

US Fish & Wildlife Service FieldNotes

SAN FRANCISCO BAY NWRC: A Decade of Restoration in the South San Francisco Bay

Region 8, July 29, 2013



A former commercial salt pond in Alviso, CA was breached and returned to tidal flow in Dec, 2010. - Photo Credit: n/a



Aerial kite photos show the return of thriving marsh just two and a half years after salt ponds were restored to tidal flow. - Photo Credit: n/a

By Doug Cordell

“This is an enormously ambitious project requiring years of planning—and we’re already seeing results on the ground,” says **Eric Mruz**, manager of the Don Edwards San Francisco Bay National Wildlife Refuge, on the tenth anniversary of the historic land acquisition for the South Bay Salt Pond Restoration Project—an unprecedented effort, in the middle of a major urban center, to restore a landscape the size of Manhattan to a thriving wetland ecosystem.



U.S. Senator Dianne Feinstein, a principal champion of the restoration of the salt ponds, at the opening of one of the project's managed ponds in 2010. - Photo Credit: n/a

In 2003, under the leadership of U.S. Senator **Dianne Feinstein**, 15,100 acres of former commercial salt ponds were purchased or acquired through donation from Cargill, Inc., the first step in a campaign to restore 100,000 acres of lost tidal wetlands around San Francisco Bay. Funds for the acquisition were provided by federal and state resource agencies and several private foundations, including the William and Flora Hewlett Foundation, the Gordon and Betty Moore Foundation, and the David and Lucile Packard Foundation.

The acquisition of the salt ponds grew out of an increased awareness of the need to do something about the 85 percent of tidal wetlands around the Bay that were lost to development over the last century and a half. These habitats serve as giant filters, removing toxic pollution and nutrient runoff that otherwise impact the Bay's fragile ecosystem. Historically, Bay wetlands have also worked as natural sponges that protect communities from tidal flooding by absorbing and slowly releasing storm water. On the climate front, they capture and store atmospheric carbon that otherwise would contribute to global warming; and they serve as a natural buffer against sea level rise. Not least of all, the Bay's wetlands pulse each year with thousands of migrating and resident birds, fish and other species that rely on these habitats to forage, rest, and raise their young.

Unfortunately, the region's vital wetland network was seriously compromised as land near the Bay was drained and diked for farming, urban development and salt production. A result has been the dramatic decline in marsh-dependent species like the salt marsh harvest mouse and the California clapper rail, both of which are currently threatened with extinction. The loss of tidal wetlands has also contributed to decreased water quality in the Bay and increased the risk of flooding.

The 2003 acquisition was a bold step to reverse some of those trends.

“It's a rare opportunity to reverse some of the damage done to Bay habitats over the last century,” says **John Bourgeois**, Executive Project Manager of the effort.

After the property was acquired, the U.S. Fish and Wildlife Service, the California Department of Fish and Game (now California Department of Fish and Wildlife, or DFW) and the California State Coastal Conservancy (SCC) launched a five-year process, bringing together a broad coalition of agency staff, scientists and members of the public to design a restoration plan for the property. The final plan, adopted in 2008, is a blueprint for achieving the project's three main goals: habitat restoration, public access for wildlife-oriented

project's three main goals: habitat restoration, public access for wildlife-oriented recreation, and flood risk management. The restoration is designed to be implemented in phases, stretching over the next several decades.

Shortly after the adoption of the final plan in 2008, Phase One of the restoration began at the project's three salt pond complexes: the Ravenswood ponds on the west shore of the Bay near Menlo Park, the Alviso ponds in the far reaches of the South Bay, and the Eden Landing Ponds along the East Bay shoreline near Hayward. For each of the pond complexes, a Working Group of interested parties meets regularly to focus on design, construction and research issues. There are also regular Stakeholder Forums that foster broader public participation for the project as a whole. In addition, there are monthly coordination meetings of the Project Management Team, with representatives from participating agencies: USFWS, SCC, DFW, the U.S. Army Corps of Engineers, the National Oceanic and Atmospheric Administration, the U.S. Geological Survey, the Santa Clara Valley Water District, and the Alameda County Flood Control and Conservation District.

For habitat restoration, the goal of the project is to provide a mix of habitats, including both the tidal marsh that historically ringed the Bay and shallow- and deep-water ponds for shorebird and water fowl species that found habitat on commercial salt ponds when development drove them out of other areas.

At the Ravenswood ponds, for instance, Phase One saw the completion of managed pond SF2, including 240 acres of enhanced pond habitat for nesting and resting shorebirds like the western snowy plover. The SF2 restoration also meets the goal of increased public access, with a nearly three-quarter mile trail and two viewing platforms with interpretive displays.

Meanwhile, at the Alviso complex, over 2,600 acres of ponds have been connected to the Bay, creating new tidal marsh for endangered species, as well as shallow water habitat for shorebirds, pelicans, cormorants and ducks. Another 240 acres of designed pond habitat include shallow waters and 16 nesting islands for migrating shorebirds such as avocets and stilts. For the public, two and a half miles of new Bay Trail were opened between Sunnyvale and Mountain View's Shoreline Park.

At Eden Landing, 630 acres of tidal habitat have been restored, along with 230 acres of pond habitat for a variety of bird species such as phalaropes and eared grebes. Public amenities include 3.8 miles of new trails, an interpretive site with raised walkways and viewing platforms overlooking the remnants of the historic salt works, and a kayak launch.

Phase Two of the restoration, now in the planning stage, envisions opening more ponds to tidal action so they can transition to marsh; improving the quality and diversity of managed ponds; and adding more recreational trails and interpretive displays.

"The restoration of these lands is the culmination of decades of work," says **Florence LaRiviere**, founding member of the Citizens Committee to Complete the Refuge, one of a number of local groups that have been advocating for the preservation and restoration of Bay Area wetlands since the 1960s.

As for the third principal goal of the project, flood risk management, planners have also taken a phased approach. The development of fully restored wetlands that buffer against flooding will take decades. Meanwhile, there is a need for flood protection in the South Bay. In the near term that will be met by maintaining a portion of the levees that Cargill and its predecessors originally built for salt-making purposes. Over the years, these levees have provided de facto flood protection for communities in the South Bay—like Alviso, which sits twelve feet below sea level. With a longer view, the project is partnering with the U.S. Army Corps of Engineers and local agencies to design a comprehensive flood control plan for the South Bay shoreline that will be integrated with habitat restoration.

One of the unique features of the restoration project is its use of Adaptive Management—the process of taking lessons learned on the ground in restoration activities and folding them into future management practices. That process is playing a critical role in determining which combination of habitats provides the best environment for resident and migrating species of birds, fish and other wildlife.

Science is central to the adaptive management program. Each year, the project's scientists monitor and evaluate new data on everything from mercury accumulation and sediment dynamics to the impact of trail use on birds. That information, in turn, guides management decisions about future restoration

information, in turn, guides management decisions about future restoration work, public access and flood risk management.

Early scientific research by the project has produced some notable findings. For instance, restoration sites at the Island Ponds in the southernmost portion of the

Bay are accumulating sediment more rapidly than expected, which augurs well for the future development of thriving wetlands. In fact, in the less than five years since restoration of the Island Ponds was undertaken, the area is showing significant plant colonization. Satellite imagery has been found to be particularly effective in tracking large-scale vegetation shifts.

Scientific monitoring has also shown an increase in native fish inside several of the project's newly restored areas, and in adjacent creeks and sloughs. Meanwhile, at managed Pond SF2 near the western foot of the Dumbarton Bridge, newly created islands were seen to support 150 pairs of nesting shorebirds in the first year. Refinement of pond management techniques, based on scientific data, is also improving water quality and increasing the number of dabbling ducks and shorebirds.

One key to the success of the South Bay Salt Pond Restoration Project thus far has been the work of volunteers—some who have helped out on refuge lands for many years, and others new to the work, many of them brought in groups brought by organizations like Save the Bay. Anyone interested in visiting the restored ponds or volunteering to help with restoration work can find out more at: <http://www.southbayrestoration.org>.

Despite its impressive record to date, the restoration project faces some challenges in the coming years. One of the most significant is the accelerating pace of sea level rise. While restored tidal marshes lessen the impact of rising waters and protect levees that shield inland areas from storm waves and tidal surges, the marshes need sediment to anchor them. Though there is sufficient sediment in the Bay now, that may change with a rising sea level. Which means that the sooner salt ponds are restored to tidal marshes and wetlands the better chance they will have to establish themselves and grow as the sea level rises.

Then, too, there is the need for continued funding of the project—always a challenge, but especially so in an era of government budget cutbacks.

Representatives of the project are confident, however, that they will meet those challenges.

"We believe the Bay community will continue to make wetland restoration a priority," says Executive Manager Bourgeois. "And the agencies are committed to seeing the work implemented. The benefits are simply too great."

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