

Nature Hike at Mangini Ranch Educational Preserve (All Grade levels)

Teaching Point: As hikers we can appreciate and learn about nature by being observant and respectful of our surroundings. Docent guides ask students guiding questions and relay stories about the history, geography, geology, flora, and fauna so that students can learn more about what they are seeing. Depending on the season, different natural features and flora will be prominent.

Format: The hike up to the amphitheater is ideally done in groups of 10-15 participants per route. Having two docent leaders allows class groups to be split into two groups. One group hikes up via the Desert Olive Trail and the other via the Galindo Creek and Chupcan Canyon Trail. (60 minutes)

The return hike can be used as a formative assessment with marked stops for participants to test their knowledge about various concepts learned on the way up. (40-60 minutes)

Materials: Plant ID cards

Stopping Area	Script
<p>Commemorative Stone</p> <p>(5 mins)</p>	<ul style="list-style-type: none"> ● 208 acre preserve vital corridor between Mt Diablo and Shell Ridge purchased by SMD in 2006, opened as an educational preserve in spring 2022 ● In 1898 the land was purchased by Italian immigrant Giuseppe Mangini and was used to raise cattle and farm vines, later almonds and walnut trees. (See commemorative stone) ● Many habitats- <ul style="list-style-type: none"> ○ Galindo Creek riparian zone with Buckeyes, Bay Laurels, ferns, miner’s lettuce ○ Blue oak woodland and oak savannas ○ Chaparral with sages and chemise, coyote brush ○ Desert olive, Hospital Canyon Larkspur ● Point out the creek runs only every 7-10 years, and this year is the highest the land steward has seen it run since 2007 ● Geology of the nearby area- Cross Section of Jurassic and the quarry was/is used for diabase rock for drainage rock.
<p>Land Acknowledgment</p>	<p><u>Land Acknowledgment:</u> <i>Save Mount Diablo recognizes that we are on the unceded ancestral lands of the Bay Miwok, Muwekma Ohlone, Northern Valley Yokuts, and other tribes and tribelets – peoples who have loved and cared for Mount Diablo as a sacred mountain since time immemorial. Many of these peoples continue today as thriving members of the diverse communities of the greater San Francisco Bay Area and the larger Diablo Range Region. We acknowledge and honor the Bay Miwok, Ohlone, and Northern Valley Yokut tribes, as well as all of the indigenous people of the lands which Save Mount Diablo serves.</i></p>

<p>Safety and Respect</p> <p>(2 mins)</p>	<p>As hikers enjoying nature you too must care for the land, respect it, and stay safe.</p> <ul style="list-style-type: none"> ● Stay hydrated, sunscreen, layers, good shoes ● Stay on the main paths <u>with the group</u> to protect yourself and the species of plants/animals ● Walk respectfully, quietly to see more and to be part of nature ● Listen to the docent at each stop and minimize (maybe show a hand signal for getting quiet) ● Stay safe <ul style="list-style-type: none"> ○ Poison oak ○ Rattle snakes ○ First aid kit ● Bathroom stop here and then at lunch we will find a spot if necessary
<p>Itinerary</p>	<p>You are split into two groups and we will hike up separately but then meet at the amphitheater area for most of the day's activities. Then we will hike back switching routes so that everyone gets to do the whole loop. *Pass out plant ID cards to students to look for plants on trail.</p>
<p>STOP #</p>	<p>Galindo Creek and Chupcan Canyon Trail Hike</p>
<p>One Run off/slump erosion</p> <p>Native vs. non-native grasses</p> <p>CA Poppy</p>	<p>How has water helped shape and change the landscape you see?</p> <p>The grasses you see are mostly non-native, annual grasses that were brought in by the settlers. These invasive shallow rooted annual grasses grew quickly and outcompeted the perennial, deep rooted native bunch grasses.</p> <p>How might the seeds of these non-native grasses become so widespread? In what ways are deeper roots better than shallow roots? Why are lower growing grasses perhaps better than taller grasses?</p> <p>Does anybody recognize these orange flowers? Notice these are true California poppies because they have this reddish ring at the base of the flower. It is called the Torus. These perennials have a deep taproot that is bright orange, subdivided grayish green leaves, two sepals that protect the flower until it opens, and four orange petals seen on so many California images. Watch the poppy throughout the day as it opens with the sun and then closes again at night. The state flower since 1903.</p>
<p>Two Snag/Decay</p>	<p>What do you notice about this tree? (dead, falling apart, rotting, has lots of holes) Do you have a tree like this in your garden or school yard? Why not?</p> <p>It is important to keep snags and rotting decaying trees in the ecosystem. They provide storage spots as you can see for the acorn woodpecker, as well as hiding places and habitat for other animals, insects, mosses, lichens, fungi. The carbon in the tree will be broken down by decomposers</p>

<p>Acorn woodpecker</p>	<p>rendering it back to soil.</p> <p>Woodpeckers can store thousands of acorns in snags like this one, drilling a separate hole for each nut. Although they usually eat flying insects in spring-fall, they store the acorns for winter when insects are few. They share these acorns with their clan. Having large acorn granaries allows the bird to overwinter in the area. Many of their acorns will shrivel once dried and fall or be stolen by squirrels and blue jays. To maintain large stores, the woodpeckers move a small percentage, hundreds of their acorns, around each week to avoid them all being stolen or lost.</p> <p>You may see acorn woodpeckers on your feeders at home. They like the hummingbird nectar feeders and suet with sunflower seeds.</p>
<p>Three</p> <p>Big Buckeye Tree on creekside</p> <p>grassland side has deer track down from slope to creek</p> <p>Coast live oak</p> <p>Valley oak</p>	<p>CA Buckeye:</p> <ul style="list-style-type: none"> ● Big palmate leaves with five to seven leaflets allow them to photosynthesize early in the year before other trees have much foliage and sunlight can penetrate the riparian zone easily. ● Drop leaves in summer especially in times of drought to save water. ● The entire tree is filled with toxins, and only edible when the leaves have fallen and lost their toxicity or when the shoots are very small. Only grey squirrels and ground squirrels are able to eat the seeds and are one of the main ways their seeds get dispersed. ● They have beautiful large white flowers that co-evolved with native bees and insects including some butterflies that can feast on their nectar. Toxic to all other insects. ● Their seeds are huge, filled with toxins (saponins) and were used by Native Californians to stun fish (chemical compounds gets in their gills and slows respiration, stunning them, but does not enter the flesh, so still edible) <p>What do you think created this narrow trail? (deer path to water below- look for tracks)</p> <p>Evergreen grows on hillsides, leathery and spiny leaves with edges curled under, darker green above and paler below. Acorns are reddish about 1" long. Male flowers are called catkins and are easily visible.</p> <p>Deciduous "with hills and valleys" rounded lobes and pale green leaves. Grows closer to creeks and in the valleys where water is more abundant. Bigger acorns up to 2" long.</p>

<p>Poison oak</p>	<p>“Two leaves kissing and one leaf running away” “Leaves of three let it be” All parts of the plant are covered in urushiol, which causes dermatitis in most people, but no effect on other animals. Grows as a vine, bush, or groundcover. Serves as important habitat and source of berries/seeds for many birds such as woodpeckers, wrentits, jays, western bluebirds, chickadees, magpies, finches, juncos, quail.....Also for mammals such as ground squirrels, woodrats, rabbits, black tailed deer, black bear. They disperse their seeds. One of the first plants to reestablish after fires and provide shelter/shade (nurseplant) to other plants that grow in later. Used by Native Californians for a variety of uses (shoots for baskets, sap for dyes, ashes for tattoo ink, juices from stems to treat warts, skin ailments.)</p>
<p>Four Across the bridge heading up the Chupcan Canyon</p> <p>CA Bay Laurel</p> <p>Soap plants</p>	<p>Provide samples of bay leaves for participants to smell. Ask them what this reminds them of- even though it smells like Eucalyptus it is not a relative.</p> <p>Bay laurel (sometimes called pepperwood) provides insects (pollinate mostly by gnats and flies) with much needed pollen early in the season. Leaves filled with volatile oils like eucalyptol which gives it that strong smell and wards off a lot of diseases. The oils in the leaves can induce and relieve headaches (used by natives for this). This native laurel is much stronger than the bay leaves from Europe used in most cooking. Endemic to CA and Oregon, lives in riparian coastal areas can get very big. Many animals eat the bay flowers, nuts, and leaves. Unfortunately, it also is the host of a fungus that causes Sudden Oak Death (SOD) If you see bay leaves with yellowish black spots this could be a sign that the laurel has the fungus which is fatal to many oaks that may live nearby. (Tanoak, black oak, coast live oak, shreve’s oak, canyon live oak)</p> <p>Soap plants (Agave family) grow from a fibrous bulb whose fibers were used by Indigenous peoples as scrub brushes. The bulb contains toxins that also were used to stupefy fish. They have small white flowers that open in the evenings and are pollinated by night insects. These deciduous plants will lose their leaves and disappear by late summer. They grow in chaparral, grasslands, and woodlands.</p>

<p>Miner's lettuce</p> <p>Buttercups</p> <p>Shooting Star</p> <p>Lupine</p> <p>Maidenhair ferns</p>	<p>Miner's Lettuce: Grows in the riparian zones, has circular succulent leaves with tiny white flowers. Used by miners during the Gold Rush for vitamin C to ward off scurvy. Can be eaten raw as salad or cooked like spinach.</p> <p>Buttercups: a ranunculus, often seen in oak woodlands.</p> <p>Shooting star: once pollinated the flower will point upward</p> <p>Lupine: (Kids may have read <u>Miss Rumphius</u> by Barbara Cooney or the "Lupine Lady" by Hilda Hamlin- similar to the <u>Man Who Planted Trees</u>, but about a woman who plants lupine)</p> <p>Maidenhair ferns: Ferns are vascular plants that evolved during the warmer more tropical carboniferous period (300 mya) before flowering plants and use spores rather than seeds to reproduce. Their leaves are called fronds. They grow from underground stem rhizomes.</p>
<p>Five</p> <p>Fungi and soil</p>	<p>Stop by tree stump with toadstools and discuss the importance of fungi as decomposers and their relationship with roots of various plants/trees. The importance of living soil that we take for granted and do not consider.</p> <ul style="list-style-type: none"> ● Soil = Rock particles (45%inorganic) + living microbes and decomposing matter (5% organic) + Air (25%) + Water (25%) ● Soil is made up of minerals from broken down rock of various sizes that have been decomposing for millions of years as well as all the living creatures in the soil that are aiding in this decomposition. It also has air gaps and water. ● Plants use the sun's energy to convert carbon dioxide and water into usable sugars for the plant. The roots carry some of this sugar down into the ground where a fungal network is intertwined with the root system. ● The fungus provides the plant with broken down minerals from the soil in return for some of the plant's sugars. ● Many other tiny beings like algae, bacteria, nematodes, amoeba, mites, paramecia as well as larger worms, millipedes, earwigs, and even moles are part of the underground food web. ● It can take 1000 years for one inch of soil to form!
<p>Six</p> <p>Four Communities</p> <p>Above the Amphitheater or on the way back down</p>	<p>From here we can see the four major plant communities:</p> <ul style="list-style-type: none"> ● Riparian- near the creek where water is more abundant ● Chaparral- The south/west exposed higher lying slopes are dry with the California sagebrush (<i>Artemisia californica</i>) manzanitas and chamise ● Oak Woodland-Oak stands mixed with other trees and wildflowers like buttercups ● Oak savanna- grassy expanses dotted with a few oaks