

## Is Mt. Tam at Peak Health?



### **NO**, the overall condition of Mt. Tam's natural resources is **FAIR**.

While some of the mountain's plants and wildlife are thriving, others are suffering the effects of invasive species, plant disease, altered fire frequencies, and climate change. The condition of others, such as invertebrates and bats, remains largely unknown. Fortunately, we can still help many of those that are in decline, and work together to fill key information gaps.

#### How Do We Know?

Agency and local scientists identified indicators to assess the health of Mt Tam's natural resources, and then analyzed their condition and trends.

#### What Are We Doing?

- Monitoring threatened and endangered species, and restoring their habitats
- Conducting volunteer-supported Wildlife Picture Index surveys
- Restoring, monitoring, and protecting vegetation communities and rare plants
- Assessing and treating non-native, invasive plant species
- Researching forest resiliency and Sudden Oak Death
- Engaging youth and adults in outreach, volunteer stewardship, and research projects

### Where Can You Learn More?

Use our interactive website at [onetam.org/peak-health](http://onetam.org/peak-health) for more details, and to learn about the health of the many other species and habitats included in this assessment.

◀ See inside for highlights

## How Can I Help?

There are **many ways** you can help support a healthy and vibrant Mt. Tam!



### Volunteer

Join us to help pull invasive weeds, restore habitats, maintain trails, count wildlife, protect breeding frogs, and more:

[onetam.org/volunteer](http://onetam.org/volunteer)



### Learn & Share

Take part in a bioblitz or annual bird count, share your sightings on iNaturalist, or join one of many educational programs hosted by local environmental organizations.



### Care

Stay on designated trails to protect sensitive species and habitats, use native or non-invasive plants for home landscaping, and clean your shoes after passing through areas with Sudden Oak Death.



### Donate

Give to support the mountain, and the projects and programs helping to maintain and restore this special place:

[onetam.org/donate](http://onetam.org/donate)

### Learn More

Visit [onetam.org/peak-health](http://onetam.org/peak-health) to get more information about Mt. Tam's resources, download the technical report, and more.



One Tam is a community-wide initiative of the Tamalpais Lands Collaborative (TLC) to ensure the long-term health of Mt. Tam. The TLC is a partnership of the Marin Municipal Water District, Marin County Parks, California State Parks, National Park Service, and Golden Gate National Parks Conservancy. For more information visit [onetam.org](http://onetam.org) or email [info@onetam.org](mailto:info@onetam.org)



# ONE TAM

## IS MT. TAM AT PEAK HEALTH?

2016 Natural Resources Report

See inside for highlights

## Mt. Tam's Biodiversity

Located within an internationally recognized biodiversity hotspot, the mountain's complex terrain, unique geology, and location between the sea and inland areas create a remarkably diverse array of microclimates and habitats. It is home to more than 1,200 native species, including over 10% of the native plants found in California, and over 10 times more native plants per acre than Yosemite National Park, which is 20 times as big.

### NATIVE BIODIVERSITY ON MT. TAM

Total Native Species	over 1,200
Lichen & Fungi	383
Mammals	35
Birds	184
Plants	769
Fish	11
Reptiles & Amphibians	25

BASED ON WHAT WE CURRENTLY KNOW

Several animals and more than 60 plant species have been lost from Mt. Tam in the last century.

### Climate Change Over the Next Century

Climate change models suggest mixed hardwood and redwood forests are likely to decrease, while some oaks, Sargent cypress, and Douglas-fir may prove more resilient. Species such as deer fern that thrive in cool, moist areas are still found farther north and west, but have disappeared from Mt. Tam.

- Bay Area temperatures are predicted to increase between 2.5° and 6°F
- Future precipitation and fog are uncertain, with models predicting 25% more to 25% less rainfall
- Even if rainfall increases in the future, plants may experience drought-like conditions due to higher temperatures



FAIR

## OAK WOODLANDS: Stinson Gulch, Bon Tempe Reservoir

- Support a rich diversity of plants and wildlife species
- Have declined significantly from Sudden Oak Death
- Are threatened by non-native plant invasion

Long-lived trees shade an understory of grasses, sedges, and forbs in Mt. Tam's iconic open-canopy oak woodlands, which are in varying health. Sudden Oak Death has killed thousands of coast live oaks and black oaks, physically changing these habitats, reducing wildlife food sources, and increasing wildfire risk.

Fire suppression has allowed Douglas-fir to expand into these habitats, where they eventually shade out oaks and understory species. Non-native, invasive plants like French broom, cotoneaster, and panic veldt grass are also becoming increasingly common. **One Tam volunteer weed management teams need your support to control these threats to the mountain's oak woodlands.**

GOOD

## Woodland Birds



Iconic species such as the Acorn Woodpecker, California Bluebird, Lark Sparrow, Oak Titmouse, American Kestrel, and Western Screech Owl make their homes in Mt. Tam's oak woodlands.

**This bird community appears to be healthy, suggesting that they are finding ample food, cover, and safe nest sites.**

The regionally common Western Scrub Jay—vital in acorn distribution and oak woodland regeneration—is experiencing modest declines on Mt. Tam, perhaps as a result of West Nile Virus.

FAIR

## REDWOOD FORESTS: Muir Woods, Steep Ravine, Bolinas Ridge

- Are fair overall; Muir Woods old-growth forest is in good condition
- May decrease in distribution due to climate change
- Store more standing carbon than any other kind of tree in California

Among the tallest trees in the world, coast redwoods may live as long as 2,000 years. Their thick, tannin-laden bark and their ability to re-sprout enable them to fend off insects and survive wildfires. Mt. Tam's redwood forests provide important habitat for the federally threatened Northern Spotted Owl and Redwood Creek is home to threatened steelhead trout and endangered coho salmon.

Most of Mt. Tam's redwood forests are previously logged second-growth stands, which are in fair condition. More information is needed to understand their health trends. Redwoods are fog-dependent, and may decline in a hotter or drier future. **One Tam has teamed up with the Save the Redwoods League on Fern Watch—a project to track these climate-sensitive plants in redwood forests. Use the iNaturalist app on your smartphone to join in.**

GOOD

## Conifer Birds



With species that are typically found in the Sierra Nevadas, this bird community truly puts the "mountain" in Mt. Tam. Hermit Warblers, Audubon's Warblers, Pacific Wrens, Pileated Woodpeckers, and Golden-crowned Kinglets make up Mt. Tam's **thriving redwood forest bird community**. One species of concern, the Olive-sided Flycatcher, is increasing on Marin Municipal Water District lands despite four decades of strong and consistent range-wide declines.

FAIR

## GRASSLANDS: Ridgecrest Boulevard, Oat Hill/Carson Ridge

- Are threatened by non-native grass invasion and changed fire patterns
- Have been reduced statewide to 1% of original area
- Provide habitat statewide for 90% of California's rare plants

With some species that can live 100 years or more, native grasslands are the old-growth at our feet, and a rich part of Marin's natural heritage. Dotted with native purple needlegrass, blue wild rye, and other species, as well as many non-native grasses, Mt. Tam's nearly 4,000 acres of grasslands are in fair but variable condition.

Non-native grasses have taken over many of the mountain's grasslands, and the loss of grazing animals and periodic wildfires have allowed encroaching shrub and tree species to flourish. Mammals and grassland-nesting birds—many of which are declining—rely on large patches to breed and forage. **Join a bioblitz to help us document and explore Mt. Tam's grasslands, or volunteer with the Marin Wildlife Picture Index Project to learn about the mammals that depend upon them.**

UN-KNOWN

## Grassland Birds



Grassland-associated birds are experiencing consistent, long-term declines, both in the San Francisco Bay Area, and all across North America. Important species on Mt. Tam include the Grasshopper Sparrow, Savannah Sparrow, Western Meadowlark, and White-tailed Kite.

**There is currently not enough data to determine the health of the mountain's grassland birds.** Only the Marin Municipal Water District's lands have been surveyed, and grassland birds are naturally found at such low densities that an analysis of trends is difficult.

## ICONIC SPECIES

The indicators included in this update were chosen based on the amount of information available about them, and if their condition and/or trend might reveal something else about ecosystem health.



GOOD

**Northern Spotted Owl** Federally threatened Northern Spotted Owls depend on diverse, robust conifer forest ecosystems, where they are an important part of the food web. Although their numbers are dramatically decreasing range-wide, monitoring shows that Marin County's Northern Spotted Owl populations appear stable.



POOR

**Coho Salmon** Living in freshwater streams and also at sea, coho salmon are good indicators of both riparian and ocean health. Mt. Tam's coho have been devastated by changing ocean conditions and historic habitat loss. Coho in Redwood Creek are declining; coho in Lagunitas Creek, while more stable, are still tenuous.



GOOD

**California Red-legged Frog** Once found in ponds and wetlands from Mendocino County to Baja California, federally threatened California red-legged frog numbers have plummeted due to over-harvest, habitat loss, and invasive species. Recent habitat restoration has increased their numbers on Mt. Tam.



GOOD

**Sargent Cypress** Sargent cypress communities on Mt. Tam host several locally rare plant species. Unlike many of the mountain's other plant communities, they appear to be disease- and weed-free, and may even expand under future climate change scenarios.

## KEY

### CONDITION



Good Condition



Moderate Concern



Significant Concern



Insufficient Data

### TREND



Improving



No Change



Declining



Unknown

► More findings available online at [onetam.org/peak-health](http://onetam.org/peak-health)