

Miwok Meadows Virtual Nature Hike - Teacher Resource Guide

Virtual Nature Hike Stop #1 – Wetlands

Wetlands in Miwok Meadows marsh complex include freshwater wetlands, brackish wetlands, and salt marsh tidal wetlands. Each type of wetland has unique plant and animal species and habitats. Wetlands are nurseries (spawning areas) for many fish and invertebrates like crabs. Wetlands also help reduce flooding, coastal erosion, and they filter pollutants entering the bay. Below are some of the wetland plants and animals commonly found at Miwok Meadows' wetlands:

- Cattails (freshwater marsh) – a tall wetland grass
- Pickleweed (salt marsh) – low-lying plant in salt marsh
- Cordgrass (brackish/salt) – a spiky grass with feathery tops about waist height
- Mallard Duck– the most common bay duck
- Great Blue Heron – tall, majestic heron that feeds on wetland fish and invertebrates
- White Tailed Kite – small predatory raptor (hawk-like) bird that often hovers when hunting
- Northern Harrier – medium sized raptor with owl-like face that flies low over the marsh and feeds on small mammals and birds but also larger prey such as rabbits and ducks
- Snowy Egret – medium sized egret, all white with a black bead and yellow legs. Feeds on insects, crustaceans, and fish.

More information on San Francisco Bay wetlands: <https://www.nps.gov/goga/learn/nature/wetlands.htm>

Virtual Nature Hike Stop #2 – Dusky-footed Woodrat

The Dusky-footed Woodrat builds complex homes like the one seen on the video out of sticks, leaves and other oak woodland debris. They are nocturnal and their main predators are coyotes, bobcats, gray fox, owls, and skunks. They cache food and shiny objects that catch their eye. Below are some of the plants and animals in the Oak woodlands at Miwok Meadows:

- Coast Live Oak – a tree that produces acorns and keeps its leaves all year round
- Valley Oak – a large tree that produces acorns and is home to oak galls
- Madrone – a tree with smooth, orange-red bark and red berries
- Manzanita – a bush with smooth, red bark and stiff, twisting branches

More information on California oak woodlands: https://www.fs.fed.us/pnw/pubs/pnw_rb245.pdf

More information on the Dusky-footed Woodrat: <https://www.nwf.org/Educational-Resources/Wildlife-Guide/Mammals/Dusky-Footed-Woodrat>

Virtual Nature Hike Stop #3 – Scat

Scat is a naturalist's clue to what animals live in an area and what they are eating. See if you can tell the difference between deer scat and rabbit scat. Keep your eyes peeled for scat of all kinds on the Miwok Meadows trail, including some of these animals:

- Brush Rabbit
- Coyote
- Black-tailed Jackrabbit
- Mule Deer
- Wild Turkey

Here's some Q&A from a local "scat-ologist": <https://baynature.org/article/tracking-scat-with-cat/>

Virtual Nature Hike Stop #4 – Western Fence Lizard (Bluebelly)

Western Fence Lizards or Bluebellies are a small lizard that lives in the open, sunny areas of Miwok Meadows, often on fences, rocks and trees. Blue-belly lizards eat insects and do push-ups to fend off other lizards or as a mating display.

Find out more about blue-belly here: <http://animalia.bio/western-fence-lizard>

Virtual Nature Hike Stop #5 – Poison Oak and Ticks

Poison oak is a shrub or vine with "leaves of three" that comes in many colors. But beware of touching it because the oils on its leaves, stems, or berries can cause an itchy rash on your skin. Ticks also live along the Miwok Meadows trail, and provide an important source of food for many animals. It's important not to be frightened by ticks, but treat them with respect. While they don't sting or bite, they can attach to your skin and spread disease. So, check for ticks

on your body after any hike in the woods. One of the more common ticks at Miwok Meadows is called the Western Black-legged tick.

Here is a good article on how to identify Poison Oak (PO): <https://openspacetrust.org/blog/poison-oak/>
Here is some good information on Lyme disease: <https://www.bayarealye.org/our-research/ecology-lyme-disease/>

Virtual Nature Hike Stop #6 – Squirrel Dreys (Nests)

Gray Squirrels and Fox Squirrels make waterproof dreys or leaf nests to protect themselves from the weather and provide a safe place to sleep and raise their young. So if you see a “nest” up in a tree, it could be a “drey.”

Here’s an interesting article on squirrel dreys and baby squirrels from WildCare:
http://wc.convio.net/eNews/March_2009.html

Virtual Nature Hike Stop #7 – Red-breasted Sapsucker (Woodpecker)

The Red-breasted Sapsucker has a red head, so keep an eye out for them in the oak woodland. The Red-breasted Sapsucker and its cousin the Yellow-bellied Sapsucker, both peck holes in trees to extract sap. They return later to eat the sap and any bugs that get caught in the sap. It can damage the tree if too many holes are drilled, but typically a healthy tree has ways of preventing too much sap loss.

Here’s some information: <https://www.audubon.org/field-guide/bird/red-breasted-sapsucker>

Virtual Nature Hike Stop #8 – Cynipid Wasp and Oak Galls or Apples

On the forest floor beneath Valley Oaks or on live branches; look for galls or oak apples. These growths are the result of cynipid wasps inserting fluid and laying eggs under the oak’s bark. The fluid stimulates tree cell growth around the eggs, creating an oak apple or gall. But don’t eat these apples! How many oak apples can you count in a single tree?

Here’s a little natural history article on oak galls: <https://nothinginbiology.org/2014/07/24/random-natural-history-valley-oaks-and-their-galls/>

Virtual Nature Hike Stop #9 – Acorns

Acorns were a staple food of the Miwok people. The Black and Valley Oaks are preferred for making oak flour because they are lower in tannins. Acorns are a significant food source for Miwok Meadows animals, including Squirrels, Mule Deer, Wild Turkeys, Acorn Woodpeckers, and the Dusky-footed Woodrats.

Here is a website on native California oaks and their acorns: <https://nature.berkeley.edu/garbelottowp/?p=1749>

Virtual Nature Hike Stop #10 – Bay Trees and Moss

California Bay Laurel (or simply Bay tree) is an important tree to animals and people, including the Coast Miwok People. Many animals eat the fruit or drupes that grow on the Bay tree in summer and fall. Bay trees only produce drupes after they are 30 to 40 years old. The Dusky-footed Woodrat puts pungent Bay leaves in its home to fend off bugs. The Bay tree is even used in cooking and can be used as a natural mosquito repellent if you rub green leaves on your skin. The furry green stuff growing on tree trunks is a type of moss. It doesn’t hurt the trees and dries out during the dry season. But if you pour water over it like rain, it will freshen up and turn green in a few minutes.

This article has a lot of great information about Bay trees (and their many other names):
<https://baynature.org/article/taste-bay-laurel/>

Virtual Nature Hike Stop #11 – Turret Spiders

Up close these are some scary looking spiders. Only one spider lives in each turret – they are solitary. Females live up to 16 years and get much larger than males. Males live about half as long as females and die after they mate for the first and only time. Their burrows are lined with silky web and can be up to 20 cm deep. The outside of the turret has small twigs and pine needles woven into the web that act as motion detectors and allow the spider to ambush insects that travel across their path.

More on turret spiders here: <https://baynature.org/article/and-this-little-spider-stayed-home/>

Other Plants Found at Miwok Meadows

Buckeye – a tree with tennis-ball sized nuts seen in fall

Coyote Bush – a tough green shrub that is drought resistant

Lichen – a special organism that’s part fungus and part algae

Willow – a small tree that lives along streams, “Sausalito” is the Spanish word for small willow grove

Other Animals Found at Miwok Meadows

Chestnut-backed Chickadee
Pacific Chorus Frog (or Pacific Tree frog)
Red-tailed Hawk
Turkey Vulture
Wild Turkey

Vocabulary

Carnivore – An animal that eat other animals
Drey – A squirrel nest
Diurnal – Active during day
Ecologist – A scientist that studies how plants, animals, and the environment interact
Ecosystem – A community of interacting organisms and their environment
Habitat – Natural home or environment of an animal, plant, or other organism
Marsh or wetland – Low-lying area that is flooded or wet for part or all of the year
Migrating – Seasonal animal movement from one home to another
Nocturnal – Active at night
Pollutants – Harmful things put into the environment, like trash or chemicals
Predator – An animal that hunt other animals
Preserve – Protected just the way it is
Prey – Animals hunted by other animals
Sap – Tree blood
Scat – Animal poop (scat is the scientific way to say it)
Vegetarian or Herbivore – An animal that eat only plants

Links for More Information

WildCare: <https://www.discoverwildcare.org>

China Camp Park: <https://www.parks.ca.gov/pages/466/files/ChinaCampSPWebLayout2015.pdf>

Miwok Meadows Trail Guide (AllTrails): <https://www.alltrails.com/trail/us/california/miwok-meadows>

San Francisco Bay Area Wildlife: <https://www.sfbaywildlife.info>

Lichen and Moss Information: <https://baynature.org/article/identifying-with-lichen/>

Miwok Native Californians: https://www.parks.ca.gov/?page_id=22538

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All video of wild animals is original video taken by the WildCare Nature Guides.