

Restoring Southern California's Urban Wetlands

An Interview with Dr. Joy Zedler

By Nia Hurst

Department of Oceanography and Coastal Sciences
Louisiana State University, Baton Rouge, LA 70803

California had lost of 91% of its natural coastal wetlands by the turn of the 21st century. As the most populous state in U.S., California's last remaining wetlands are surrounded by extremely urbanized landscapes, making these habitats an oasis in a sea of people, cars, and buildings. The wetlands left are even more of an oasis for the federally endangered species that inhabit these sites, including the California Least Tern, the Salt Marsh Bird's Beak, and the Light-Footed Clapper Rail. Given the magnitude of wetland loss and their ecologic importance, several efforts to restore California's wetlands are underway, including those in the Tijuana River National Estuarine Research Reserve (Figs. 1 & 2) and the Sweetwater National Wildlife Refuge (Figs. 1 & 3). Restoration in this region has been spearheaded by federal agencies, such as the U.S. Fish and Wildlife Service, the state, and non-profit organizations and citizens groups.



Figure 1. The location of the Sweetwater National Wildlife Reserve and the Tijuana Slough NWR (courtesy of the USFWS).

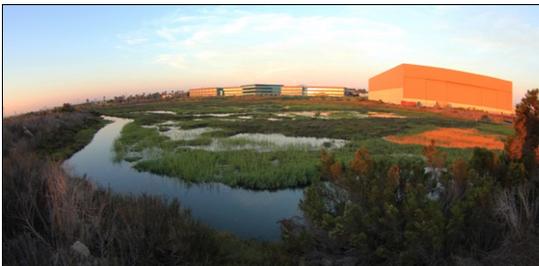


Figure 3. The interior of the Sweetwater Marsh (courtesy of the Ocean Force Foundation).



Figure 2. The Tijuana Estuary (courtesy of the TDNEDD)

Common Restoration Goals for California's Wetlands

- "To protect, enhance, restore, and manage coastal wetland and upland habitats to benefit native fish, wildlife and plant species."³
- "To protect, restore and enhance the viability of key coastal habitats and species and preserve the region's cultural heritage while encouraging compatible public use, education and research."⁴
- "To protect, enhance, and manage populations of endangered and threatened species and other species of concern through habitat restoration and population management."³

Obstacles to Restoration

The fact that only 9% of California's naturally occurring wetlands remain is just one of the many obstacles plaguing restoration in the region. Invasive species continue to be an issue and, in the Tijuana Estuary in particular, sedimentation loads that suffocate natural habitats are especially problematic. Cost remains a considerable factor and one of the highest hurdles. The Tijuana Estuary required \$600 million in the first 25 years of restoration alone. Given the location of California's wetlands in an urban environment, high price tags often stem from manipulating geomorphology and managing man-made structures, such as the dredging of land and the tearing down and rebuilding of roads.



Figure 4. The Light-Footed Clapper Rail
(Courtesy of Monte Stinnett).

Example of Restoration in Sweetwater Marsh

California adopted a “no net loss” policy towards wetlands in 1989, which means that the acreage of wetlands in the state can remain the same or increase, but not decrease. Wetland mitigation, one of the ways in which this goal is accomplished, requires the restoration or creation of wetlands to off-set for those whose destruction is unavoidable. While this method helps to maintain California's wetland area, it often faces criticism from those who question whether restored or created wetlands can live up to their natural counterparts. This question was well tested in 1985

when the California Department of Transportation (Caltrans) restored cord grass habitat in Sweetwater Marsh to offset natural habitat that was destroyed during the expansion of an interstate near the marsh. Tall cord-grass habitat is critically important to the endangered Light-Footed Clapper Rail, which nests best in grass that is at least 90cm tall (Fig. 4).

Dr. Joy Zedler (Fig. 5), the Aldo Leopold Professor of Restoration at UW-Madison and researcher of S. California's wetlands for over 30 years, was hired by Caltrans to monitor the progress of their cord grass restoration. Dr. Zedler first began taking her San Diego State University students out to California's salt marshes in the 1980's to show them vegetation changes along salinity gradients. Her prior research, which included understanding the mechanisms of cord grass growth, would prove beneficial during the Caltrans study. In 1990, five years after Caltrans's initial restoration in Sweetwater Marsh, Zedler reported that the restored habitat had yet to attract any Clapper-Rail nesting because the cord grass was too short. The grass was unable to accumulate enough organic matter or nitrogen on its own to provide self-sustaining habitat. Almost 30 years later,



Figure 5. Dr. Joy Zedler outside her office at UW-Madison.

not much has changed. "I actually went back this summer and looked at those same areas and they're even worse than they were when we were studying them." Zedler recalls. Now, the Clapper Rails are bred in captivity and reintroduced in to the site to increase its population numbers.

Redefining Success

Although some might be quick to judge the restoration in Sweetwater Marsh as a failure, Zedler wouldn't be included in that list. Despite being unable to provide sustaining habitat to the Clapper Rail, restoration efforts have successfully created habitat for other endangered species living in the marsh, including the California Least Tern. Instead of using the term "success" to define a project, Zedler likes to use the terms "progress", saying that the word 'success' is a too subjective and an unclear descriptor of restoration. Progress allows for a wider range of outcomes and better demonstrates the movement towards meeting restoration criteria. Mistakes along this progression can inform new restoration efforts of what not to do and increase the probability of meeting criteria in future projects. Although Caltran's restoration of the Clapper Rail's habitat may have not been a total "success", Zedler says if they had to do it again, they'd know how to do it right.

References

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- ³"Sweetwater Marsh National Wildlife Refuge South San Diego Bay Unit of the San Diego National Wildlife Refuge." U.S. Fish and Wildlife Service, 1 Oct. 2001. Web. <http://www.fws.gov/sandiegorefuges/new/pdf/Planning_Update_2.pdf>
- ⁴"Tijuana River Comprehensive Management Plan National Estuarine Research Reserve." *National Estuarine Research Reserve System*. National Estuarine Research Reserve System, 1 Sept. 2010. Web. <http://www.nerrs.noaa.gov/Doc/PDF/Reserve/TJR_MgmtPlan.pdf>

For more information about the Tijuana Estuary, go to <http://trnerr.org/>

For more information about the Sweetwater , go to: http://www.fws.gov/refuge/san_diego_bay/