Red Hills Interpretive Nature Trail

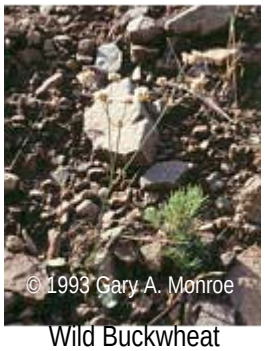
Welcome to the Red Hills Area of Critical Environmental Concern (ACEC). This area was designated as an ACEC to protect the rare plant species found here, the unusual serpentine soils that provide habitat for the unique flora of the area, habitat for the rare minnow known as the Red Hills roach, and to protect bald eagle wintering habitat.

Along this self-guided interpretive trail you will learn about the ecology of the Red Hills, the history of the area, and some of the past uses of the area. You'll also get a chance to see some of the amazing plants that grow here, including five of the seven rare plants that occur in the Red Hills ACEC and some of the beautiful common wildflowers that attract visitors every year.

The first portion of the trail is marked with rocks to show you the way, making three interpretive stops before coming to a small, dry drainage. From here the trail follows along the edge of drainages and creeks. The trail crosses the creeks at two locations. Please be cautious at each of these crossings (especially in winter or early spring), and choose the area that looks safest and easiest for you to cross. Keep in mind that during wet times of the year the rocks can be slippery, so take your time.

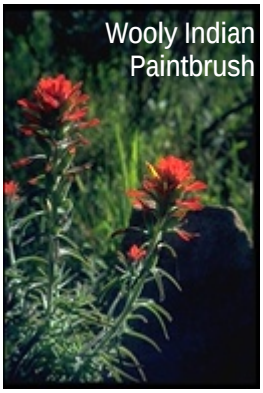
As you walk along the trail, look for greenish colored rocks…these are serpentine rocks, designated as the California State Rock in 1965! Serpentinite has very unusual characteristics. It is an ultramafic rock, meaning it is low in calcium, high in magnesium, and high in heavy metals such as iron, chromium, and nickel. Serpentine soils are often low in useable forms of the fundamental plant nutrients; nitrogen, phosphorus, and potassium. Although serpentine is present, the most common rock of the Red Hills is an igneous ultramafic rock called dunite. Serpentine is a metamorphic rock derived from dunite and similar rocks. The major soil type in the Red Hills, the Delpiedra Series, is derived from serpentine and dunite. This soil is reddish brown or yellowish red in color from the oxidation of iron, and it is this color that gave the Red Hills their name. Because of the serpentine characteristics, this iron-rich soil has low fertility. Preservation of the soil will permit investigations of the plant/soil relationships that have led to the unique flora in the Red Hills. To help preserve these soils and rare plants, this trail is open to foot traffic only and is closed to motorized vehicles, mountain bikes, and equestrian use. Enjoy your walk!

The Red Hills is home to over 250 native plant species, many of them wildflowers. For this reason, the Red Hills ACEC receives a large number of "wildflower watchers" throughout the spring and early summer. Below are just of few of the common wildflowers you may encounter along your journey:
Compare these first two plants with their relatives, discussed on page 2 (Post #'s 5 & 6).



Wild Buckwheat

Common lomatium



All photos below the first two are credited to: *Brother Alfred Brousseau* © 1995 Saint Mary's College of California

Interpretive Post #1: Red Hills Vegetation

As you look around you may notice that the oaks which dominate much of the surrounding country seem to be absent here. Only a few species are adapted to grow on the relatively infertile serpentine soils of the Red Hills. Vegetation is sparse in comparison with other areas. Foothill pine and buckbrush are the dominant plants on this landscape.

Photo: © 2004 Dr. Mark S. Brunell

Interpretive Post #2: Cultural Resources

The Red Hills has few cultural resources in comparison to surrounding areas. Unlike most of the motherlode, the serpentine of the Red Hills did not bear gold. This area was probably populated by the Central Sierran Miwok people prior to the Gold Rush of 1849. Chinese miners arrived in this vicinity in 1849 and mined much of the placer gold within Six Bit Gulch (located east of this site, along Red Hills Road). Chromite ore and crude magnesite ore were mined from the 1860's to the 1940's. The pit in front of you is evidence of the mining that took place in the Red Hills.

Interpretive Post #3: Foothill Pine

The foothill pine that you see scattered around the Red Hills are well adapted to the unique soil conditions. These pines differ from most of the common pines of California in that they often have several trunks. Foothill pines make great wildlife trees, and the branching trunks create perfect niches for nests. Look for the large, heavy cones. Pine nuts are an important food source for wildlife and were also eaten by Native Americans.

Photo: J. E.(Jed) and Bonnie McClellan © California Academy of Sciences

Interpretive Post #4: Rawhide Hill Onion

The Rawhide Hill Onion is a BLM-sensitive species. It received this classification because it has a limited distribution, confined to serpentine areas of Western Tuolumne County. It is named for Rawhide Hill just west of Jamestown. This native onion has many, mostly small, colonies in the Red Hills, similar to the population in front of you. It typically blooms from April to May and produces 20-60 white or pink flowers. It has only one leaf, which is cylindrical in shape. Continue left (south) down this drainage to the next drainage to find the next post.

Interpretive Post #5: Tripod Buckwheat

Although many species found in the Red Hills can be found on various soil types, some plants in this area are found only on serpentine soils (serpentine endemics). This species also grows in the California Coast Ranges, but again only on serpentine. Tripod buckwheat, the shrub growing in and along the drainage in front of you, is an example of a serpentine endemic. This species typically blooms from May to July and produces yellow flowers. It looks quite different from the common wild buckwheat also growing around you (page 1 for photo).

Photo: © 1997 Dean Wm. Taylor

Interpretive Post #6: Congdon's Lomatium

Congdon's lomatium is another BLM-sensitive species, classified as such because of its rarity. Although it is locally common, this species has been found only in the Red Hills area and nearby serpentine in Calaveras County. Interestingly, it was first described from plants in Mariposa County, but these plants have not been seen since 1903. This species belongs to the carrot family. It blooms from March to June, produces small, yellow flowers, and has finely divided leaves. The common lomatium looks very similar and also grows in this area (page 1 for photo).

Photo: © 1998 Dean Wm. Taylor

Interpretive Post #7: Goldback Fern

The goldback fern is abundant in many areas, including the Red Hills. Although this is not a rare species, it is interesting. Ferns require water for reproduction, and most fern species are found in moist, shady habitats. This fern, however, appears to be more drought tolerant, and in the Red Hills we see it in growing in very dry areas. It also has a striking golden color on the back during the spring. Try pressing the bottom side of a leaf against your shirt for just a moment to see the impression it leaves!

Photo: © Br. Alfred Brousseau, Saint Mary's College

Interpretive Post #8: Leave No Trace

Here you can see old off-highway vehicle (OHV) tracks. At this location you can clearly see the deep grooves left in the soil by the vehicle(s). How long do you think these tracks have been here? How long do you think it takes for the land to recover from these activities? The logs you see across the tracks have fell after a fire in 1997, and vehicles haven't been on this track since then. Although the land is recovering, it is a very slow process. We encourage everyone to visit and enjoy the public lands. Take time to learn about appropriate uses for different areas, how to minimize your impacts, and always leave the area in good condition.

Interpretive Post #9: Red Hills Soaproot

Red Hills soaproot is a BLM-sensitive species, classified as such because of its limited distribution. It is relatively abundant in this area. It blooms from May to June, but the flowers open at night and close by the next morning! The white flowers attract moths as pollinators. During the day the leaves of this plant are its most striking characteristic. They radiate like the spokes of a wheel and tend to be very wavy. This species is typically much smaller than the common soaproot. Soaproot is a member of the lily family.

Photo: © 2004 George W. Hartwell

Interpretive Post #10: Native Perennial Grasses

Native perennials constitute a large percentage of the grass cover in the Red Hills. This is in contrast to similar elevations in the foothills, without serpentine substrates, where native perennials have been mostly replaced by exotic annuals. Important native perennial species include California oniongrass (picture at left, bottom), big squirreltail (picture at top, right), and pine bluegrass. The oniongrass and squirreltail are both growing near this post.

Oniongrass photo: © 2004 Carol W. Witham
Squirreltail photo: © Br. Alfred Brousseau, Saint Mary's College

Interpretive Post #11: Dwarf Onion

The dwarf onion is not considered to be a rare species, but it is pretty spectacular! This small onion tends to grow in open areas with serpentine, volcanic, and granitic substrates. It blooms in early spring, producing 20-30 pink flowers growing in clusters. The clusters of flowers will eventually break off and roll around in the spring winds, distributing seed wherever it's blown. This onion produces one leaf, like the Rawhide Hill onion, but the dwarf onion leaf is wide and flat rather than cylindrical.

Photo: *Gladys Lucille Smith* © 1999 California Academy of Sciences

Interpretive Post #12: Fire in the Red Hills

The northern portion of the Red Hills has been considered a high wildfire hazard area because of the heavy recreational use. Fire scars are common throughout this area. The largest wildfire on record was a 2,778-acre blaze that occurred on July 27, 1982. In 1997 a fire swept through this area. As you look around you'll see many snags (standing dead trees) and skeletons of buckbrush. Some buckbrush were killed in the fire while others were injured and recovered over time. Along this trail you can see new buckbrush that has grown up since the fire, and occasionally you may even find a foothill pine seedling.

Interpretive Post #13: Hoover's Butterweed & California Verbena

From this post you can see both Hoover's butterweed and California verbena. These species grow near each other in riparian (streamside) zones, so look near the water's edge or on islands in the creek to find these species. Because they have moisture for growth later in the year, these species tend to bloom later than other species in the Red Hills.

Hoover's butterweed is a member of the sunflower family. Some botanists do not distinguish between the Red Hills plants and plants of the same species that grow on serpentine in the Coast Ranges. However, there is a consistent leaf shape difference that has convinced other botanists that this is a distinct variety within the species, confined to just the Red Hills. Regardless of the two theories, it is rare and is therefore classified as a BLM-sensitive species. It blooms from June to July. Look across to bank on the other side of the creek to see if you can find this rare plant: the smooth, wide, basal leaves occur in bug clumps. The flowers are numerous, daisy-like, small, and yellow. This tends to be a tall plant, growing 11-40 inches tall! When blooming, this plant should be fairly easy to see.

California verbena is a Red Hills endemic, meaning that it is found nowhere else but here! This species is so rare that the U.S. Fish and Wildlife Service has classified it as a Federally Threatened species. This designation gives it protection under the Endangered Species Act. Its distribution is confined to the short stream reaches that remain moist year round. It blooms from May to September (much later in the year than other plants of the Red Hills!). To find this species, look at the area on this side of the creek near the water's edge and on the small, rocky island in the creek (please stay at the post when looking for this plant so you don't accidentally step on it): it grows 11-30 inches tall and produces numerous spikes with tiny violet to purplish flowers on them. The leaves are wedge-shaped, mostly near the base of the plant, and they have no petiole (leaf stalk).

Butterweed photo: *Unknown (CNPS)* © 1981 California Native Plant Society
Verbena photo: © 1982 Dean Wm. Taylor

Thank you for visiting the **Red Hills ACEC** (Area of Critical Environmental Concern) **and Interpretive Nature Trail**. We hope you had an enjoyable day!

Serpentine Loop Road (just to the north of Post #13) will lead you back to the parking area, or you are welcome to travel back on the trail and see how many plants you can identify.

For questions or comments about the trail, please contact the Bureau of Land Management, Folsom Field Office at 63 Natoma Street, Folsom, CA 95630 or call us at (916) 985-4474.

Red Hills Nature Trail: the first portion of the trail is marked with rocks to show you the way, making three interpretive stops before coming to a small, dry drainage. From here the trail follows along the edge of intermittent creeks. At the end of the interpretive portion of the trail, follow the road uphill back to the parking area.

Please Note: the trail crosses the creek at two locations. Please be cautious at each of these crossings (especially in winter or early spring), and choose the area that looks safest and easiest for you to cross. Keep in mind that during wet times of the year the rocks can be slippery, so take your time. If, after looking at the Horton Creek crossing, you do not want to cross, you can retrace your steps, or follow the southwest side of Horton Creek upstream to the parking area.

Thank you to:
CENTRAL SIERRA ENVIRONMENTAL RESOURCE CENTER
SUMMERVILLE HIGH SCHOOL ECOLOGY CLUB
CALIFORNIA NATIVE PLANT SOCIETY
for all of their help in creating this Interpretive Nature Trail.