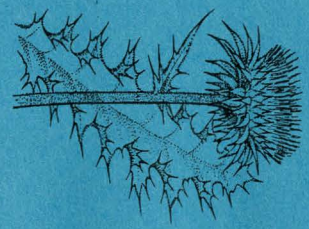
CULTURAL HISTORY

The San Francisco peninsula supported one of the oldest and densest Native American populations in all of North America. As many as thirty or forty permanent Ohlone villages rimmed the shores of the San Francisco Bay. The Ohlones were hunter-gatherers, relying completely on seasonal land and water resources, rather than traditional agricultural. Lake Merced, which was home to deer, elk and other mammals, was a valuable hunting territory for local villages. The lake was also rich with tule rush *(Scirpus californicus)*, possibly the most useful non-food plant to the Ohlones. The stem of tule rush is honey-combed with thousands of passageways that provide air to the roots, allowing the plant to exist in water-saturated, oxygen-depleted environments. These airways also make the plant light, buoyant and waterproof. Boats, houses, baskets and sleeping mats were among items constructed from these fibrous plants. The Ohlone people and culture remained virtually unchanged for more than 4000 years until the arrival of Europeans who imposed a different culture on the Ohlone and brought diseases to which they had no defenses.

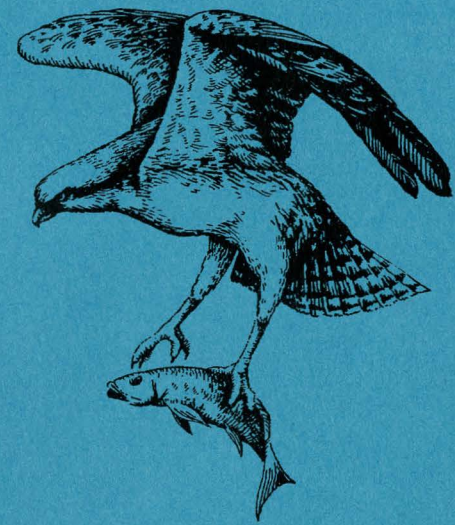
The most significant changes to the lake s watershed began in 1775 when Spanish explorers, Moncada and Palou, discovered and named the lake *Laguna de Nuestra Se ora de la Merced* - Our Lady of Mercy. In 1835, about 2,219 acres - now Fort Funston and Lake Merced - was granted to Jose Galindo and became known as the *Rancho Laguna De La Merced* or the Lake Merced Ranch. By the late 1800s ranching was starting to give way to recreational uses in the watershed. The construction of the Ocean House, Engleside Inn, Lake House Resort and the Ocean Race (horse) Track provided pleasure seekers a retreat from the urban environment. In 1928, with the completion of the Sunset tunnel, the Sunset district became open to development, changing the area around Lake Merced forever.



Populations of the uncommon cobweb thistle *(Circium occidentale)* can be found in a few locations at Lake Merced

City and County of San Francisco
Recreation and Park Department
Mclaren Lodge, Golden Gate Park
San Francisco, CA 94117

Lake Merced San Francisco



Osprey
Pandion haliaetus

Lake Merced is located in the southwest corner of San Francisco

San Francisco
Recreation and Park Deparment
Natural Areas Program

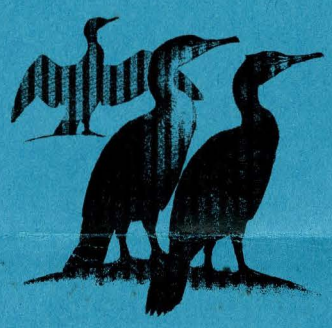
The Self-Guided Tour begins at the Sunset circle parking lot where Sunset Boulevard and Lake Merced Boulevard meet.

1 SUNSET CIRCLE

From the Sunset Circle parking area, take the dirt path down the wooden steps to the lake s edge. As you walk down the path, you will observe two native plants with effective defensive adaptations: poison oak *(Toxicodendren diversilobum)* which can cause dermatitis in some people if the plant s oily leaves touch skin, and blackberry *(Rubus ursinus)* which has thin thorns that can penetrate the skin. Both plants can be a nuisance to humans, but provide a great source of food and shelter for local wildlife.

At the lake s edge, follow the trail to the right, which will take you to the pier. Surrounding the pier is the native tule rush *(Scirpus californicus)*. The tule marsh wetland borders most of the lakeshore and is the single most important resource for migratory waterfowl. The dense tule habitat provides protection from predators, food (leaves, seeds, flowers) and nesting sites for millions of resident waterfowl and shorebirds migrating along the Pacific flyway.

The pier is a popular fishing spot as well as a good place to bird watch. Often, in the dead trees or snags, you can see a gull-sized black bird with a long slender hooked bill and wings spread. This is the double-crested cormorant *(Phalacrocorax auritus)*. Cormorants are fishing birds and unlike many waterfowl, they lack the glands in their feathers that produce a water-repellent oil shell. Although the lack of buoyancy does assist in their pursuit for fish underwater, their feathers do get heavy and waterlogged requiring the bird to dry its wings in this characteristic posture.



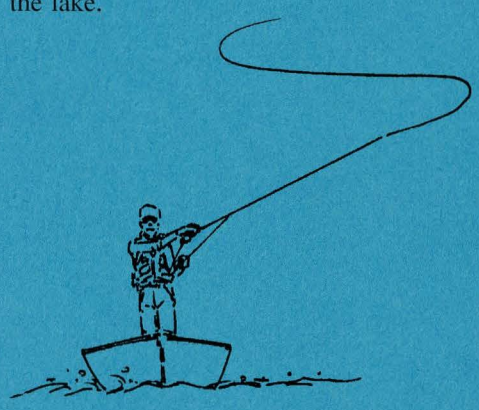
Double-crested cormorant

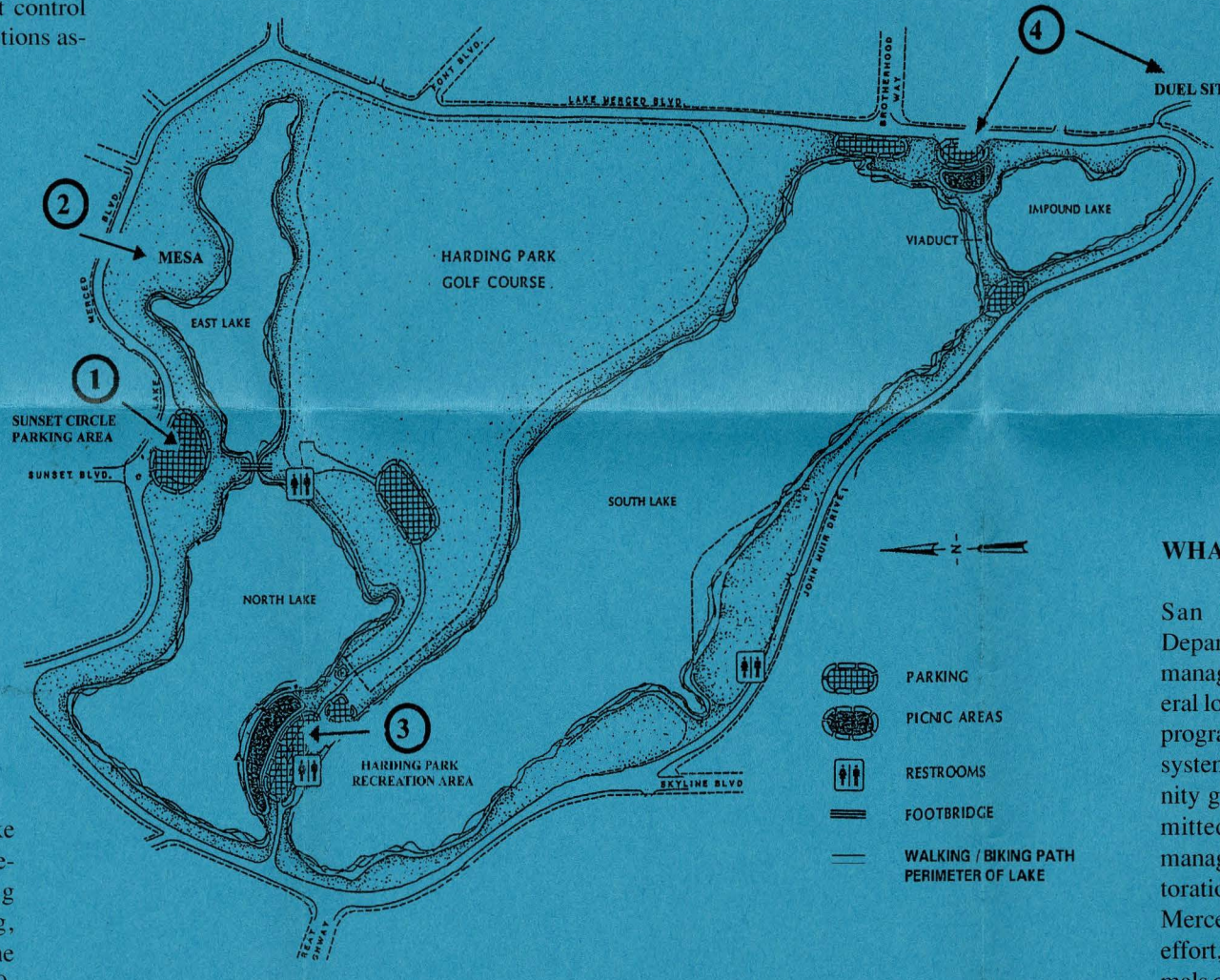
Millions of acres of wetlands, like those around Lake Merced and the San Francisco Bay, have disappeared in California since the 1900s. Today only about 10% remain and much of that is degraded. Correlated with this reduction in wetlands has been the decline of shellfish, fish and waterfowl as well as the loss of flood control, pollutant control and groundwater recharge functions associated with wetlands.

Poison oak

3 HARDING PARK RECREATION AREA

In addition to natural areas, Lake Merced offers a variety of recreational amenities including picnicing, boating, golfing, shooting ranges and fishing. The lake opened to fishing in 1939, soon after its use as a domestic water source was discontinued. Since then, Lake Merced has been recognized as one of the nations premier urban fisheries, with more than twenty species of fish introduced into the lake including trophy size rainbow trout. The cold-water rainbow trout population has been artificially stocked over the years, while warm-water fish such as large mouth bass, bullheads and bluegills reproduce naturally in the lake.

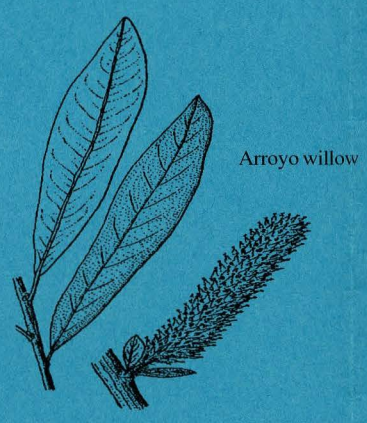




4 IMPOUND LAKE AREA

The Impound Lake Area offers interesting natural and cultural history features. The Penguin s Prayer, the large marble statue perched above the lake was created by the nonconformist Italian sculptor, Beniamino Bufano, who epitomized artistic life in San Francisco during the 50s and 60s.

If you walk out onto the viaduct just past the statue, you will notice native arroyo willow *(Salix lasiolepis)* trees. Willows provide dense cover and shelter for dozens of songbirds and mammals as well as being a host plant for swallowtail butterflies. Arroyo willow produces a plant toxin known as salicin, which when synthesized becomes salicylic acid, the drug found in aspirin. Ohlone Indians chewed the bark for pain relief from common ailments such as fevers, toothaches and headaches.



Arroyo willow

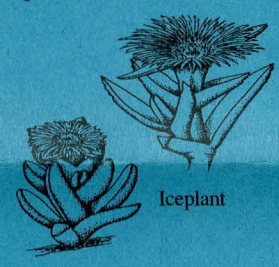
Political history was also made near the shore of Lake Merced in the legendary 1859 duel between a United States Senator and Chief Justice of the Supreme Court. To learn what happened visit the plaque describing the event and markers representing their standing places near the south end of Impound Lake (see map).

2 THE MESA

The flat coastal scrub area, just across the street from Lakeshore Elementary School on Lake Merced Boulevard is called the mesa . Not long ago, most of this area consisted of one plant species, iceplant. The U.S. military brought iceplant to California from South Africa in the early 1900s for erosion control and dune stabilization. With its extensive shallow root system and lack of herbivores the plant has successfully invaded and replaced California vegetation. Through enthusiastic community and school involvement, and with the support of the Friends of Lake Merced and the NAP, much of the iceplant has been removed, and the historic coastal scrub community is being restored. Native local dune plants have been planted, which increases local biodiversity, provides more and diverse habitat for local and migratory wildlife and reduces the possibility of local extinction. The beautiful spring bloom of native plants such as the rare San Francisco wallflower *(Erysimum franciscanum)* can once again be enjoyed on the mesa.

Yellow bush lupine

Another aggressive invader at Lake Merced, and throughout the state is the Tasmanian blue gum or eucalyptus tree. Tasmanian blue gum trees can easily be identified with their long falcon claw leaves and smooth papery bark. Australian eucalyptus trees were brought to California in the 1850s to be used as a fast growing ornamental for windbreaks, lumber and pulpwood. Unfortunately, eucalyptus trees proved to have minimal economic value (the wood splits and warps and is therefore an unsuitable timber source), and instead they have caused a number of ecological problems. Similar to iceplant, eucalyptus trees spread very fast and if left unchecked will inevitably replace the diverse native flora.



Iceplant

WHAT CAN I DO TO HELP?

San Francisco Recreation and Park Department s Natural Areas Program (NAP) manages Lake Merced with the help of several local community groups. The goal of this program, initiated in 1997, is to restore ecosystems and build community. The community group Friends of Lake Merced, is committed to the stewardship, protection and management of Lake Merced. Volunteer restoration activities occur year round at Lake Merced and all are encouraged to join the effort, learn about the native plants and animals of San Francisco and enjoy the outdoors. For more information on how you can help, please contact Kristin Bowman at (415) 753-7265, or click on the Friends of Lake Merced website - www.lakemerced.org

LOCAL NATURAL AREAS

Other significant natural areas in the region that you may want to visit include Mt. Davidson, Brooks Park and Pine Lake, just to name a few. For more information contact the San Francisco Recreation and Park Department Natural Areas Program (415) 753-7266.

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Please help us keep this Significant Natural Area litter free. Thank You!

INTRODUCTION

In the 1940s Alice Eastwood, a botanist at the California Academy of Sciences in San Francisco, walked the city s hills frequently writing about the plants she had seen more than a half century earlier: In the 1890s, the open country everywhere around San Francisco was a beautiful wild flower garden in the spring... the region near Lake Merced the wild flowers were so thick it was impossible to avoid stepping on them.

Nestled in the southwestern corner of San Francisco, Lake Merced remains one of the most treasured remnants of San Francisco s original landscape. The biodiversity (*bio* refers to life, *diversity*, many kinds) of native plants and animals that still live in and around Lake Merced make it a Significant Natural Resource Area (SNRA), now protected by the San Francisco Recreation and Park Department.

Seaside daisy

San Francisco wallflower

GEOLOGY - THE MERCED FORMATION

The soils that underlie Lake Merced consist of particles from two distinct formations - the more recent Merced formation and the much older Franciscan formation. Both of these strata (geologic layers) are comprised of clay, shale, sandstone, pebbles and shells laid down on the bottom of an ancient sea that covered this area possibly two million years ago. The topmost layer, the Merced formation, consists of the kind of stone and sand laid down by streams and marshes, providing evidence that the land was rising out of the sea. The same tectonic processes that raised the ancient sea floor to the surface also caused a buckling of the earth s crust, and downward movement of the Merced strata. This tilt of the earth s crust prepared the way for stream erosion and the formation of Lake Merced Valley, i.e., the Lake Merced watershed.

THE LAKE AND ITS WATER

At the end of the last ice age, beginning some 15,000 years ago, the ocean flooded into the mouth of the Merced Valley, creating an inlet or a small bay. The ocean level continued to rise, battering the shoreline, suspending sediments and free floating particles. The sand-laden current moved across the mouth of the flooded Merced Valley, depositing its load as a sand bar across the inlet, damming off Lake Merced. The elimination of the ocean influence, and the inputs from freshwater springs and creeks, changed the lake s water and became less and less saline. On rare occasions such as an extreme high tide, heavy flooding, or movement of the earth, water from the north lake would move through a gap in the dunes and meet the Pacific Ocean only 50 yards away. On November 22, 1852, a tremor shook the area, breaching the sand bar, dropping the lake level by thirty feet. The inlet was dammed in the 1880s in order to expand Skyline Boulevard and the Great Highway. The lake was later divided into four distinct lakes: east lake, north lake, south lake and impound lake.

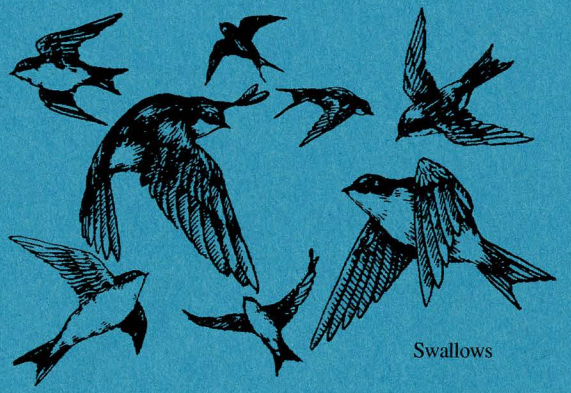
Beginning in the 1870s the Spring Valley Water Company sold Lake Merced water to San Francisco residents. In 1934, with the completion of the Hetch Hetchy water supply system, use of the lake as a domestic water source was discontinued. Although, today the lake surface water is not pumped and is considered an emergency water supply, groundwater pumping from the lake s aquifer reduces the depth of the lake water. (Contact the San Francisco Public Utilities Commission at (415) 923-2466 for more information)

ENDANGERED SPECIES

The Golden Gate Audubon Society has observed more than fifty species of birds, that breed and nest at Lake Merced. The **bank swallow,** a state listed threatened species arrives here every spring to nest in the vicinity. Bank swallows are a migratory species that winter in South America and breed throughout North America. The bank swallow is a small brown-backed bird with irregular fluttery flight, a notched tail, and a distinctive dark breastband. Bank swallows build their nests into the banks and cliffs along the beach near Fort Funston. These grass nests constructed at the end of a three-foot deep tunnel protect the young from the wind and rain.

You can still find swallows chasing insects over Lake Merced s waters. Unfortunately, habitat loss has eliminated most of the swallow nesting sites and much of the insect diet on which they depend.

Several other special-status bird species, that have been recorded around Lake Merced, include California black rail *(Laterallus jamaicensis),* California clapper rail *(Rallus longirostris obsoletus),* saltmarsh common yellowthroat *(Geothlypis trichas sinuosa)* and the American peregrine *(Falco peregrinus anatum).*



Swallows

NON-NATIVE INVASIVE PLANTS

Urbanization has had many effects on the landscape, including fragmentation of natural areas. Fragmentation threatens the persistence of plant and animal species by increasing edges and avenues for weed invasion. The spread of non-native invasive plants constitutes a major threat to Significant Natural Resource Areas. Non-native invasive plants are species that have evolved in other parts of the world where pathogens and pests keep their populations under control. Once introduced here (without the natural checks on their populations), these species can quickly choke out native vegetation, transforming a diverse native system into a monoculture with little habitat value for native plants and animals. As these invasive non-native plants replace native plants, the insects, birds, mammals and other species that have evolved over thousands of years to rely on local indigenous plants rapidly decline or even become extinct. Not all non-native plants create problems at Lake Merced, but those that do, proliferate at an alarming rate. The most invasive plants around the lake are cape ivy *(Senecio mikanoides),* iceplant *(Carpobrotus edulis),* and eucalyptus *(Eucalyptus globulus).*