

# Giacomini Wetlands Restoration: A Legacy for Tomales Bay







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## GIACOMINI WETLANDS RESTORATION: A LEGACY FOR TOMALES BAY

For hundreds of years the south end of Tomales Bay was a productive wetland regularly visited by egrets, herons, and shorebirds in search of their favorite food found in the mudflats and tidal marshes that edge the bay.

In the 1800s, settlers came to West Marin and built ranches and farms on the rich grasslands and productive prairie found in coastal areas. They created one of the premiere dairy industries in the San Francisco Bay Area. Logging ventures thrived on the virgin Douglas-fir and redwood forests along the coast in areas such as Inverness Ridge and in the wetter inland areas. Roads and a railroad carrying lumber and farm products to San Francisco resulted in the diking of extensive portions of historic marsh, converting them either to upland or to freshwater marshes and other types of wetlands.

An extensive tidal marsh complex once spanned the entire width of the headwaters of Tomales Bay, extending south towards Bear Valley and north towards Inverness. In the early 1940s, Waldo Giacomini diked the south end of Tomales Bay to create additional pasture for his dairy in order to produce milk for the war effort. More than 550 acres or 50% of the wetlands in Tomales Bay were diked to reclaim this marsh that, at that time, was thought to be an unproductive wasteland. From this land, the Giacomini family created one of the largest and most productive dairies in Marin County, which the family maintained until recently.

*aerial view of Tomales Bay looking south*

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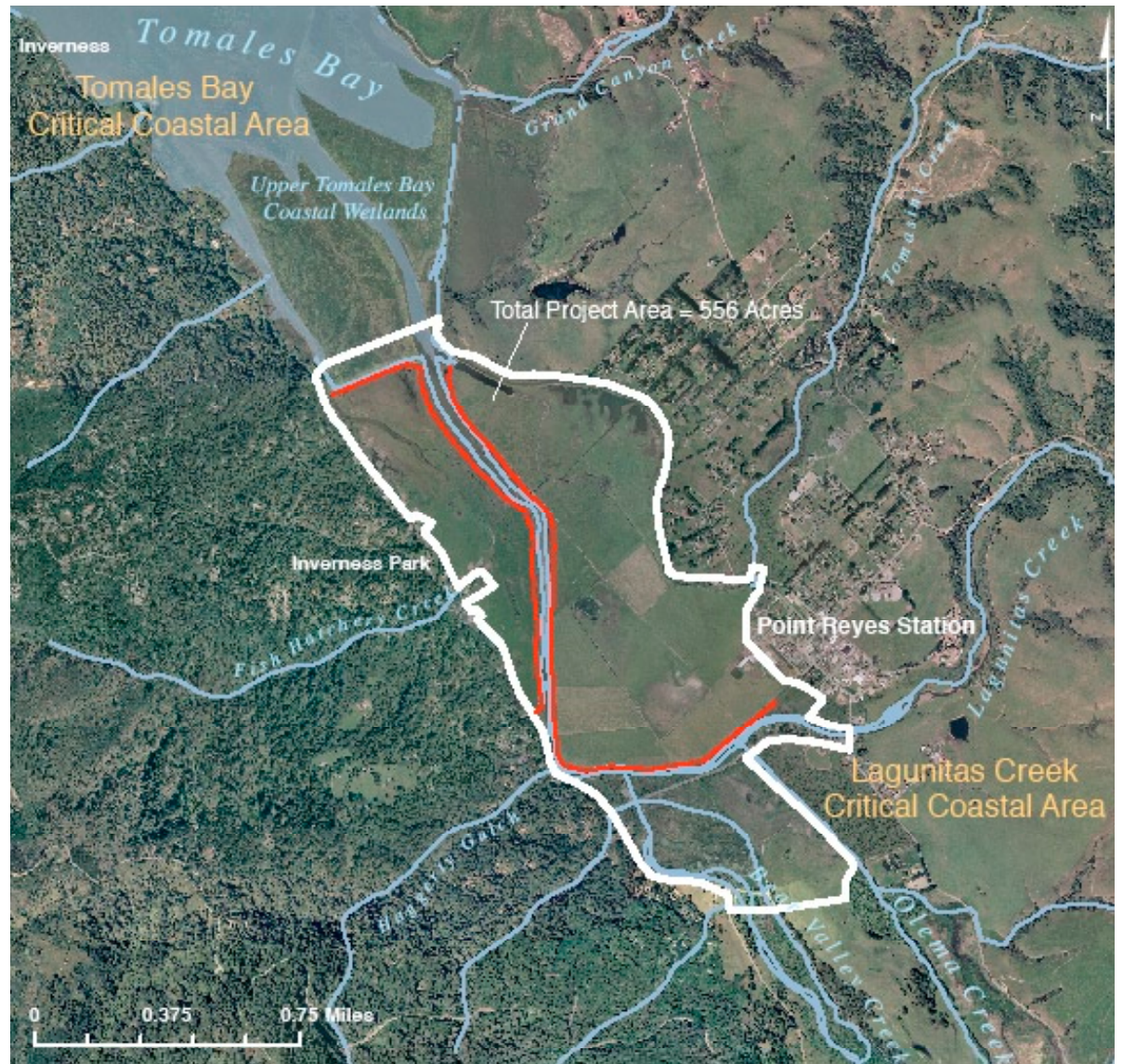






The changes caused by ranches, roads, and the railroad had subtle and not-so-subtle effects on Tomales Bay. They dramatically increased sedimentation to streams emptying into the Bay. Sedimentation at the mouth of Lagunitas Creek choked open water portions of the Bay, converting subtidal and intertidal mudflats into vegetated marsh, and doubling wetland acreage relative to historic conditions. Over time, the increase in ranching, logging, and home building also increased loading of pollutants to the Bay's waters, leading the state water board to declare the Bay as impaired by pollutants and impose new regulations. Salmon, clapper rail, river otters, tidewater goby, and other endangered and threatened species dwindled dramatically in numbers or even disappeared altogether.

People in Tomales Bay saw these changes and realized something needed to be done. In the 1960s and 1970s, thousands of acres of coastal lands were saved from development by establishment of national parks and land trusts, but still problems continued. What was needed was not only preservation, but also restoration and restoration at a large scale – a scale that could effect watershed-level change. While community and watershed groups have spearheaded a number of projects to improve the health of Tomales Bay, the largest and potentially most effective effort is the Giacomini Wetland Restoration Project, which returns the former dairy ranch back to tidal wetlands and floodplain.



map of project area



*I grew up in the neighborhood next to this restoration. For over thirty years I heard from friends and relatives about the potential for restoring this ranch to wetlands. To be part of this wetland restoration, and realizing the dreams of so many, is truly remarkable.*

DENNIS J. RODONI  
*Chair, PRNSA Board  
and Olema Resident*



## A CHANGING VISION OF RESTORATION

In the 1970s, a new vision was developed for the coast of California and for Marin County. A 1968 plan for extensively developing West Marin was rejected, and a 1972 statewide Coastal Act placed a high value on protecting natural resources. This new vision, in part, led to the formation of Point Reyes National Seashore (Seashore) and, later, Golden Gate National Recreation Area (GGNRA).

The first step towards restoring the Waldo Giacomini Ranch to wetlands was incorporation of the ranch into the boundaries of Golden Gate National Recreation Area (GGNRA). This enabled the National Park Service to purchase the ranch. It wasn't, however, until the California Department of Transportation (CalTrans) needed to mitigate for resource impacts associated with a road repair that the restoration project became an achievable goal.

With the help of the California Coastal Commission and Gulf of the Farallones, the National Park Service brokered a deal with CalTrans that gave the park the monies to purchase and restore the Giacomini Ranch. In 2000, the purchase was complete. Seven years of planning and fundraising later, the restoration of 550 acres — or more than 50% of Tomales Bay's wetlands — is a reality.

Early on, the National Park Service and its restoration partners focused on defining a project that would not only increase its sustainability, but allow it to function naturally within the current watershed context. Conditions have changed since the 1860s, and the southern portion of Tomales Bay is now a very different type of system than it was historically.

*cows grazing on Giacomini Dairy*

In addition, the restoration area is within a very dynamic part of the estuary — the estuarine transition zone between downstream saltwater influences and upstream freshwater contributions. In transitional zones, the physical landscape, vegetation, and wildlife can shift substantially over time, constantly adapting to short-term and long-term watershed conditions and climate patterns.

By emphasizing restoration of natural hydrologic and ecological processes and functions, the National Park Service and its partners recognize the inherently dynamic nature of this zone within estuaries and the irreconcilable differences between this system and the one that existed 150 years ago. The project focuses on removing impediments and conditions that constrain natural process and functions — removing levees, tidegates, culverts, and agricultural infrastructure; filling in drainage ditches; recreating tidal sloughs and creeks; and shifting creeks into historic alignments. The marsh will be left to evolve on its own, not managed to recreate historic conditions or specific marsh types.

Most of the Giacomini Ranch restoration work has been concentrated into a two-year period (2007-2008). Where appropriate, the restoration partners will use an adaptive approach to restoration that will allow the system to respond to restoration actions and then let changes determine the need for any future action. This is the approach being taken for restoring Olema Marsh, the 63-acre freshwater marsh directly south of the Giacomini Ranch.



*The Giacomini Wetlands Restoration project is restoring 560 acres of pastures back to wetlands, the equivalent of 12% of lost coastal wetlands in central California. This is by far the largest and perhaps most significant project directly affecting the Tomales Bay watershed to date. This is truly a life-long gift to the community.*

CARLOS PORRATA  
*Chair, Tomales Bay Watershed Council*

*reconfiguration of original channels and  
white tailed kite*



*This is an incredible moment in history. The community has created 560 acres of wetlands to enhance the long-term health of Tomales Bay and all of its inhabitants. This gives me hope for our future.*

DON NEUBACHER  
*Superintendent  
Point Reyes National Seashore*

*great egret and view of the shallow shorebird area on the east side of the project area*





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## HOPE FOR THE HEALTH OF TOMALES BAY

Dynamic hydrologic processes are regarded today as the cornerstone of important wetland functions. Wetlands filter floodwaters to improve downstream water quality. They alleviate the severity of flooding by storing floodwaters and dissipating the erosive force of flood flows. They provide breeding and nesting habitat and foraging opportunities for wildlife and are an important nursery for a wide variety of marine and anadromous species, many of which are species that typically frequent open waters of Tomales Bay.

By restoring natural hydrologic process, this project can improve conditions not only within Giacomini Ranch and Olema Marsh, but potentially within the entire Tomales Bay. More than 66% of the freshwater inflow – and potential pollutant source – to Tomales Bay flows into the system just upstream of the Giacomini Ranch, and levees have constrained most of the flows to Lagunitas Creek, funneling these sediment- and pollutant-laden waters directly into the Bay itself. Removal of levees, tidegates, and other hydrologic impediments will dramatically increase floodwater retention in the Giacomini Ranch during smaller flood flows by as much as 2,000% and could decrease downstream delivery of sediment and pollutants by as much as 19%.

This improvement in the quality of Tomales Bay's waters could have tremendous benefits not only for people who use the estuary for recreation and oyster mariculture, but also for the freshwater, estuarine, and marine wildlife species that use Tomales Bay for breeding or foraging. Because of its importance to wildlife, Tomales Bay is not only part of the Golden Gate Biosphere Reserve and a California Critical Coastal Area, but in 2002, it was nominated as a "Wetland of International Importance" under an international treaty called the Convention on Wetlands (commonly known as the Ramsar Convention). Tomales Bay is also one of 16 wetland areas that qualify for inclusion as a wetland of regional importance under the Western Hemisphere Shorebird Reserve Network because of its large number of wintering and migrating shorebirds.

The functionality of the Giacomini Wetlands will recover quickly once connectivity is restored. Tidewaters will flood the Giacomini Ranch daily, cresting creek banks and overspilling onto the new marshplains. With frequent inundation by these tidewaters, the vast expanse of grassland will shrink rapidly, transitioning into broad marshplains dominated by low-growing saltgrass, pickleweed, and jaumea and taller-growing species such as arrow grass, California sea lavender, and gum plant. Patches of Pacific cordgrass and alkali bulrush will line the more shallowly sloped edges of the new tidal sloughs and channels. Stands of arroyo willow and red alder will rapidly establish and expand along upper portions of creeks within the former ranch and along the perimeter of Olema Marsh. Even prior to restoration, there was a surge in the extent of native grasses and salt marsh habitat. Each year, there will be new arrivals to find and celebrate.

*The Giacomini Project will reintroduce natural tidal and floodplain dynamics at the head of Tomales Bay. The removal of levees and reconnection of five watersheds, including Lagunitas and Olema Creek to this ecologically productive estuarine transition zone will benefit a wide range of aquatic and avian species, including coho salmon and steelhead. The opportunity to return full function to this dynamic and beautiful place is a true privilege.*

BRANNON KETCHAM

Hydrologist

Point Reyes National Seashore

*emerging pickleweed in wetlands*



*The wetlands restoration project made the partnership even stronger between the Point Reyes National Seashore Association and the National Park Service. Staff in many different functional areas from both organizations worked closely together -- and the wide range of perspectives made for a much more innovative and ultimately successful project.*

GARY KNOBLOCK  
*Executive Director (2001-2007)*  
*Point Reyes National Seashore Association*



The changes will involve more than vegetation. With restoration will come dramatic changes in the wildlife that depend on marsh habitat. Salmon that have been inhibited from using creeks such as Fish Hatchery, Tomasini, and Bear Valley by culverts, tidegates, and other impediments will be able to swim upstream more easily and spawn in the upper portion of these smaller watersheds. They will also have more marsh channels to use during their outstream migration in preparation for adjustment to life in the ocean. Federally endangered tidewater goby, which prefer slower-moving, more impounded brackish waters, will benefit from improved habitat quality with elimination of dredging, runoff of manure into waters, and other agricultural management practices. Habitat for the elusive California black rail, a state-listed threatened species, will dramatically increase. In general, the diversity and numbers of birds coming to the restored marsh will respond to the increased complexity and diversity of vegetation and aquatic habitats. The marsh may even be visited occasionally by sharks, bat rays, and seals in search of food and breeding areas.

*white pelicans and black-bellied plovers*





## FUTURE RESTORATION

While most of the earthmoving will be complete in 2008, the National Park Service and PRNSA will continue to look for opportunities to expand restoration efforts in the Giacomini Ranch and Olema Marsh. These opportunities could include excavating more pasturelands to become hydrologically interactive marsh and floodplain or undertaking additional restoration in Olema Marsh.

The National Park Service has approached this project as both a restoration and a research opportunity. It is important not only to restore wetlands, but also to document the success of restoration efforts in achieving project objectives, including restoration of natural process and function. Restoration planning for the project was accompanied by development of a 20-year restoration monitoring plan. Through monitoring, the National Park Service and its partners will follow evolution of the Giacomini Wetlands and determine how well they function relative to natural tidal marshes and how much they have improved relative to pre-restoration conditions.



## FUTURE PUBLIC INVOLVEMENT

Even before the bulldozers and excavators stop, the National Park Service, PRNSA, and community volunteers will be removing invasive plants, such as eucalyptus, pampas grass, Cape ivy, English ivy, and Himalayan blackberry. Revegetation efforts will focus on riparian, marsh, and bluff areas that are more susceptible to invasion by non-native, weedy species and/or areas that are unlikely to naturally develop a native vegetation community due to distance to seed sources and other factors.

The National Park Service and PRNSA invite the public to become involved in restoration through community and school group planting days. Volunteers can also participate in weed and invasive plant removal.

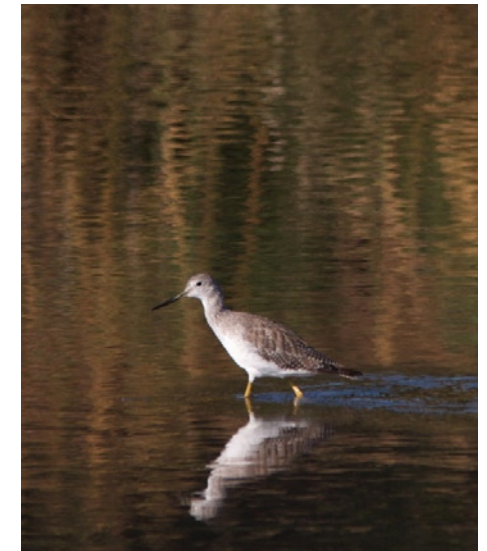
The National Park Service and PRNSA continue to seek funds to enhance public access and education, including improvement or development of several spur trails, viewing areas in several locations on the Giacomini Ranch perimeter, interpretive opportunities, and ADA-compliant access.



*We have so few opportunities in our lives to feel like we have done something that truly makes a difference. With this project, we feel that we have made a difference. We have helped to bring back something truly special. Something that will make Tomales Bay a better place for both people and wildlife.*

LORRAINE PARSONS  
Project Manager  
Giacomini Wetland Restoration Project  
Point Reyes National Seashore

*river otters, raccoons  
and greater yellowlegs*





*This project is the catalyst for alchemy  
– removing man-made obstructions  
and allowing nature to turn the pasture-  
land back into the wetlands that are  
our coastline’s heritage.*

SALLY BOLGER  
PRNSA board member

## PARTNERS IN RESTORATION

Projects as large and complex as this one depend on the involvement of multiple partners.

*PRNSA: Point Reyes National Seashore Association has been an integral part of the restoration process, helping to raise more than \$6.2 million for the restoration and to manage the construction phase of the project. The Association has also worked closely with the park to increase public outreach and involvement.*

*CALTRANS: The Park Service received mitigation monies from the California Department of Transportation for purchase of the Waldo Giacomini Ranch and planning and implementation of the restoration project.*

*GULF OF THE FARALLONES & CALIFORNIA COASTAL COMMISSION: These agencies helped to orchestrate the agreement with CalTrans that enabled purchase of the Giacomini Ranch and restoration.*

*CSLC: The California State Lands Commission participated in planning as the lead California Environmental Quality Act agency for the Environmental Impact Statement/ Environmental Impact Report (EIS/EIR).*

*RESTORATION SUPPORTERS: Several non-profit organizations and agencies contributed monies toward design, restoration, and monitoring:*

GORDON & BETTY MOORE FOUNDATION  
U.S. FISH AND WILDLIFE SERVICE  
*(National Coastal Wetlands Conservation Act Grant;  
North American Wetlands Conservation Act Grant)*  
STATE WATER RESOURCES CONTROL BOARD  
CALIFORNIA COASTAL CONSERVANCY  
CAPE MOHICAN - *Oil Spill Mitigation*  
WILDLIFE CONSERVATION BOARD  
NATIONAL FISH AND WILDLIFE FOUNDATION  
KINGFISHER FOUNDATION



*bobcat and willets*



*facing page: greater yellowlegs*





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PRIVATE DONORS

*facing page: great blue heron*

This project represents a major step in restoring the ecological integrity of Tomales Bay, an estuary that supports significant biodiversity and will strongly promote future protection, restoration, and monitoring efforts in the region.

Some key people and companies made this project happen, including:

LESLIE ADLER-IVANBROOK	LIZ LEWIS
LESLIE ALLEN	CASSANDRA LIU
SARAH ALLEN	ANDREW LOWRY
ARGONAUT CONSTRUCTION	MARIN COMMUNITY FOUNDATION
SALLY BOLGER	MARIN CONSERVATION CORPS
DONALD BROWN	SARAH MINNICK
SARAH CARLISLE	CHUCK MORTON
JOHN DELL'OSSO	DOUG NADEAU
PETER DOUGLAS	DON NEUBACHER
DARREN FONG	BRIAN O'NEILL
DANIEL GEORGE	LORRAINE PARSONS
ERIC GILLIES	JORDAN REESER
GREAT TREE TENDERS	MICHAEL REICHMUTH
HANFORD ARC	DENNIS RODONI
KIRSTEN HARDIN	AMELIA RYAN
DAPHNE HATCH	KRIS SWOFFORD
ED HULME	ED UEBER
BETH HUNING	ED WALLS
KAMMAN HYDROLOGY & ENGINEERING	WETLANDS RESEARCH ASSOCIATES
JOHN KELLY	PHILIP WILLIAMS & ASSOCIATES
BRANNON KETCHAM	WINZLER & KELLY
JOSEPH KINYON	ROGER WONG
GARY KNOBLOCK	

*The National Park Service and PRNSA thank all partners for making this project a true legacy for the Tomales Bay watershed.*



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