## THANKS FOR TAKING A WALK IN THE WOODS WITH US!

Let us know what you thought of this self-guided experience by emailing ***info@onetam.org***

## HOW YOU CAN HELP

LEARN MORE – get started at ***onetam.org/forest-health*** and check ***onetam.org/calendar*** for tours and events where you can learn more.

VOLUNTEER – check ***onetam.org/calendar*** for opportunities to get involved in caring for our public lands.

BECOME A MEMBER – join at ***onetam.org/donate*** to support our work and access member events.

CLEAN YOUR SHOES – before taking a walk in the woods, be sure to brush any soil off your shoes and spray them with rubbing alcohol – this helps remove weed seeds and pathogens that may be hitching a ride.

GRIZZLY CORPS

*Our forest health stewardship and community engagement are supported by GrizzlyCorps, an AmeriCorps program designed by Project Climate at UC Berkeley's Center for Law, Energy, and the Environment in partnership with California Volunteers.*

## GLOSSARY

**Beneficial fire** – A term used to collectively refer to prescribed fire, cultural burning, and managed fire.

**Fire exclusion** – The exclusion of natural and indigenous fire ignitions and policies to suppress all fires.

**Forest health** – A condition of ecosystem sustainability and attainment of management objectives for a given forest area. There are many characteristics used to describe health, and health looks different in different forest types.

**Fuels/fuel load** – Burnable plant material/quantity of burnable plant material.

**Girdling** – A method of slowly killing a tree without cutting it down by removing a ring of bark *(right)*. Girdling has the benefit of leaving standing snags for wildlife and is less labor intensive.

**Ladder fuels** – Fuel that can carry a fire burning in low-growing vegetation to taller vegetation.

**Resilience** – The capacity of systems to absorb or recover from disturbance while undergoing change to retain desired ecosystem services and functions within a mosaic of forest types.

# ONE TAM

## WHAT IS A HEALTHY FOREST?

### A SELF-GUIDED WALK AT LAKE LAGUNITAS, MT. TAMALPAIS

The trail around Lake Lagunitas offers a glimpse into efforts to restore forests. Forest and woodland comprise over a third of Marin County and provide us with clean air, drinking water, recreational opportunities, habitat for diverse species, and much more. They also have significant cultural value.

Today, forests face threats such as diseases, introduced weeds, fire exclusion, human-caused climate change, and more. One Tam partners are working to address these threats on our public lands, improve forest health, and evolve our understanding of caring for forests.

This self-guided walk aims to show both the effects of forest threats — in particular, fire exclusion—and work being led by Marin Water, a One Tam partner, to restore forest health.

The walk starts in the Lake Lagunitas parking lot and leads you counterclockwise around the lake. It is a 2.6-mile loop with 394 feet of elevation, with the option to shorten to 1.7 miles.

**MAP INSIDE!**

ONE TAM | NATIONAL PARK SERVICE | CALIFORNIA STATE PARKS | GOLDEN GATE NATIONAL PARKS CONSERVANCY | MARIN WATER | MARIN COUNTY PARKS

One Tam brings together its five partners and inspired community members to support the long-term stewardship of Mt. Tamalpais. Get involved at ***onetam.org***

## 1 LAKE LAGUNITAS PARKING LOT

Before colonization, the Coast Miwok cared for these lands in a way that produced a diverse, interconnected landscape, supporting habitat for animals as well as sustainable sources of food, tools, and medicines. Instead of massive areas of a single resource type like Douglas-fir, many smaller grasslands, shrublands, woodlands, and forests were woven together in a patchwork across the landscape that facilitated efficient and productive access to these resources for people in those local areas. These lands experienced frequent natural and cultural burning.

When Europeans colonized this fire-adapted land, they banned cultural burns and suppressed natural fires. Fire exclusion interacts with other threats to make the region more vulnerable to higher severity wildfires.

Forest health work involves attempts to mimic fire using manual tools to reduce understory and fuels, reduce the spread of trees into other habitats like grasslands, and help preserve a patchwork of diverse habitats. You will experience this today as you walk through redwood forest, Douglas-fir forest, oak woodland, and grassland. Fires that do occur in patchy, open landscapes are likely to be less intense than in dense, untreated areas.

This work includes other activities like managing the weeds that reduce biodiversity, degrade habitat, and sometimes contribute hazardous fuels. It also takes a lot of planning and preparation, including caring for sensitive wildlife. All of this prepares the landscape for beneficial fire, which we hope to eventually return to treated areas as appropriate.

The next stop is through the picnic area and up the stairs, on the deck overlooking the lake at the top of the spillway.

Wooden deck at the top of the spillway at Lake Lagunitas *(left)*, bottom of the spillway next to picnic area *(right)*

## 2 TOP OF THE SPILLWAY

You are standing on an earthen dam, where Lagunitas Creek was contained to form this reservoir. Most of Marin's water supply comes from rainfall across the Mt. Tamalpais watershed and the grassy hills of west Marin. This precipitation provides 75% of Marin Water's supply, collected here in Lake Lagunitas and six other reservoirs. Maintaining healthy forests is essential for providing clean drinking water since problems such as erosion and sedimentation can threaten the quality and abundance of our water.

Now take the path to your right until you come to the intersection of Lagunitas-Rock Spring Rd. As you walk, look at the forests to your right. The cut-up trees and cleared areas are examples of thinning, where the understory has been removed by hand. Keep in mind that manual forest thinning is different from beneficial fire. While it helps by reducing fuels, only fire can provide benefits such as nutrient cycling, pest and disease control, and heat for fire-adapted species regeneration.

## 3 INTERSECTION WITH LAGUNITAS-ROCK SPRING RD

Look up slope for thickets of overgrown tanoak. Tanoak is highly susceptible to sudden oak death (SOD), a disease caused by an introduced water mold called ***Phytophthora ramorum***. After tanoak trees die from SOD, they resprout, grow only to the height of a few meters and then once again die and resprout in a continuous cycle. This cycle creates dense thickets of dead tanoaks and multiplies the fuel load in forests. In addition, the reduced tree height creates ladder fuels that help fires jump up into the forest canopy.

Continue walking until the first footbridge, stop #4. On your way, look uphill for an expanse of large, felled trees. These were madrone trees that died from another non-native plant pathogen, ***Phytophthora cinnamomi***, closely related to ***P. ramorum***. While discouraging to witness these beautiful trees felled, the regrowth of this area – with native species such as huckleberry, douglas iris, native ferns, and grasses – also exemplifies the resilience of the land.

With the suppression of fire, this stand of Douglas firs was encroaching upon and outcompeting the native oak savanna and grassland beyond. By felling and girdling targeted Douglas firs, we reduce fuel load and protect surrounding habitats.




## 4 FIRST FOOTBRIDGE

The presence of this creek, one of the three tributaries to Lagunitas Creek, allows coast redwood forest to thrive. Redwoods need more moisture than other forest types on the mountain. In fact, redwoods contribute to creating their habitat – fog condenses on their tall canopy into fog drip, dampening the surrounding area even more.

This forest is secondary growth (resprouts from cut old growth trees) and can be dated to the 19th century when it was last logged for the development of San Francisco and to supply railroad ties for the Transcontinental Railroad. The fire scars on some of the trees came from the last significant fire in this area, the "Little Carson Canyon Fire" of 1945. Before colonization, fire likely occurred in this area at an interval of less than ten years.

As you cross the footbridge, look at the slope across the bridge and directly in front of you. A few years ago, it was impenetrable and overgrown. After thinning, this patch is less vulnerable to intense fire and supports diverse wildlife such as northern spotted owls, bats, and giant salamanders.

Continue until the intersection of Lagunitas Rd and Lakeview Rd.

## 5 THE JUNCTION

Look for trees that have a ring of bark removed. These are Douglas-firs, and this treatment is called girdling. Douglas-fir forest is native, but without fire their fast-growing saplings can encroach on other vegetation communities. Girdling causes trees to slowly decay and stops them from dropping seed, while retaining benefits that the trees provide such as wildlife habitat and carbon storage. This work protects the native grassland lying beyond these trees and its diversity of plants and animals.

From here, you can either return to the parking lot by following the trail along the lake or continue on Lakeview Rd up to Pilot Knob. The last stop will be the lookout at the end of the Pilot Knob spur trail.

At the junction, notice the difference between the hillsides on either side of the trail. The north side has been treated while the south side is overgrown.

## 6 PILOT KNOB OVERLOOK

The area you see from here was thinned a couple of years ago, resulting in a more open landscape. The big piles of sticks that dot the view are slash, or the woody debris created during thinning. This is gathered and burned when conditions permit to recycle the nutrients into the landscape, and so that it doesn't add fuel to the landscape. Forest managers also aim to leave 4-6 inches of material in place for erosion control. Large logs are also left as they would burn slowly in a fire. This also releases their carbon more slowly and provides important animal habitat.

Each time you visit an area where forest health work occurs, it may look different as the forest responds. Once work starts, we commit to ongoing care – we may rotate treatments over multiple years, while regularly removing weeds and monitoring wildlife species.

This work is just the beginning, and it takes time. We need to scale up these efforts where most appropriate, we need to consider the use of beneficial fire as a tool for care, and we will need to continue caring for forests for generations to come.

Our tour ends here, but there's more! Turn for more resources.