

NATURAL HISTORY OF NILES CANYON

NILES CANYON STROLL AND ROLL



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Natural History of Niles Canyon

Alameda Creek Alliance

“Passing slowly up Alameda Cañon, with eyes open and appreciative, one may secure a gallery of mental pictures, which in richness of color, variety and beauty, will rival any collection of landscape paintings in the world... When we remember that this rare bit of rural beauty and wildness is almost on the threshold of a populous city, our appreciation is quickened and heightened.”

From Picturesque California, edited by John Muir, 1888



Natural History of Niles Canyon *Alameda Creek Alliance*

About This Tour

Welcome to our interactive tour of the natural history of Niles Canyon! We invite you to learn more about the plants and animals that live in the canyon, their ecology, and some of the modern history of the canyon.

Click on:

- The numbered map (top) to open an interactive Google map of the tour
- Any underlined title to open a link with more information

We recommend you open these links where there is wireless coverage, as it can be spotty in the canyon. Zoom around the map to cache details on your device. Use your device's GPS to find your location relative to these spots.



Natural History of Niles Canyon

Alameda Creek Alliance

Welcome to Niles Canyon, one of the many special places along Alameda Creek!

Rare beauty and wildness can still be found along Alameda Creek, although our urban development now greatly encroaches upon the natural habitats of the watershed. Niles Canyon is the dramatic and scenic gateway where Alameda Creek cuts through the East Bay hills. It is the transition from the urbanized lower creek, which has been channelized and altered by urban development, to the upper watershed, where the stream is much more natural and remote.



The Alameda Creek Alliance formed twenty years ago to restore steelhead trout to Alameda Creek. We advocate for steelhead because they are “indicator species” of watershed health, and hitched to all activities and processes in the watershed.

Our belief is that the simple act of restoring steelhead trout to our local creek ties us more closely to the place we live. Steelhead need cool, clean silt-free water and healthy streamside forests to thrive. They’re affected not just by water diversions and pollution, but also by land use and lifestyle choices far upslope from any watercourse. The dramatic journey of steelhead around the Pacific and back to their home stream captures public interest. Decades of engineering projects and water diversions have greatly impacted their ability to make that journey and return home to spawn. We’re excited that downstream fish ladders will be finished in 2021 that will finally allow salmon and steelhead to swim upstream through Niles Canyon for the first time in half a century.

Niles Canyon is one of the special places in the Alameda Creek watershed worth protecting. We hope you’ll join us.

Viva Niles Canyon!

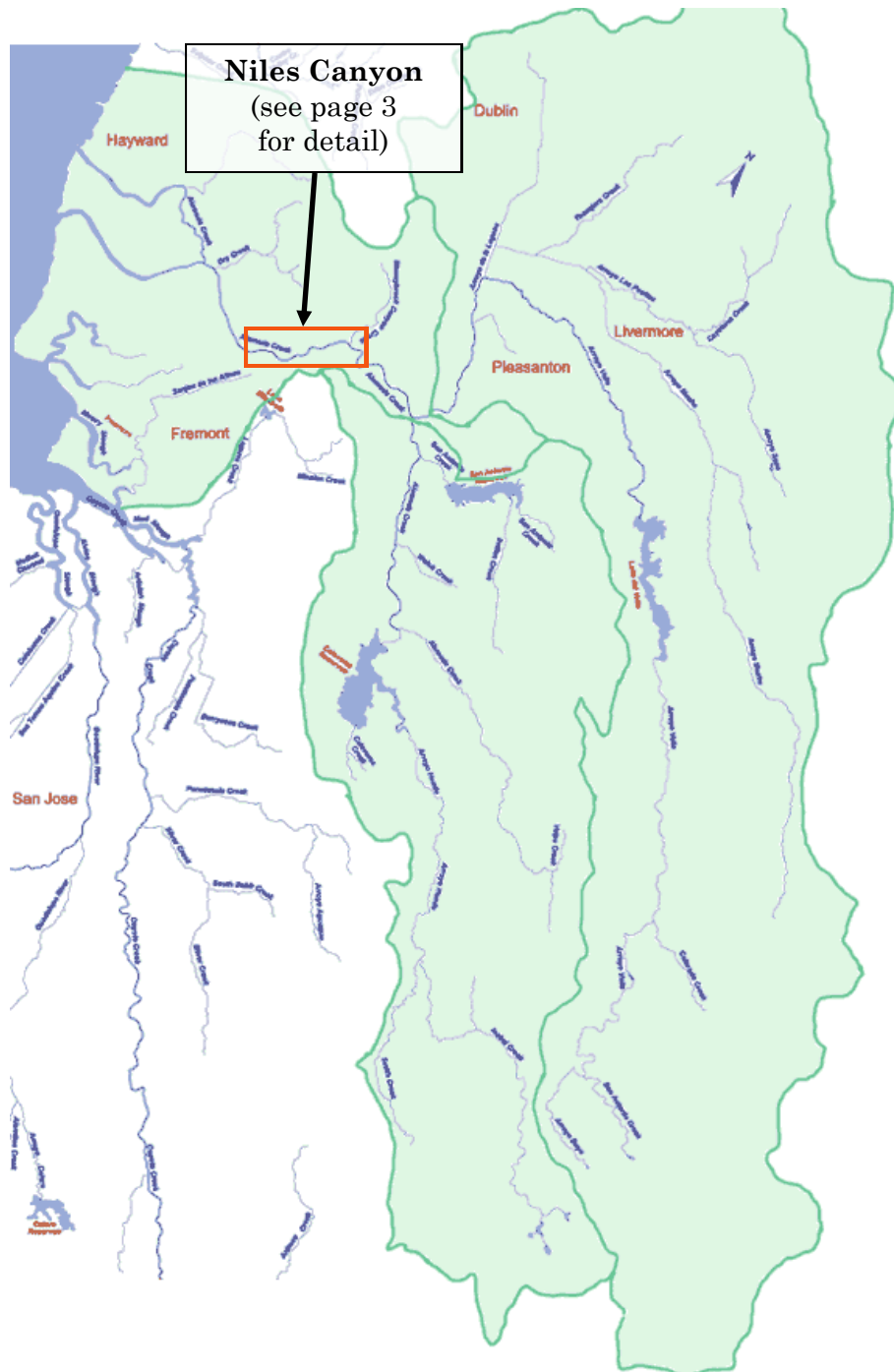
A handwritten signature in black ink, appearing to read 'Jeff Miller'.

Jeff Miller, Director
Alameda Creek Alliance



Alameda Creek Watershed

A **watershed** is the area of land where all water that falls in it and drains off of it through a common outlet. The Alameda Creek watershed, at nearly 700 square miles, is the largest drainage to southern San Francisco Bay.



Alameda Creek Watershed

The Alameda Creek watershed once supported runs of migratory fish like salmon and steelhead trout. These fish are born in fresh water, migrate to salt water to feed and grow large, and migrate back to fresh again to **spawn** (reproduce and lay eggs).



Development has greatly altered the watershed, including changes such as the channelization of the lower 12 miles of the creek for flood control, the construction of San Antonio, Calaveras, and Del Valle Reservoirs for water supply, and the construction of a concrete drop structure to stabilize the channel around the BART overpass. Changes such as these have made the spawning habitat within the watershed inaccessible for returning migratory fish.

However, there have been many observations of steelhead trout attempting to migrate up Alameda Creek. Since the late 1990's these fish have been observed in ever-increasing numbers. Their presence has rekindled interest in

their restoration by the public, elected officials, and the responsible management agencies, who are working to restoring a sustainable population of steelhead to the Alameda Creek watershed.



Top, right: Steelhead trout at the BART weir in Fremont, blocked from migrating upstream by the 12-ft high barrier.

Bottom, right: Fish rescue volunteers, working with East Bay Regional Parks and California Fish and Wildlife, net the steelhead and place them in coolers. Rescued trout are moved upstream and released into Niles Canyon.

Native Fish of Alameda Creek

Steelhead Trout



Rainbow Trout



Sacramento Sucker



Sacramento Pikeminnow



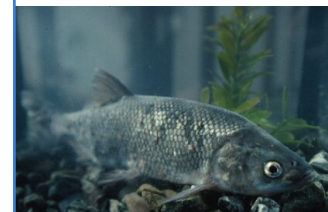
Pacific Lamprey



California Roach



Hitch



Native fish of Alameda Creek need:

- Clean, pollution-free water.
- Healthy, native trees to stabilize banks and support the creek's food web.
- Gravel-bottom creek beds for spawning.
- The ability to freely swim length of the creek, from the hills to the Bay.
- Cold water (<72°F), and enough water in stream during migrations in the winter and spring.

1. Vallejo Mills Park / Flood Control Channel

From here to San Francisco Bay Alameda Creek is a 12-mile engineered flood control channel. It was constructed in stages over the 1960's and early 70's by the US Army Corps of Engineers to reduce flooding in Fremont and Newark. It is now maintained by Alameda County.



Notice how straight the channel is here. It has a shallow, flat bottom and little or no vegetation on the rock-lined banks. There is little here to support fish and wildlife but what flows down from better habitats upstream. The water is warm here, as the channel is shallow and without shade. This favors non-native fish like carp, catfish, bluegill, bass, and mosquitofish.



These non-native fish have increased in numbers since construction of the flood control channel. They compete with and can prey on native fish like steelhead trout, especially the young as they migrate out to the Bay.

Above: The Alameda Creek Flood Control Channel, Niles

Right: In 1856, José de Jesús Vallejo, brother of General Vallejo, built a flour mill here. The stone aqueduct built to carry water for the mill parallels Niles Canyon Road. It's an example of an early use the resources of the watershed to further regional economic growth.



2. Niles Staging Area — Alameda Creek Regional Trail

Niles Staging Area marks the eastern end of the Alameda Creek Regional Trail, which extends to San Francisco Bay at Coyote Hills Regional Park. It also marks the end of the flood control channel and the beginning of a natural creek channel through Niles Canyon.

A small concrete weir (right) marks the line between the flood control channel and the creek. A **weir** is a barrier across a stream to control flow rates of rivers at high discharge.



Notice the more natural creek banks above the weir, with vegetation that extends over the water's edge. The native trees that line the creek banks are important to life both in and out of the creek. They stabilize the banks, prevent erosion, and shade and cool its waters. Trees provide food and shelter for wildlife, and the leaves they drop into the creek form the base of its food web.

Below left: Alameda Creek Flood Control Channel

Below right: Alameda Creek with natural banks and vegetation

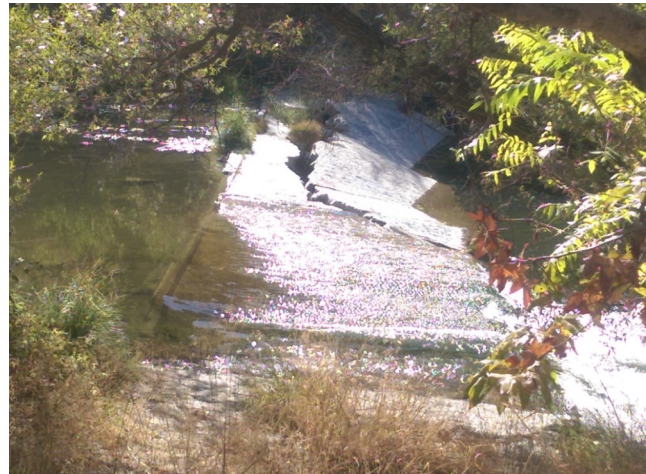


3. USGS Gauging Station



This failing cement apron is part of a gauging station used to measure stream flow in Alameda Creek. It is impassable to steelhead trout and other native fish at low flows. A new gauging station is in place, but continued use of this gauge allows scientists to properly calibrate the new data with historic.

Stream gauges like this are essential to understand how river systems function and to properly manage flood risks.

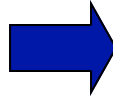


Did You Know?

Stream flow is measured in cubic feet per second (cfs). If you can imagine a waterfall running across the stream (which this mimics), the flow would equal the total volume of water flowing over that waterfall every second.

Stream flows here typically range from 15-30cfs in late summer, but flows here topped 14,000cfs this past winter (2017). The highest flow ever recorded at this gauging station was 29,000cfs in December 1955!

4. Former Site of the Niles Dam



The 2006 removal of Niles Dam allowed fish to once again move freely through this part of the canyon. This 6-ft high dam from the 1880's blocked fish passage at all but the highest flows, and no longer served a useful purpose. Its removal immediately provided migrating fish with an additional 5 miles of high quality habitat in Niles Canyon, which continues to increase as more fish passage projects are completed upstream.



Above: The deconstruction of Niles Dam

Right: Alameda Creek after the removal of Niles Dam.

5. Confluence of Stonybrook and Alameda Creeks

A **confluence** is where two water bodies join. Here is the confluence of Stonybrook Creek (which Palomares Rd. follows) and Alameda Creek (which Hyw 84 follows).

Some of the rescued steelhead trout that were released into Niles Canyon are known to have swam into Stonybrook Creek and successfully spawned there. Stonybrook creek runs dry in places by late summer. But young steelhead trout (called **fry**) either find deep, cool pools to over-summer in, or they swim into Alameda Creek which has water all summer long. Steelhead fry start by eating small organisms called zooplankton, but switch to aquatic insects, fish eggs, and even smaller fish as they get older and grow larger.



Above: Stonybrook Creek

Below: Steelhead trout fry in Stonybrook Creek. These fish are under a year old and less than 1-inch long! Those that survive their journey to the ocean can be as big a 3-feet long and weigh as much as 40-pounds when they return to spawn!



6. Alameda Creek Bridge Replacement

Caltrans is proposing to replace the 89-year old Alameda Creek bridge. The project could mean cutting of hundreds of trees, excavating canyon walls, and placing of thousands of feet of fill and retaining walls to accommodate the new bridge approaches.

Above right: Alameda Creek Bridge;
Right: People enjoying views of Niles Canyon and Alameda Creek from the bridge;
Below: View of Alameda Creek from the bridge.



Did You Know?

The forests along rivers are called **Riparian Forests**. The wet soils and high water table here create a place for water-loving plants like willow, cottonwood, alder, dogwood, maple, and sycamore. The trees' thick vegetation and dense root systems stabilize banks, filter sediment and pollutants, control water flow, and create important wildlife habitat. Help us to protect our riparian forests!

7. Former Site of the Sunol Dam

Sunol Dam is to date the largest dam removed in the Bay Area for fish passage. Its removal in 2006 provided access to miles of additional spawning grounds for native fish, including important habitat in Sunol Regional Wilderness.

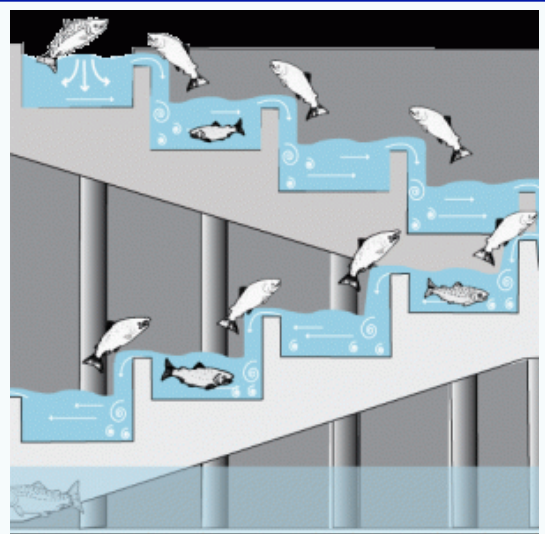


Below left: the former Sunol Dam;
Below right: Deconstruction of Sunol Dam;
Above right: Site of the Sunol Dam after removal.



Did You Know?

A **fish ladder** (right) is a structure that allows migrating fish passage over or around an obstacle on a river like a dam or weir. The ladder contains a series of ascending pools that are reached by swimming against a stream of water. Fish leap through the cascade of rushing water, rest in a pool, and then repeat the process until they are out of the ladder.



**8. Confluence of Arroyo de la Laguna and Alameda Creek
and the Sunol Water Temple**



Arroyo de la Laguna drains the northern half of the Alameda Creek Watershed and the Tri-Valley cities of Dublin, Pleasanton and Livermore. It empties into Alameda Creek on San Francisco Public Utility Commission (SFPUC) land in the Sunol Valley. The Sunol Valley Water Temple marks the confluence of water flowing into the Sunol Valley. Water from three sources pour down into a tile basin at the bottom of the 1910 landmark. Today only a small amount is diverted for local uses and storage. The rest is released into Alameda Creek and benefit fish and wildlife in the creek.

This area is currently off-limits due to construction, but is expected to re-open to the public in November 2018.

Sycamore Alluvial Woodland (right) is a rare plant community dominated by California sycamore. It exists across fewer than 2,000 acres worldwide, and the Sunol Valley contains some of its best examples! This woodland appears at the base of flat valleys having deep alluvial gravel (deposited by rivers), where water from the hills hits the flat valley floor. They are found on intermittent streams with large seasonal fluctuations in the water table.



9. Confluence of Sinbad Creek and Arroyo de la Laguna

Sinbad Creek has headwaters in Pleasanton Ridge Regional Park, and empties into Arroyo de la Laguna in downtown Sunol, adjacent to Sunol Glen School. It historically supported both steelhead trout and salmon. Large salmon and steelhead trout were fished out of Sinbad Creek into the 1950's.

The Alameda Creek Alliance has been working with the Sunol community to steward Sinbad Creek and better understand its importance to the native fisheries of the Alameda Creek watershed.



Above: Sinbad Creek

Join us in our efforts!

Below, left and right: Sinbad Creek volunteers collect habitat data and sample for aquatic insects in the creek.



Right: Salmon and Steelhead fished out of Sinbad Creek by a local resident, circa 1940 .



About the Alameda Creek Alliance

The Alameda Creek Alliance is a community watershed group dedicated to protecting and restoring the natural ecosystems of the Alameda Creek watershed. Our mission is protecting and improving natural habitats, with a goal to maintain and restore native wildlife, plants and ecosystems within the Alameda Creek watershed, as much as possible given modern constraints. We also seek to protect undeveloped areas along creeks within the watershed for their habitat value to native flora and fauna. Our primary efforts are focused on bringing salmon and wild steelhead trout, an indicator species of watershed health, back to our watershed

Participation with the Alameda Creek Alliance is open to anyone committed to these goals. We work cooperatively with any and all organizations, government agencies and private entities interested in supporting these goals. We are an independent, non-profit community group. We accomplish our work through education, outreach, publicity, advocacy, public pressure, legal action and volunteer work.

Visit us today at alamedacreek.org!

