

Chapter 1  
THE EFFECT OF DEVELOPMENT ON A NATIVE SPECIES:  
A HISTORY OF THE OAK IN OAKLAND  
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Introduction

The amount of land in the Bay Area that exists in its naturally evolved state continues to diminish as development sprawls farther and farther into the outskirts of the urban areas. The native ecosystems and indigenous species of the land disappear as the new species, Homo sapiens, changes the land to suit its needs. The previous existence and inhabitants of the land are soon forgotten, and the newly-developed land added to "the dominion of man". The inhabitants of this now-controlled ecosystem perceive their environment to be the buildings they have constructed and the streets they have paved. Unfortunately, these controlled ecosystems are not self-sustaining. They must be maintained constantly, or they fall into decline. The dominant custom, which is called the "progress of civilization", has been to leave those cities and areas that are in decline and find new land on which to develop.

The history of Quercus agrifolia (Coast Live Oak) in Oakland and its relationship to the development of the Bay Area can give insight to others studying present and future development plans. Looking at the past effects of development on native organisms of the area can help us to understand how the present plans may have long-term effects on the natural environment and its inhabitants. Only with proper foresight and respect for other species can many of the still-untouched, naturally evolved ecosystems of the Bay Area be spared from development. At the same time, the valuable resources that are expended to develop new lands could be used to redevelop areas that have not been properly maintained.

In this report I will show the result of developing on undisturbed land by studying the effects of development on an indigenous species, Quercus agrifolia, in Oakland. I will also ask for restraint on development of the still-natural ecosystems of the area and encourage instead redevelopment of already-controlled environments.

Past Work

No detailed study has been made of the history of the Coast Live Oak in Oakland. Many books written in the early part of this century describe Quercus agrifolia in its natural environments (e.g., Chandler, 1903; Jepson, 1923; Cornell, 1938). None of these studies specifically mentions the trees of Oakland. This fact is not surprising, for the City had already been developed by the twentieth century and few Oaks remained at that time. However, these books have a large quantity of information about the general ecology of the species.

Books that describe the City and its early growth generally discuss the developmental, industrial, and civic organization of Oakland, rather than the Oak population. The trees only impeded those processes.

#### Methods and Approach

Many different sources of information can be used to derive a valid overview of the history of the land as it was transformed from an Oak forest to an industrialized city.

Almost all of the historical information for this report was found in two libraries. The Oakland History Room in the Oakland Public Library provided an overwhelming amount of information about the City's history, and the Bancroft Library at UC Berkeley has a collection of photos that enabled a pictorial history to be seen.

The first written accounts of the Bay Area by Europeans were made by Spanish explorers. Bolten's translation of Crespi's journal of 1772 (Bolten, 1927) and Watson's presentation of de Cañizares' map of 1781 (Watson, 1934) allow one to imagine the natural setting without any European or American influence. The nature of the Oak-based ecosystem that existed at that time can be interpolated from other descriptions of Oaks in California, such as the studies previously mentioned. Other information comes from discussions of the interaction of the Oak trees with different organisms such as the Costanoan Indians (Beechey, 1831), deer, and the now-absent Grizzly Bear (Bolten, 1927).

Data on the transformation of the previous environment to the present one are easier to collect and verify because of the written and pictorial history left by the settlers and citizens. Written descriptions of the land can be obtained from personal writings of some of the residents of Oakland, as well as from documentation by the local newspapers. These papers provide a wealth of information about the widespread removal of the trees and the debate that was waged over this action. They also give accounts of the replanting of trees in the City once most of the original trees had been eliminated.

Numerous photographs of Oakland in the late nineteenth century, archived in the Oakland History Room and in the Roy Graves Collection in the Bancroft Library, give a pictorial history of the development of the City. The photos enhance the validity of this report, for they are visual proof of the transformation that occurred.

Oakland's Planning and Parks Departments have a large amount of unpublished information regarding more recent plantings and removals of Oaks and other trees, as well as general locations of the Oak today (Oakland City Planning Department, 1978; Oakland City Park Department, 1985).

#### General Ecology of the Coast Live Oak

Quercus agrifolia is well adapted to the major stress of this region, the long, hot, dry months of summer. The roots of the trees extend deep into the soil, allowing ground water uptake during the period of drought. These strong root systems lend support to the large, woody parts of the tree. Quercus agrifolia grows naturally low to the ground, with a short trunk, and a dense, flat crown of foliage.

The branches can extend completely parallel to, or even touch the ground (Jepson, 1923). The tree, then, appears to be shaped like an "overgrown" shrub. The advantage of this shape may be for stability against the brisk, coastal winds.

The leaves of the crown are also adapted to the stresses of the climate and help the tree to prosper. The Coast Live Oak is an evergreen species, always covered with foliage. Each spring a new growth of leaves comes, yet the tree waits until the new leaves are grown before it drops the old ones. This adaptation allows the tree to drop the large, grown leaves which create a greater water stress in the summer, while still having new, smaller leaves to photosynthesize with any available water. The new leaves are hairy, leathery, and somewhat shiny. These morphological features allow the leaf to save water by reflecting the often-present summer sun with the shiny surface and also prevent desiccation from the strong bay and ocean winds with the protection of the hairs and thick, leathery coating. The leaves tend to lose their hair as they mature, but do maintain some of it on the axils in their principal veins (Chandler, 1904). In their native habitat during the dry season the trees also had to cope with the endemic fires of the grassland region. Mature Quercus agrifolia can survive all types of fires except very hot brush fires. The young seedlings have an 80% resprout rate after exposure to fire (Snow, 1979).

Reproduction in the Coast Live Oak is accomplished through the yearly release of acorns. Blossoms fertilized in the spring mature into acorns in the autumn. The tree, in its reproductive efforts, can provide food to the animal world.

#### The Coast Live Oak Forest in Oakland

Before the occupation of California by English-speaking settlers, the land that is now called Oakland was covered extensively with Quercus agrifolia, the Coast Live Oak. The tree was the dominant vegetative species in the environment. The land bordered extensive marshes and a large creek (now Lake Merritt), which was fed by four streams coming down from the hills. The soil that collected there must have been deep and filled with a variety of nutrients brought down from the slopes. Oak groves existed naturally on the fertile, untouched grasslands (Bolten, 1927).

The Oak's yearly production of acorns provided the food base for many animals, including the indigenous Homo sapiens, the Costanoan Indians. The Costanoans used these acorns extensively, for they provided a nutrient-rich flour that, after the tannins were properly leached, could be used for cooking and baking (Beechey, 1831). It is possible that the native man of the East Bay lived a very easy, unconcerned life before the arrival of the Spanish missionaries. The Oak trees produced a staple nut crop for the tribes, and the Emeryville shell mound remains show the availability of marine nourishment near to the Oak forest.

Other animals that came to the groves to collect or eat the acorns include squirrels, jays, deer, and grizzly bears (Bolten, 1927). All of these animals relied to some extent upon the acorn for their

winter food. One species, the acorn woodpecker, subsists solely on Oak acorns (Cornell, 1938), and it was probably present in the Oak forest of Oakland.

It is difficult to estimate exactly how long the ecosystem existed in this manner before European civilization arrived and began to change life on the land. It is likely that thousands of years had passed without any human disruptions, and that the Coast Live Oaks were a necessity for the lives of the animals in the area that was to become Oakland.

#### American Settlement of Oakland: The Disappearance of the Coast Live Oak

The first Spanish explorers of San Francisco Bay noted that the eastern shores were dominated by groves of Quercus agrifolia. Crespi wrote that the Oak forest was approximately one league (2.4 to 2.6 miles) in length (Bolten, 1927). De Cañizares' map describes Oakland as "bosques de buena madera" [forests of good wood] (Watson, 1934, p. 181).

The beauty created by these trees was noticed by the new settlers that began to inhabit California after the gold rush of 1849. San Francisco was a bustling city within a few years, and in 1852 people began crossing the Bay to live in the area's first suburb, the Oak forest that had been appropriately named Oakland (Carpentier, 1854). The City at the time of its founding was quite a small area of land. Market Street and 14th Street were the western and northern edges respectively, and San Antonio Creek (now the estuary and Lake Merritt stream) was the eastern and southern boundaries. Figure 1 shows the City in 1860. The naturally-evolved ecosystem of which the Oak tree had been an essential part was

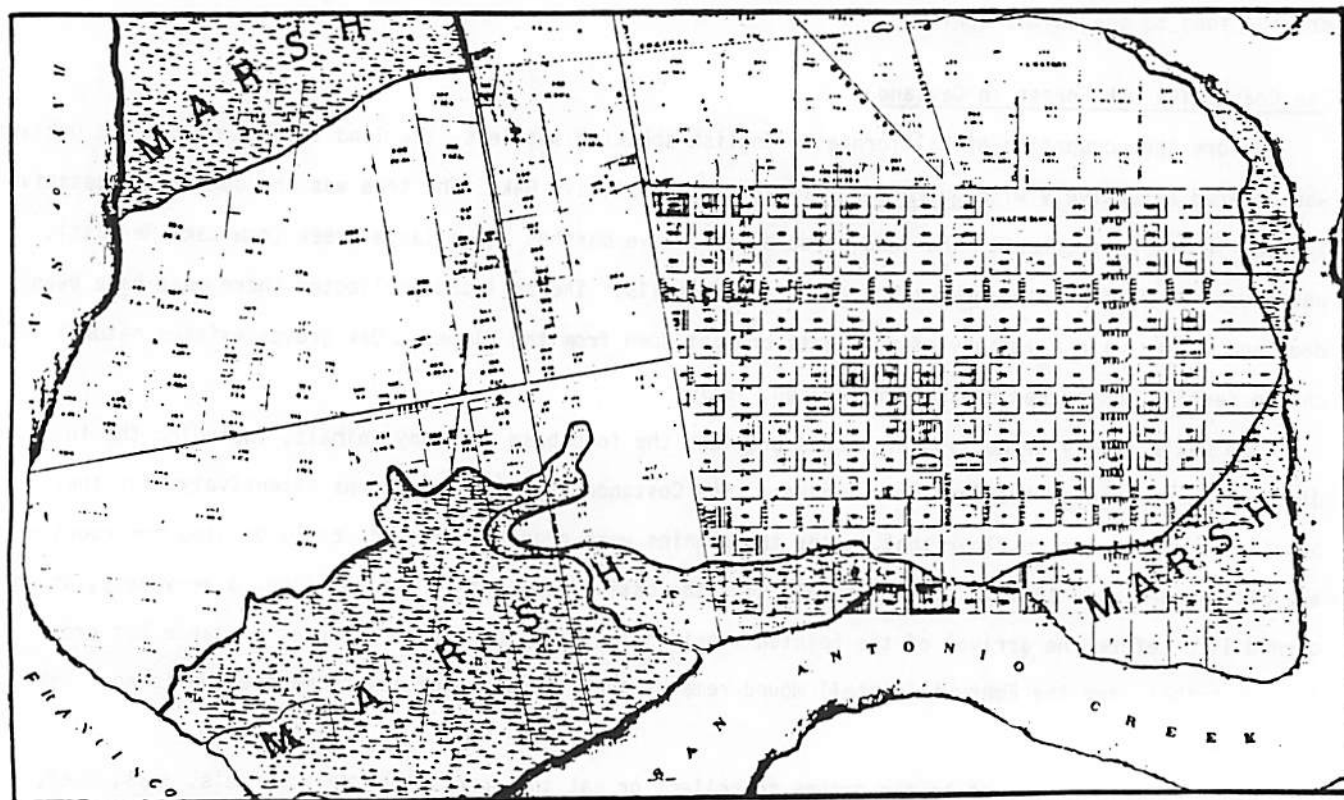


Figure 1. City of Oakland, 1860. That land which is not marsh is assumed to have been Oak forest.  
Source: Whitcher, 1860.

soon to be changed forever by the environment-controlling European-Americans that had plans to make Oakland "the Door to the Orient" (Blake, 1911).

Examination of the photos of the City shows that the removal of almost all of the Oak trees occurred within 40 years of its founding, and that most of the wholesale cutting occurred in only one decade, the 1870s. As late as 1869, trees could be seen lining most of the sides of the main street, Broadway. There were even trees left in the middle of the roads, as most horse-drawn carriages could easily pass around them. To the east and west of Broadway, many trees still existed. Photo 1 shows a view of 9th Street, facing east from Broadway in 1869.

In the 1850s, when original development of the forest occurred and many Oaks were removed, an ordinance had been passed by the city council which said that an Oak could be removed only if the council granted permission to the owner of the land. There was such an abundance of the trees, though, that the council never halted removal of the trees. The City's growth greatly accelerated with the railroad's arrival in the 1860s. The trees became a nuisance to anyone with commerce on his mind. Travel with teams of horses carrying goods to the wharf or to the produce market (Alameda County at that time was an agricultural leader) was hindered by the trees in the streets or by those whose branches extended over the roads close to the ground.

The removal of the trees was often discussed in the local newspapers, and many views were expressed. "Ladies" of Oakland took the most extreme view, requesting that the Oaks be saved at all costs (Oakland Daily News, 1875a, p. 3). Sympathetic editors agreed with the "Ladies", but said that "when the trees were on a spot to be occupied by a new building, then cutting was justified" (Oakland Daily News, 1875b, p. 2). Another extreme view was taken by an editor of the Oakland Transcript, who said that the Oaks gave too much shade and that every single tree should be cut down. He stated that the "sour, ungainly" Oaks rob man of the rays of the sun that he requires for good health, and that the Oak is to blame for "the fevers, diptherias, and a hundred other ills" in the City (Oakland Transcript, 1877, p. 2). Of all the views, the one that remained the dominant force in the removal of the tree was the importance of improving the land.

"Improvement" meant the support of the City's business practices. Soon the original forest of Oaks became downtown Oakland, and by 1890 the only trees left there were those that had been saved or planted by people who appreciated them on their own property (Oakland City Planning Department, 1978). Downtown Oakland was a true city and quite industrialized. The Graves photos from this period show large buildings in all directions from Broadway, and very few, if any, Oak trees. Photo 2 shows Broadway, looking north from 9th Street in 1890 (Graves, 1890).

The new century brought with it many new technologies to change the land. These changes threatened those trees that until this time had not been removed. Many trees were cut down to allow the paving of streets and sidewalks, or the installation of electricity or water lines. Some individual trees



Photo 1. Looking East from 9th and Broadway, Oakland, 1869.

Source: Oakland History Room, Oakland Public Library.



Photo 2. Looking North from 9th and Broadway, Oakland, 1890.

Source: Graves Collection, V. 46, Bancroft Library, University of California, Berkeley.

escaped these removals and were allowed to remain next to a street or a sidewalk, but then could not compete with man and his controls on the land. The pavement poured over the roots would often kill a tree. Occasionally, a tree acclimated to the sidewalk on top of it, but then the roots would buckle and crack the sidewalk. The tree would have to be removed (Oakland City Planning Department, 1978). Rarely, a tree would be saved by the owner of the property from one of the improvements. This could be accomplished by pointing a threatening shotgun into the face of the authorized tree-remover (San Francisco Examiner, 1931, p. 1).

Finally, many Oaks were indirectly killed by summer watering. Water given to the trees in the summer made the deep roots, which searched for water during this annual drought period, unnecessary. The roots then weakened and/or rotted. The large above-ground parts that were supported by the once-strong roots could no longer support themselves against the brisk ocean winds.

Except for a few isolated trees, the forest that attracted the City's original inhabitants was removed in less time than the average life span of a human individual. This infiltration of one species on the domain of another species was done without any halt whatsoever. Development of the area was more important than preservation of what gave the land its natural beauty.

#### Oak Trees in Oakland Today

It was only after the removal of most of the trees (except in a few park areas) that the City began to undertake tree-plantings (Oakland City Planning Department, 1978). Although it was too late to do anything about the already-removed forest, the City is fortunate to be situated on a piece of land that has rich, fertile soil where replanting efforts produce results. The trees that have been planted in great numbers, though, are mainly Liquidambar styraciflua (American Sweetgum) and Prunus blireiana (Pink Flowering Plum). Both of these trees are deciduous, and therefore do not create shade in the winter months.

Some Coast Live Oaks have also been planted by the Parks Department. Quercus agrifolia can be seen on MacArthur Boulevard, west of Broadway. Mosswood Park, at MacArthur and Broadway, has numerous Coast Live Oaks. Some appear to have been planted, whereas others could be natives. The deciduous Scarlet Oak, Quercus coccinea, was planted on Mandana Boulevard south of Lakeshore Avenue in the 1930s. These trees are now fine Oak specimens.

The banks of Echo Glen, a stream that flows through the middle of Richmond Boulevard, are lined with Coast Live Oaks. DeFremery Park, off Adeline Avenue between 16th and 17th Streets, is covered with Quercus agrifolia. It is very likely that these trees were part of or descended from the original forest, since they are so close to the original city limits. Lakeside Park, along Lake Merritt, has many groves of Coast Live Oak. These parks show the natural beauty that the trees can give to the land. The flatland groves of Quercus agrifolia may give a sense of what once existed in Downtown Oakland 135 years ago.

There are many Oak trees in the Oakland hills, growing on private property as well as in parks. Dimond Park, near Fruitvale Avenue, has some very old and large specimens that probably were many years of age before the land ever became Oakland. Finally, the very large Oak tree that is on the plaza in front of City Hall is a nice reminder of the forest, although that tree was transplanted from another location (Oakland Parks Department, 1985). Figure 2 shows the location of many of the trees in Oakland today. Because Oaks are scattered throughout the hill areas, the figure does not show the locations of the trees growing there.

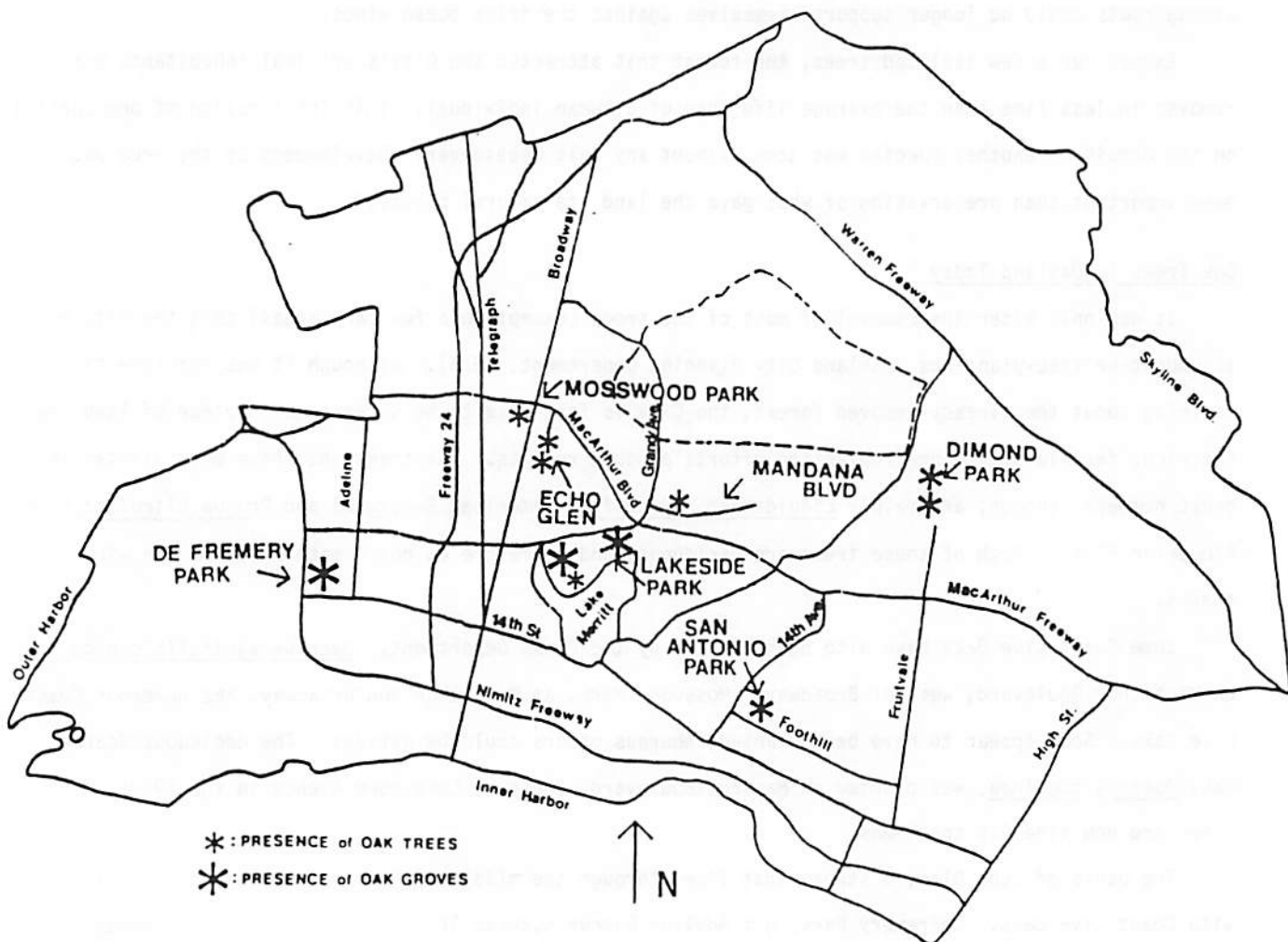


Figure 2. Oaks in Oakland Today.  
Source: USGS. Oakland West and Oakland East 7½' Quadrangles.



### Conclusion

Today the name Oakland has little if any relevance to the original significance of the title. The forest of Oak trees has been replaced with buildings and pavement to satisfy the needs of "civilized" man. There are no real reminders of the forest in the City today except for the small, inconspicuous groves in DeFremery and Lakeside Parks. I was inspired to study the Oaks of Oakland because it interested me that there was no substantial evidence of Oaks in a city that was named for the trees. Today the name Oakland usually invokes the image of a large city with many people and buildings. Downtown Oakland is considered by some residents to be one of the worst parts of the City, with many deteriorated buildings, industrial factories and a large amount of pavement. This downtown area is the end result of development in the name of "progress". A visitor to this area would have problems imaging that less than a century and a half ago, a forest of Oak trees grew at this location. Furthermore, if the City had been named for a person rather than the forest, the past history of the land would never even occur to a present-day resident.

The important question is whether the people of the Bay Area wish to let development of untouched, or at least unbuilt-upon, lands follow the fate of numerous other areas that have been paved over by civilization. Will the people of the Bay Area tolerate limitless urban expansion until there is no open space nor naturally-evolved ecosystems close to the already-developed cities?

Even the history of the removal of the Oak in Oakland shows that the past residents of the City regretted the wholesale removal of their trees after they were all gone, and only then did an effort to replant them on a large-scale basis occur. It must have appeared that there was such a surplus that the trees could be cut down forever, and that there would still be more to remove.

This same situation will occur with open space in the Bay Area if we do not learn from history that our environment does not provide unlimited resources for man. If development continues, then one day there will be little or no open space remaining, and there will be no native species on the land except for the few that can acclimate to the rigors of the changes of the environment that man inflicts upon them.

Development must be planned with the foresight that if no limits are put on the spread of "man's dominion", then one day no one will know or remember what the natural environment was like. Development must be understood in the context of what effects it will have on the land and the species of that of that land. All species should be given the respect to live on the land. The land itself should be left in its natural state in many areas, so that it will always be there for all future residents as well as for maintaining the natural diversity that all ecosystems need.

This statement does not imply that local development should be stopped, for growth must occur to sustain the economic health of the area. There are numerous examples of open land in the already existing cities on which redevelopment has occurred. Regulation of development should be continued and

future development should be focused upon areas where the natural ecosystem has already been disrupted. Many urban regions of the Bay Area could be redeveloped and improved if they had the proper resources. I suggest that in as many cases as possible, remaining open space be left as it is for the preservation of more natural ecosystems, and for the present and future use of all the species of the Earth.

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