. Early landings—Alviso, Union City, Redwood City, Roberts Landing (below, near San Lorenzo)—were usu-

Hunting the marshes. While we tend to think of the Suisun marshes as the main locale for waterfowl in the region, most of the Bay’s tidal marshlands were productive wa-
terfowl habitat well into the 20th century. The journal Overland Monthly described “hundreds of shooting clubs and resorts… [from] San Leandro Bay down south to Alviso” in 1910, prior to the construction of most of the salt ponds. The several hundred citizens currently identified as members of local hunting clubs are testimony to the persistence of hunting in the South Bay.

Salt pond history – models for reintegration

The development of artificial salt ponds has resulted in the most extensive transformation of the South Bay landscape. However, salt ponds were—and can be again—a natural part of the tidal marsh ecosystem. While we typically frame restoration options as salt ponds versus tidal marsh, history provides robust examples of their integration, through both natural process and local tradition.

About courtesy Pacific Archaeological Museum of Anthropology, and the Regents of the University of California, photographed by Waldo Wedel, 1935, catalog number H-10730, thanks to Kent Lightfoot. Below, from November 1910, No. 5, Vol. LVI. Overland Monthly, described “hundreds of shooting clubs and resorts… [from] San Leandro Bay down south to Alviso” in 1910, prior to the construction of most of the salt ponds. The several hundred citizens currently identified as members of local hunting clubs are testimony to the persistence of hunting in the South Bay.

Evolution of salt ponds. During the past 150 years, the salinas were subdivided and expanded, transforming a marsh with scattered ponds (1857) into ponds with larger marsh (1910). The small-to-medium-scale salt ponds, independently managed at scales of 20 to 300 acres, have demonstrated an intermediate level of management with a range of ecological and cultural benefits. The historical character and landscape position of these features provide evidence for the integration of modern salt ponds into a diverse South Bay landscape. (The channel meanderer cited in red provides a common reference point between the images.)

From U.S. Coast Survey Trips, 1877, courtesy NOAA; from U.S. Coast and Geodetic Survey, T-2252, 1896, courtesy NOAA; 1996 air photo courtesy BCDC and NOAA.