Vegetation of Cold Canyon

Stebbins Cold Canyon Reserve provides an excellent opportunity to experience vegetation characteristic of the Inner Coast Ranges of North-Central California. Here, the variable California climate produces dramatic changes in vegetation, both in time and space. Over the course of the year, rain and temperature cycles force many plants to grow and reproduce during specific seasons. In addition, the relatively small area of Cold Canyon harbors a variety of plant communities, including grassland, savanna, chaparral, live oak woodland, and riparian (riverside) woodland. These communities offer a wealth of plant life. This chapter discusses how climate influences which plant species occur in Cold Canyon, the communities in which these plants live, and what common species you can easily observe in Cold Canyon. Since many of these species produce beautiful flowers during certain months, this chapter concludes with a blooming "calendar" of common plants (p. 36). A complete list of plants known to occur in Cold Canyon can be found in the appendices (p. 95).

Coping with the Climate

Much of California enjoys the comfortable weather associated with Mediterranean climates, which are characterized by cool wet winters and hot dry summers. Humans love these climates and the plants associated with them. However, these extreme weather conditions pose quite a challenge for the plants that live in California, particularly in Northern California, where the benefits of the Mediterranean climate are fewer and the hardships are greater. The cool winter temperatures retard much plant growth in Cold Canyon, and many plants do not grow at all in this season. By December, many trees have shed their leaves, and most other perennial plants have shut down their growth. A number of plants have extensive bulb or root systems that store nutrients during the winter so that the plant can resprout in the spring.

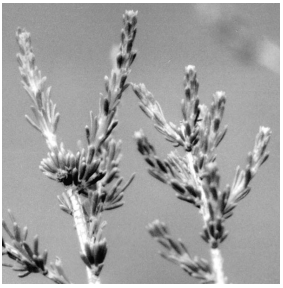
However, the greatest challenges to the plants that inhabit Cold Canyon are the summer temperatures and lack of rain, which turn the region into a temporary desert. Many native grasses avoid the harshness of summer by growing and producing seeds during the wet months of winter. They use the available water to grow and reproduce through the winter, and sit, brown and dormant, through the summer. Many annual plants have evolved a similar strategy, growing only during the mild and wet months of late winter and early spring. Therefore, spring is the ideal season to see many of Cold Canyon's beautiful wildflowers.

To survive through the summer drought, some plants live in cool "microclimates." The majority of these species avoid drying out by growing in the moist and shady canyon bottom along Cold and Wild Horse creeks. These areas are much cooler and moister than the average conditions of the reserve. Experience this microclimate by hiking to the location of the cold storage foundation at the end of the main trail. Even on a hot summer day, this spot is remarkably cool. Mild microclimates exist in wet areas, in shaded areas, and on north-facing slopes, while the harshest microclimates exist in rocky, bare, sunny areas on south-facing slopes.

Perennial species that do not rely on riparian microclimates often have adaptations that enable them to retain or gather moisture. Some plants found in Cold Canyon are sclerophyllous

Pleasants Ridge, to the east of Cold Canyon. The northern slopes are chaparral, while the southern slopes are grasslands.

("having hard leaves"), and have small leathery leaves covered with a thick waxy coating that minimizes water loss. Other plants grow extremely deep root systems to find water. One such example is California's state grass, purple needlegrass (*Nassella pulchra*), which sometimes grows roots extending 13 feet (4 m) into the soil.



The sclerophyllous leaves of chamise.

Plant Communities

Because both mild and harsh microclimates exist in the reserve and because different plant species are more or less tolerant of these microclimates, certain species tend to live in similar places. These groups of co-occurring species are known as plant communities. Plant communities are not easily defined, as many plants occur in different communities. Nonetheless, botanists have identified five general plant communities in Cold Canyon. These are termed grassland, savanna, chaparral, live oak woodland, and riparian woodland.

Grassland. These areas are characterized by very little shrub or tree cover, and instead are blanketed by annual or perennial grasses and other annual plants. In the spring, grasslands are often covered by Cold Canyon's many wildflowers, but most of these plants die before the hot, dry weather. Grasslands are most frequently found on south-facing slopes, which are not readily colonized by shrubs and trees because of the harsh summer microclimate. Grasslands also occur in areas that have recently experienced a natural disturbance such as a fire or landslide.

A patch of grassland surrounded by chaparral.

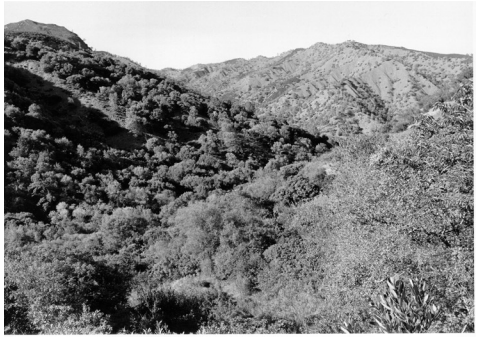
In these areas, the grasslands are more temporary and will eventually be replaced by shrubs and trees.

Grassland communities of Cold Canyon and throughout the West have changed dramatically in the last few centuries. When European settlers came to California, they brought many new grasses and forbs (non-woody plants, such as mustards, thistles, and clovers) with them, and these mostly annual exotic species now dominate the herbaceous vegetation of Stebbins Cold Canyon Reserve, particularly its grasslands.

Savanna. This association is characterized by scattered trees with an understory of grasses and forbs. Savannas exist in relatively dry microclimates; if more water were available, more trees would be able to grow, and the area would become a woodland. Therefore, the dominant trees of savannas can tolerate drought. Trees of Cold Canyon's savanna include the blue oak (*Quercus douglasii*) and the foothill pine (*Pinus sabiniana*).

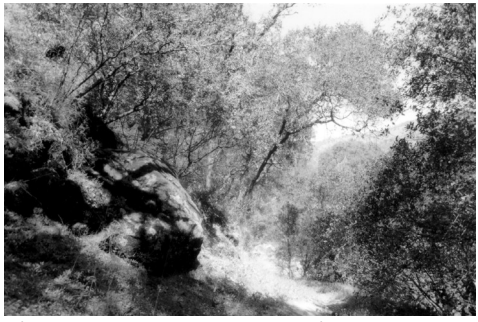
Savanna on the north end of Pleasants Ridge.

Chaparral. Chaparral, the most common community type in Cold Canyon, is a dense mixture of shrubs that range in height from 3 to 9 feet (0.9-2.7 m). In some places in Cold Canyon, the chaparral community is entirely dominated by chamise (*Adenostoma fasciculatum*), which produces a substance from its roots that appears to prevent many other plants from growing in the same soil. Other common chaparral shrubs of Cold Canyon include parry manzanita (*Arctostaphylos manzanita*), scrub oak (*Quercus berberidifolia*), toyon or Christmas berry (*Heteromeles arbutifolia*), and buck brush (*Ceanothus cuneatus*).



Dense chaparral in the foreground.

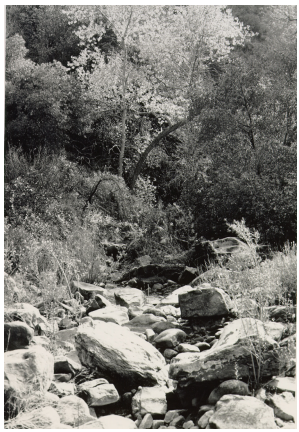
Live oak woodland. In cooler hillside areas where more water is available, live oak woodland predominates. Live oak woodland is characterized by a relatively dense growth of trees and shrubs, which provides a fair amount of shade. This plant community is dominated by interior live oak (*Quercus wislizeni*), the evergreen oak of Cold Canyon, but also includes foothill pine, blue oak, manzanita, buck brush, California coffeeberry (*Rhamnus californica*), and California buckeye (*Aesculus californica*).



Live oak woodland along the trail up to Blue Ridge.

VEGETATION

Riparian woodland. The word "riparian" comes from the Latin word meaning "river bank." Thus, riparian woodlands are the forests associated with streams and springs. Cold Canyon's band of riparian species is limited and narrow, due primarily to soil and topography. This community type includes trees associated with other communities, such as California buckeye and interior live oak. A number of less drought-tolerant species, such as Fremont cottonwood (*Populus fremontii*) and various willows (*Salix* spp.), grow right at water's edge, sometimes becoming surrounded by the creek as it shifts course due to landslides or torrential rainstorms. California bay (*Umbellularia californica*), with its aromatic leaves, and Western redbud (*Cercis occidentalis*), with its bright magenta blossoms that surprise March visitors, are both scattered along the creek. Groves of the bigleaf maple (*Acer macrophyllum*) provide shade in the upper regions of Cold Creek.



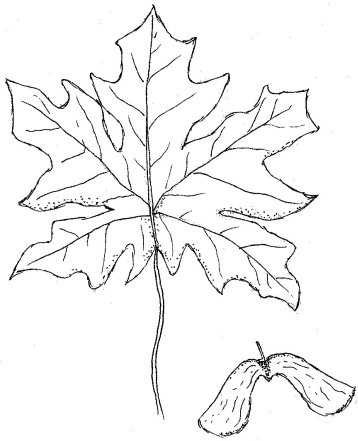
Riparian woodland.

Common Woody Plants

Bigleaf maple (*Acer macrophyllum*). Maples are easy to identify in spring and summer when they have leaves. As its name implies, the bigleaf maple's leaves are quite broad, and they are incised into several pointed lobes. There are many old maple trees growing by the cold storage of the old homestead. The paired fruits of the maple are winged for distribution via wind and have entertained countless children with their helicopter-like flight. Native Americans lined their baskets with the tree's large and graceful leaves. They also shredded maple bark to make aprons or skirts, the standard attire for women, as well as to make diapers and to wrap the dead before burial.

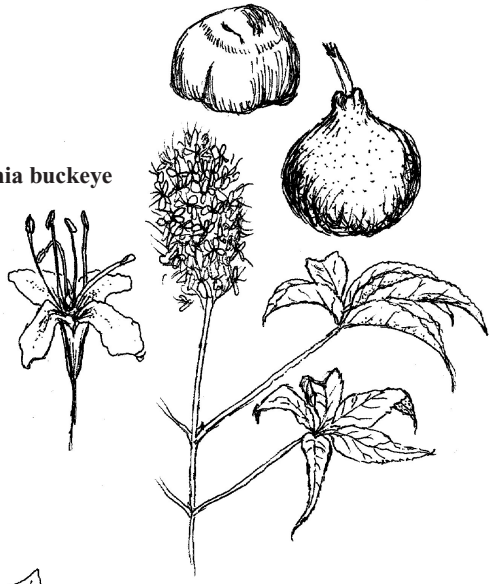
California bay (*Umbellularia californica*). The California bay has bunches of small yellow flowers in winter and spring and elongated leaves that smell strongly aromatic when crushed. Also known as peppernut, the fruits of this plant are edible. The Patwin may have dried them, roasted or parched them in a fire to make them less bitter, and then cracked and ate them. Early Californians discovered many medicinal uses for this plant. They used it to treat headaches, stomach aches, and rheumatism, and laid it in their dwellings to repel fleas. Athough the leaves of this plant are not those sold in supermarkets as "bay leaves," they make a marvelous substitute.

California buckeye (*Aesculus californica*). California buckeyes range in size from 6 to 30 feet (1.8-9.1 m) in height. In winter the white branches of the California buckeye point dramatically skyward, barren of leaves and contrasting starkly to evergreen shrubs. Early in the spring, it unfurls bright green compound leaves composed of six to eight leaflets. Later in the spring, it produces large, showy, spike-like white or pinkish stems of flowers that cover its canopy, giving it the appearance of a great candelabra. The buckeye loses its leaves in August or early September, probably as a response to drought. Once its leaves fall, the pear-shaped buckeye fruits hang prominently from the ends of the tree's branches. These fruits open up in response to the fall rains and drop their huge seeds. The buckeye seed is the largest of any tree in western North America. The seed is a beautiful mahogany brown, and it harbors a toxin so powerful that Native Americans used a ground extract to paralyze fish.

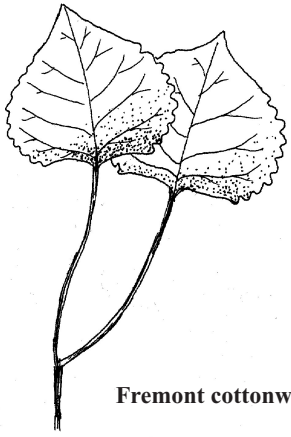


Bigleaf maple

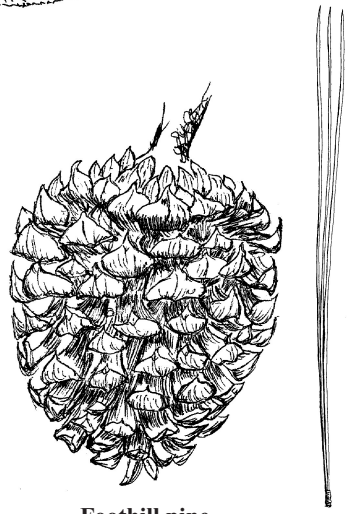
California bay



California buckeye



Fremont cottonwood



Foothill pine

VEGETATION

Foothill pine (*Pinus sabiniana*). Foothill pine, also called ghost or gray pine, is the only conifer in Cold Canyon. The foothill pine is unusual not only for its ability to live in hot, dry areas, but also for its branched appearance. The large seeds of the foothill pine were an important source of food for local tribes.

Fremont cottonwood (*Populus fremontii*). Cottonwoods grow to be large trees with coarsely grooved, grey bark. Their leaves are wide and somewhat heart-shaped, with teeth along the margin. The trees require lots of water and grow right at water's edge or sometimes even in the stream. The name "cottonwood" is derived from their downy seeds, which form snowdrift piles of fluff in late summer.

Oaks dominate Cold Canyon, and are very important for its ecology. They provide shade for numerous other plants. Their wrinkled bark houses many species of invertebrates, and because oaks have a tendency to become hollow without dying, they also provide homes to numerous cavity-seeking animals. In addition, their acorns – available during winter when other food is scarce – provide an important food source for animals as diverse as quail, squirrels, chipmunks, deer, and black bears.

Acorns were also a staple food for the Native Americans of this region. A skilled harvester could gather enough acorns in just five days to last a year. Often the Native Americans ground the acorns into flour, washed the resulting meal to leach it of bitter tannins, shaped it into cakes, and baked it. Acorns contain a significant amount of calcium, phosphorus, magnesium, potassium, sulfur, fat, and protein, nutrients that are often scarce and valuable.

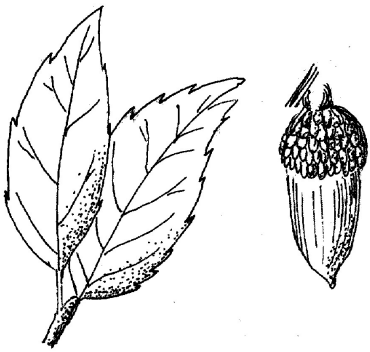
Blue oak (*Quercus douglasii*). Although bare of foliage in winter, blue oak can be identified in spring and summer by its highly variable, pastel-green leaves. Some leaves are deeply lobed, others are not lobed at all; some have gently curved edges, others have almost prickly edges. Of the three tree oak species living in the reserve, blue oak is probably the species whose acorns were most frequently gathered by Native Americans.

Interior live oak (*Quercus wislizeni*). Unlike blue oak, interior live oak is evergreen, with shiny, prickly leaves. It is sometimes difficult to tell interior live oak from scrub oak, although scrub oak can usually be identified by its shrubby appearance and more wrinkled bark. Native Americans of this region preferred the acorns of blue oak or valley oak, but they also gathered the acorns of live oak in times of emergency.

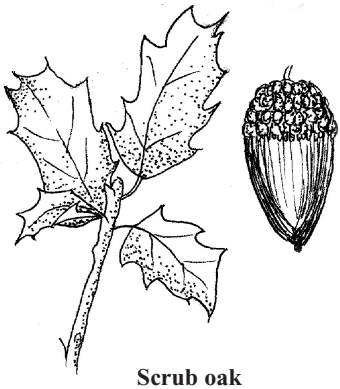
Scrub oak (*Quercus berberidifolia*). Scrub oak is a bushy shrub with evergreen leaves that have abruptly pointed teeth. It is difficult to distinguish this oak from the shrub form of interior live oak because both oaks are evergreen, but the bark of the interior live oak is much smoother.

Valley oak (*Quercus lobata*). The acorns of valley oak, which grows nearby along Putah Creek, may have been even more prized by Native Americans than those from blue oak. Valley oak leaves are greener, larger and more deeply lobed than those of blue oak. There is one valley oak growing just outside of the entrance to the reserve, and several others grow further up the creek near a permanent spring.

Blue oak



Interior live oak



Scrub oak

Valley oak

Spice bush

Blue elderberry

VEGETATION

Spice bush (*Calycanthus occidentalis*). Crush the leaves of spicebush for its distinguishingly strong, sweet smell. The unusual flowers of this plant, made up of numerous, spirally arranged petals and sepals, are bright pinkish red and measure approximately 2 inches (5 cm) in diameter. The leaves can be quite long, up to 6 inches (15 cm) in length.

Blue elderberry (*Sambucus mexicana*). Blue elderberry is a tall shrub that grows in moist areas. Its leaves are pinnately compound and opposite one another. In April, elderberries display clusters of small cream-colored flowers, which develop into purplish-black, round fruits. The fruit is toxic unless cooked. This shrub is the larval host plant for the reserve's only known federally listed endangered species, the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*).

Buck brush (*Ceanothus cuneatus*). This is one of two "California lilacs" growing in the reserve, which produce delicate plumes of blue flowers in the spring. Buck brush can be identified by the presence of three distinctive veins branching from the base of each leaf.

Chamise (*Adenostoma fasciculatum*). Probably the most common chaparral plant in the state of California, chamise is a dense shrub whose branches are lined with short (less than 1 cm), needle-like leaves. The low surface area and hard coating on these leaves help prevent water loss during the harsh summers. In late spring, chamise shows its small five-petaled white flowers. Chamise is highly adapted to fire and will resprout quickly from the roots when burned. The shrub has an interesting strategy called allelopathy, of excreting toxins into the ground, apparently to reduce competition for water and nutrients by other plants.

Coyote brush (*Baccharis pilularis*). Coyote brush is a common chaparral plant found in the reserve. It is readily distinguished by its leaves, which are smooth and thin and have irregular edges. Coyote brush, and its close relative mule fat, are particularly interesting plants because they are dioecious – different plants are either male or female, but never both. In constrast, most other plants are monoecious, which means that all plants bear flowers that produce both seeds and pollen.

Mule-fat (*Baccharis salicifolia*). This plant looks very similar to a willow. Its easy to mistake it for one, unless it happens to be blooming, and then its wispy, fluffy seed heads reveal its true identity as a relative of the common dandelion. Mule-fat grows along stream banks as well as in the creek.

Parry manzanita (*Arctostaphylos manzanita*). Manzanita is a shrub with smooth, reddish bark that peels off in strips. The leaves of manzanita are thick, light green, paddle shaped, and between 0.5 and 1.5 inches (1-4 cm) in length. Like those of toyon, manzanita's berries are red in color and a good source of vitamin C. Native Americans made a drink by removing the skins and seeds of the berries, then grinding the pulp into a powder, mixing it with water, and letting it stand for several hours before drinking it. They also dried the berries for winter use.

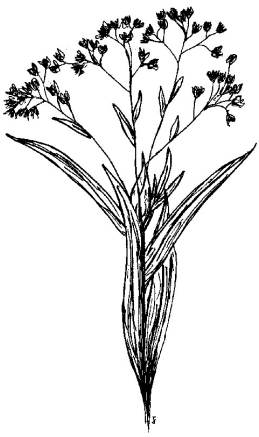
Poison oak (*Toxicodendron diversilobum*). Poison oak is ubiquitous in Cold Canyon at high densities. At any time of the year, this plant can cause severe skin reactions for some people. Hence, it is wise to know what this plant looks like and to avoid contacting it. Hiking off-trail

Buckbrush

Coyote brush

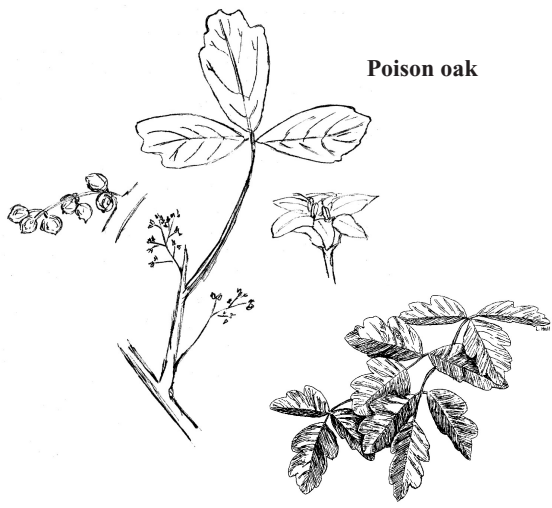
Chamise

Parry manzanita



Mule fat

Poison oak



is a sure way to get covered in poison oak, and even on the trail, encroaching stems can touch you if you are not on the lookout. If your skin does come in contact with the plant, thoroughly rubbing the skin with an alcohol swab may remove much of the noxious oil before it takes effect. Regardless, wash the area with a strong soap as soon as possible. Keep in mind that the oil can get on clothes, shoes, and other surfaces, and be transferred to skin for a long time thereafter.

Learn to recognize this plant while hiking. Poison oak usually has the appearance of a small shrub or vine, with sets of three oily, green leaflets of varied shape and color. In the winter, poison oak's straight twigs can be identified by the "pointing-finger" shape of its buds. These buds sprout shiny red leaves in the early spring. At the same time, the plant produces catkins of white flowers. The red leaflets turn green after several weeks, and may look very similar to the lobed leaves of oaks, or may also have entirely smooth edges. However, these leaflets always grow in groups of three. In late summer and fall, the leaflets turn bright red before falling off. After it loses its foliage, poison oak can often be recognized by its clusters of green-brown or white berries that are a very important food source for wintering birds and other animals.

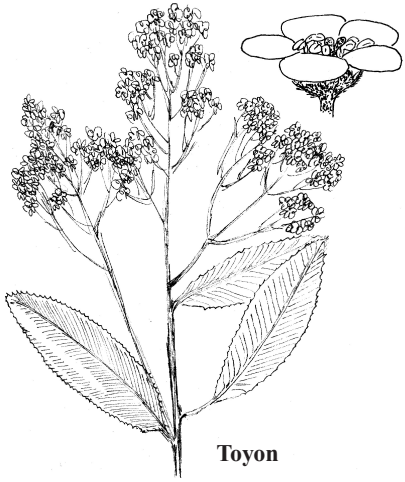
Skunkbrush (*Rhus trilobata*). This plant grows all along the homestead trail, scaring hikers with its close resemblance to poison oak. Skunkbrush, however, does not cause skin irritation. One method to tell the two plants apart is that the flowers of skunkbrush are located in a bunch at the end of each branch, whereas the flowers of poison oak come out from each side of the branch and not at the end.

Toyon or **Christmas berry** (*Heteromeles arbutifolia*). This shrub draws attention with its bright red berries and distinctive elongated, toothed leaves. The berries are bitter-tasting; Native Americans cooked them before eating. They also made a tea from the bark and leaves as a cure for stomach aches and other aches and pains.

Western redbud (*Cercis occidentalis*). Redbud thrives in a multitude of habitats in Cold Canyon – at streamsides, on dry slopes, and in chaparral. In early spring, these shrubby trees produce beautiful showy pink flowers. Thereafter, they produce heart-shaped leaves. By summer, the redbud's fruits, which are long dark brown pods, have fully developed and hang from the tree in clusters. The pods are reputedly edible. Native Americans also used the bark and shoots for dark pattern work in basketry.

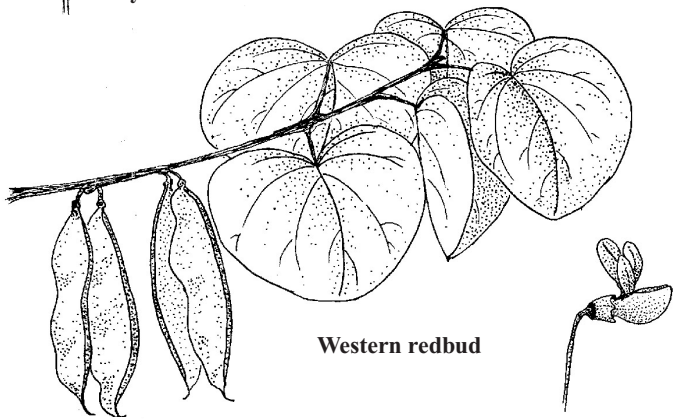
Willow (*Salix* spp.). Different species of willow are very difficult to tell from one another, and there are at least four different species in Cold Canyon. They only grow close to or in the stream. Willows are famous in the ethnobotanical world for manufacturing the chemical compound from which aspirin was derived. Its thin yet strong branches had a variety of uses to Native Americans and were particularly important for basketry.

Yerba santa (*Eriodictyon californicum*). This shrubby plant with oily, thin, dark green leaves produces a cluster of white flowers that is irresistible to many animals, especially butterflies and hummingbirds. Yerba santa literally means "holy herb," and it was used by Native Americans for a variety of medicinal purposes, such as a treatment for stomach aches and rashes. Recently, yerba santa has been listed in pharmacological texts as a treatment for bronchitis.

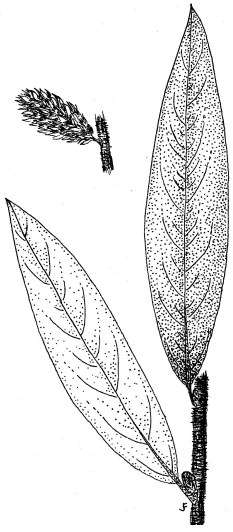


Toyon

Skunkbrush



Western redbud



Willow

Yerba santa

Common Herbaceous Plants

Ferns

Maidenhair fern (*Adiantum jordanii*). Ferns abound along the banks of Cold Creek. Maidenhair fern has small, delicately shaped, rounded leaves with crinkly edges. Two centuries ago, the Patwin of Cold Canyon probably collected the black stems, weaving them into intricate basketry patterns.

Giant chain fern (*Woodwardia fimbriata*). The beautiful leaves of the giant chain fern grow to lengths of 3 to 10 feet (1-3 m). Native Americans also collected this fern, extracting the two white strands in the stem, dying them red with the bark of red alder, and then using them for red pattern work in basketry.

Grasses

Annual grasses. European settlers brought many species of plants with them, either purposefully or inadvertently. European annual grasses such as wild oat (*Avena* spp.), foxtail (*Hordeum* spp.), and ryegrass (*Lolium* spp.) have flourished spectacularly and spread throughout the West. Spaniards probably planted broad-leaved wild oat (*Avena fatua*), but numerous California tribes, including the Pomo, Cahuilla, and Miwok, gathered it for food, grinding the parched seeds into meal. Waterbirds and songbirds also feed on the seeds of wild oat. Unfortunately, other introduced annual grasses, such as many of the bromes (*Bromus* spp.), cover large tracts of land in California but do little to provide food or shelter for native rodents, birds, insects, or large mammals.

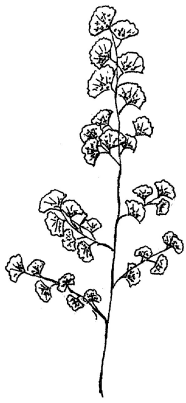
Perennial bunchgrasses. California's grasslands were at one time dominated by mostly perennial bunchgrasses, such as woodland wild rye (*Elymus glaucus*), California melic grass (*Melica californica*), and foothill and purple needlegrass (*Nassella* spp.). All three of these grasses still grow in parts of Cold Canyon, but annual grasses from Europe outcompete them for space and soil resources, so they are no longer dominant. There are some beautiful examples of these perennials growing on a hillside just after the first major creek crossing.

Flowering Plants

Bush monkeyflower (*Mimulus auriantiacus*). Monkeyflowers derive their name from the observation that the fused petals of the flower appear to form a monkey face. The bush monkeyflower can be found growing on rocky hillsides and chaparral edges. In spring and summer, look for buff yellow to salmon-orange flowers blossoming on small shrubs composed of smooth, sticky leaves. Native Americans made a medicinal tea from the leaves of this and other species of monkeyflower.

California poppy (*Eschscholzia californica*). Sprinkled about the rolling, grassy hillsides is a wide variety of spring wildflowers, including the California golden poppy, our state wildflower. Native Americans placed fresh poppy root in cavities to relieve toothache. The roots of California poppy are a startlingly bright shade of orange and look somewhat like miniature carrots.

California pipevine (*Aristolochia californica*). This vine can often be found curling up around poison oak and other shrubs. Pipevine is often the first plant in Cold Canyon to flower, opening

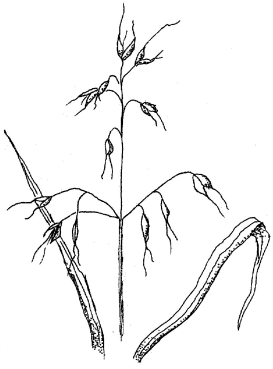


Maidenhair fern

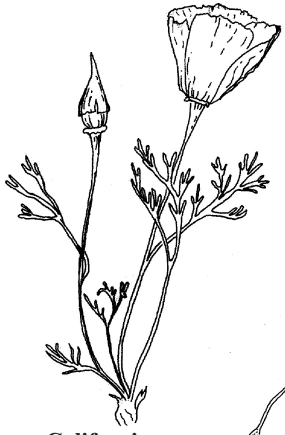
California
melic grass

Giant chain fern

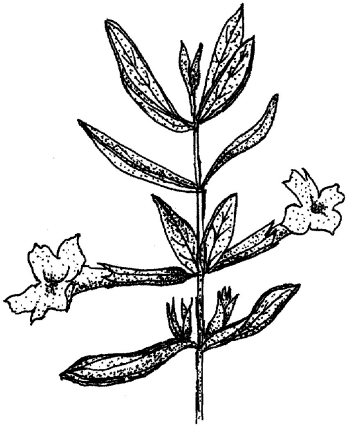
Purple needlegrass



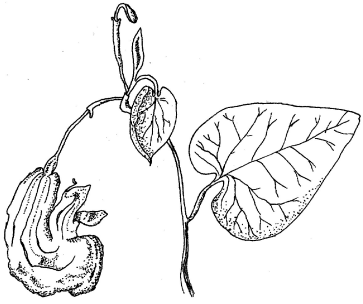
Wild oat



California
poppy



Bush monkeyflower



California pipevine

its oddly shaped, tube-like flowers as early as February. The sepals of this flower are colored green or light brown with a lining of pink or red thickened tissue and purple veins. The leaves are heart-shaped. Fungus gnats pollinate this plant, drawn by a metallic odor.

Chinese houses (*Collinsia heterophylla*). In early spring, Chinese houses can be found growing in shady areas of the reserve. Their pink or lavender flowers bloom in tiers of whorls around the stem, an arrangement that can look like the rooflines of Chinese pagodas. Native Americans used a poultice of leaves from *Collinsia* to treat insect and snake bites.

Delphinium (*Delphinium* spp.). There are at least three species of delphinium, also known as larkspur, living in the reserve, Most delphinium species tend to have beautiful deep bluish purple flowers, which are recognizable by their single nectar spur. The unusually colored red species in the reserve, red larkspur (*D. nudicaule*), has evolved a modified flower shape to attract hummingbird pollinators.

Elegant brodiaea (*Brodiaea elegans*). Elegant brodiaea is particularly lovely with its deep purple, funnel-shaped flowers. The bulbs of various species of brodiaea were one of the most significant sources of starch for some Sierran tribes. Native Americans gathered them with specially whittled and fired digging sticks. They ate the bulbs raw (some have a sweet, nutty flavor), roasted, fried, or boiled.

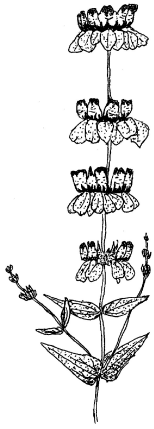
Fiddleneck (*Amsinkia menziesii*). Also known as rancher's fireweed, this plant generally grows in open, disturbed areas. The variety in the reserve has small orange flowers that grow along a coiled spike. This coil unrolls as the plant begins to blossom, and the curved appearance of the spike while unrolling resembles the neck of a fiddle. Native Americans pounded fiddleneck seeds into flour, formed them into cakes, and ate them uncooked.

Foothill mule-ears (*Wyethia helenioides*). Foothill mule-ears is one of the many wild sunflowers living in Cold Canyon, easily identified by its very large yellow flower head and broad, almost fuzzy, leaves.

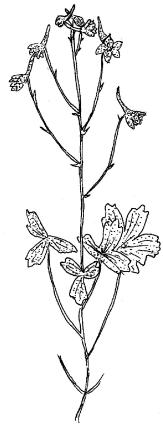
Fremont's star lily or **death camas** (*Zigadenus fremontii*). Although many members of the Lily family, like brodiaea, are edible, some are deadly. Fremont's star lily (also called death camas), which grows in Cold Canyon, is highly toxic. There have been unfortunate instances where people attempting to collect edible bulbs have instead collected death camas, a potentially fatal mistake.

Henderson's shooting star (*Dodecatheon hendersonii*). In the early spring, shooting stars blanket the cool creek bottoms and dot the trailside in Cold Canyon. Dainty and strikingly magenta to lavender, the blossoms are impossible to overlook. Native Americans roasted stems and leaves of this plant for food, and used the blossoms as a poultice to reduce swelling.

Ithuriel's spear (*Triteleia laxa*). The lovely Ithuriel's spear has many bluish-purple flowers in a large, loose cluster. This plant is a close relative of elegant brodiaea (*Brodiaea elegans*), but unlike *Brodiaea elegans*, the petals of Ithuriel's spear are not reflexed (curved away from the flower's center).



Chinese houses



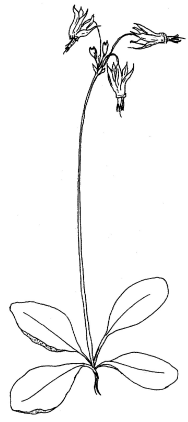
Larkspur

Elegant brodiaea

Fiddleneck

Foothill mule ears

Fremont's star lily



Henderson's shooting star

Ithuriel's spear

VEGETATION

Miner's lettuce (*Claytonia perfoliata*). Miner's lettuce leaves are rounded and shiny, surrounding the stem, and the small flowers are white or pinkish. Sometimes the leaves or stem have a reddish tinge. The black, shiny seeds of this plant are an important food for many songbirds. The leaves are an excellent source of vitamin C.

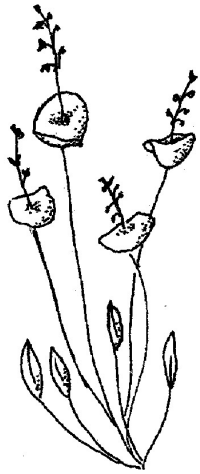
Miniature lupine (*Lupinus bicolor*). This perennial can be found growing in open areas of the reserve. Lupines can be identified by their palm-like leaves, with seven to nine leaflets arranged in a fan. Their flowers, like all legumes, have a central "banner" and four smaller petals. The banner in the miniature lupine is turned upwards, and is usually white or yellow with blue dots, while the other petals are usually blue. After flowering in the spring, lupines produce the hairy pods typical of all legumes. Unlike other legumes, however, the seeds from lupines are poisonous. Nevertheless, Native Americans would use a tea made from boiled lupine leaves and seeds to help cure gastrointestinal ailments.

Paintbrush (*Castilleja* spp.). Because these paintbrush-shaped plants occur in lovely shades of red, orange, and even yellow, some Native American tribes told their children that the paintbrush was used to paint the sunset. The colorful "petals" of the paintbrush flowers are not really petals at all, but sepals (the green flower parts surrounding the petals in other flowers) and "bracts" (modified leaves surrounding the sepals). Paintbrushes often derive some of their nourishment by parasitizing the roots of other plants and are pollinated by hummingbirds.

Soap plant (*Chlorogalum pomeridianum*). Early settlers named this plant "soap plant" because they dug up its root, stripped it of the fibrous outer coating, and rubbed it on their hands underwater to make a lather. Soap plant has beautiful, white flowers of six petals that most people never see: the flowers are moth-pollinated and only open at night. The 1 inch (2 cm) wide, long, wavy leaves that sprout in a circle at the base of the plant is a sure sign of soap plant. Out of the center of this whorl often points a tall (over 3 ft. or 1 m) bare stalk with dozens of tightly closed, pill-shaped buds. Seasonally, these leaves are browsed to nearly ground level by deer and other mammals.

Yarrow (*Achillea millefolium*). Yarrow is a frequent resident of roadsides and other disturbed areas, easily recognizable by its flat-topped clusters of small, white flowers. The leaves are distinctively narrow and feathery, and have a strong but pleasant smell.

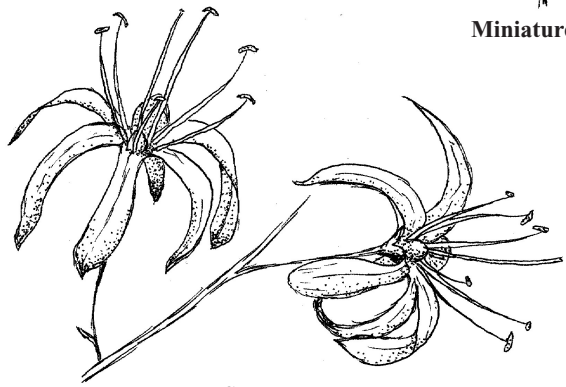
Yellow star-thistle (*Centaurea solstitialis*). One of California's most noxious weeds, yellow star-thistle made significant inroads into the reserve during the 1997-'98 El Nino year. It is toxic to livestock, and disperses via the wind and on the fur of mammals. As a result, star-thistle has spread rapidly in disturbed habitats in the Central Valley, the Coast Range, and the Sierra Nevada. In the reserve, it is most abundant in the field next to the old homestead, where the spines surrounding each flower are responsible for causing painful scratches on many hikers' legs. However, it is also prevalent on the trail, spread in part by the many boots traveling up and down the track. The ability of star-thistle to spread by catching a ride on the paws and backs of dogs is just one reason why dogs are not allowed on the reserve. Through concentrated management efforts, it may be eradicated from the reserve, but its presence nearby is a constant threat.



Miner's lettuce

Paintbrush

Miniature lupine



Soap plant

Yellow star-thistle

Yarrow