



Habitat Restoration and Enhancement Assessment and Plan for Trails Corridors

City of Watsonville Trails & Bicycle Master Plan

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Historical Ecology of the Wetlands of the Pajaro Valley



Historical ecology interprets the current and historical natural landscape to understand the past distribution of environmental features, habitats, and ecosystem services. This understanding can provide valuable information for current approaches to habitat restoration and land use planning. It is particularly valuable for use within the Pajaro Valley's wetland environments, as they have been modified greatly over the past two centuries. The historical ecology framework provides an understanding for these changes, lends perspective to the ecosystem services provided and how they have been impacted over time, and provides a lens for understanding and interpreting today's landscape. The study of historical ecology can also provide useful and interesting information for interpretation to the public, such as through interpretive signs within the trails network.

The written historical record for the Pajaro Valley is well documented beginning in the late 1700's and early 1800's with European settlement in the area. Information on culture and life prior to this point is well described and documented by the Pajaro Valley Ohlone Indian Council and others in the field of archeology. Several recent studies have looked at the historical ecology of the Pajaro Valley, including a recent primer written by the San Francisco Estuary Institute on the subject. Pinto Lake has been a focus for this study as well, in an effort to understand sedimentation rates for lakes on the California Central Coast. Early maps, journals, and newspaper articles provide valuable information.

The earliest written references to the Pajaro Valley describe abundant wildlife and wetlands throughout the valley. An early statement by William Brewer, a surveyor with the U.S. Geological Study, described the conditions in the following way:

"More species could be collected in one mile of that coast than in a hundred miles of the Atlantic Coast...Birds scream in the air – gulls, pelicans, birds large and small, in flocks like clouds.... [there are some] enormous birds that would probably weigh fifty or sixty pounds, and I frequently picked up their quills over two feet long... A whale was stranded on the beach, and tracks of grizzlies were thick about it."

-William Brewer, Up and Down California, 1860

Habitat Changes: An Overview

The recent study of Pinto Lake, *Climate and human impact on lowland lake sedimentation in Central Coastal California: the record from c. 650 AD to the present*, 2005, is one of the most

comprehensive approaches to interpreting habitat changes within the recent historical landscape. The change of plant communities surrounding the lake was studied through deep soil cores and the pollen buried within these layers of sediment in an effort to describe the short and long term trends of sedimentation in the lake. This study found that while there were slight changes of the marshes and hydro-period of the lake documented between the years 650 and 1750, most likely due to climatic changes, the changes seen in the hydro-period and habitats were greatly amplified beginning in the early 1800's.

Pinto Lake and Corralitos Lagoon were named the 'land of lakes and hazelnuts' by Juan Crespi in the 1770s because of the abundance of hazelnut trees (Mayers 2001). Pollen analysis showed that between 1844 and 1860, coinciding with the establishment of Rancho Corralitos and the beginning of a large scale logging industry, the plant communities around Pinto Lake shifted from a redwood, hazelnut, willow scrub and oak woodland habitat type to a more open grassland and open range habitat type.

In their study, these authors write:

"By the early 1860s, following the decline in gold mining after 1852, the Watsonville area developed as an agricultural center. However, the effects of intense grazing between 1850 and 1863, coupled with the 1862 flood and the 1863–1864 drought (Engstrom 1996), brought with it the search for alternative prospects for land in the form of cereal cultivation (Lantis 1970). This trend of agricultural expansion led to further destruction of woodland, with American settlers clearing trees for firewood and to make the land suitable for arable purposes (Gordon 1996). From the mid-19th century, large-scale farming stretched for miles along the Central Coast valleys, characterized by extensive plowing, channelized drainage and irrigation. By the end of the century, a diversified agricultural economy had, therefore, replaced grazing as the dominant economy."

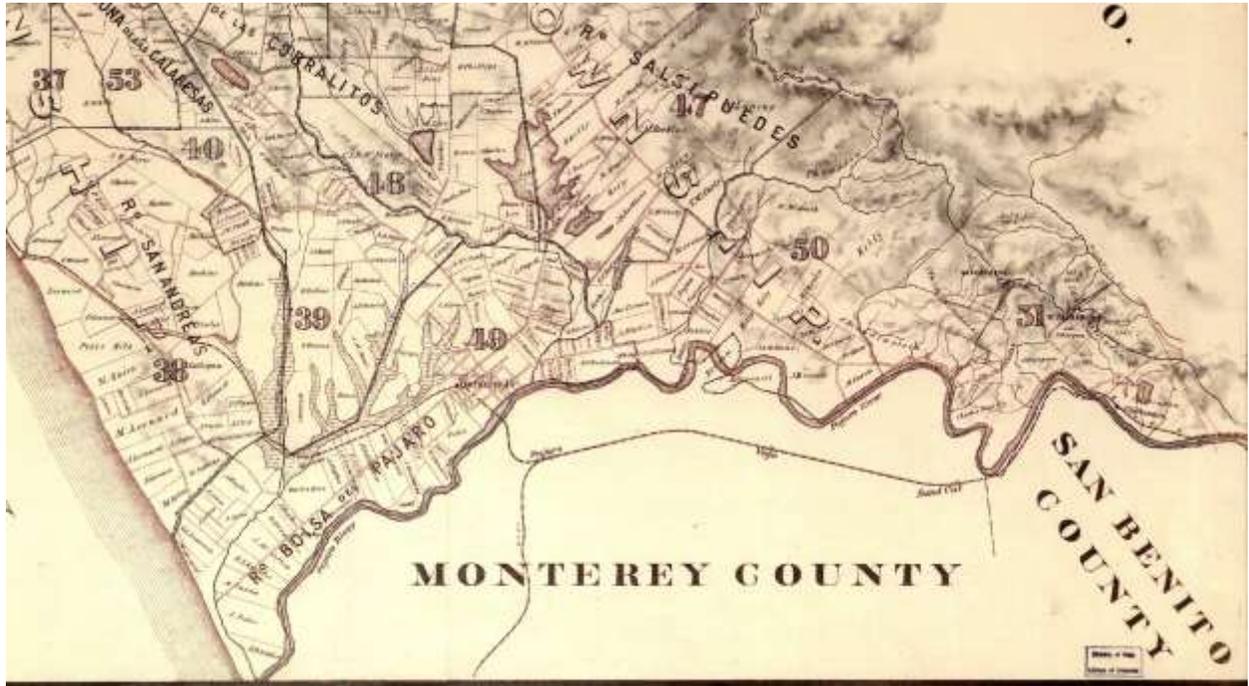
The role of logging and cultivated agriculture, including controlled grazing and plowing, had an important influence on the natural habitats in the Pajaro Valley. Within the slough system, some of the historic marshlands were drained for the planting of crops through the establishment of a channel drainage system, as reported by the Register Pajaronian.

"...the branch drainage ditch through the lands of McLean and Harkins is being made by a party of Watsonvillians, and they are pushing their work along at a good pace. When this branch ditch is opened a fine body of land will be wrested from the swamp and will be soon ready for cultivation."

-Register Pajaronian, June 16 1892

While significant draining of the sloughs likely did not occur much earlier than 1880s there was likely widespread cattle grazing throughout the slough system as well as cultivation of summer dry cereal crops within the sloughs and surrounding upland terraces. This is reflected in the great history of crop production in the Pajaro Valley, in which by 1887 over 33,000 acres were in agricultural use. Much of the habitats of the sloughs were likely seasonal marshes or wet meadows and grasslands, which would flood in winter and spring months and dry in summer months, with the exception of small spring fed slough channels. This type of habitat would have

been easily converted to land under cultivation. Much of the open-water habitat was likely not changed dramatically during this period due to the use of horse-drawn implements through the 1800s and early 1900s, and their reduced ability to drain or manage deeply inundated marshes and wetlands.



1889 Map of the Pajaro Valley, Source Library of Congress

The presence of plants not native to California have been documented in adobe bricks from the earliest missions, such as Red Stem Filaree from the period 1755 – 1760 in the Santa Barbara area. From this period through the early 1800's, cattle ranching and logging were the dominant land use practices that resulted in a change of vegetation communities. The growth of the residential areas of Watsonville and Corralitos would have demanded use of local woods (Oliver-Gonzales pers. comm.) and within the lower Pajaro Valley, the pattern of use of wood likely mirrored building construction patterns. Portions of the slough system were likely once more wooded than they appear today. However, the heavy clay soils found throughout the upland terraces surrounding the sloughs almost certainly predominately supported grasslands and other open range habitats.

By 1931, when the first survey of native marsh and wetlands plants of the Pajaro Valley was undertaken by Stanford University masters student Ida Hayward, the parts of the slough system had been channelized and their margins had been put into cultivated agriculture. Hayward identified a number of native plant species that are not currently found in the sloughs, including a rare type of wetland rein orchid, and her survey provides the first direct description of the Pajaro Valley's wetland plant communities. Through this study, she describes well the seasonal

marshes, springs, drainage canal network, and cultivated terraces, providing a window into a view of the sloughs at that time.

“Standing on the hill at the back of the nursery of the H.A. Hyde Company one looks out over a series of rolling hills, the sloughs hidden in the troughs and the crests covered with field crops. In the first trough which is the upper end of the Watsonville Slough can be seen the characteristic appearance of the region: in the center a ditch with a luxuriant swamp vegetation along its edges; on either side fields of lettuce, onions, celery, or bulbs; on the outer portions remnants of swampy growth such as ruddy docks and somber green rushes. We will begin our study here taking up each branch of the slough in turn and ending with the salt marsh near the beach. On the north side is a little spring which feeds a horse trough that overflows into a depression which leads south into the upper end of the Watsonville Slough.”

-The Marsh and Aquatic Plants of the Pajaro Valley, Ida Hayward, 1931

Historic Wetlands Creeks and Rivers

The historic extent of the slough system is not well documented, though there are some valuable early maps which show old meanders of the lower section of Watsonville Slough, including the Coastal T-sheet, created in 1853, and the 1889 map of the Pajaro Valley and greater Santa Cruz County. Some of these maps appear in the appendix of this document. From a historical perspective, we can be certain that the construction of the tide gates at Shell Road had a significant effect on the estuarine habitats of the Pajaro River and Watsonville Slough west of the City of Watsonville, and that the creation of an extensive drainage system throughout the slough system to support the growing agricultural economy was a large force of change on the landscape of the wetlands and sloughs found in the valley. More recently, urban growth has been its own driver of change.

Within the current city limits, a seasonal creek or slough drainage likely once flowed by what is now Callahan park (personal comm. V. Mattulich), crossing where Saint Patricks Church is now located and entering into Watsonville Slough.

Early Trails

The first trails through the Pajaro Valley were from the San Juan Mission to the Santa Cruz Mission. Trails that followed connected the various adobes and ranchsteads. According to F.W. Atkinson, *in 100 Years in the Pajaro Valley from 1769 to 1868*, most of the trails were passable only in summer months as they passed through swampy lands and creek bottoms. Below is the earliest graphic depiction of trails in the Pajaro Valley.

