

ONE TAM

The Ascent to Peak Health:
*Measuring the State of a Mountain's
Natural Resources*

CARCD 72nd Annual Conference

“Dynamic Partnerships, Relevant Results”

November 2017 – Sacramento, CA



RESOURCE

CONSERVATION DISTRICTS

- Population – 260,000
- Area – 520 sq. mi.
- 80% of County lands protected
- Median household income – over \$100K





ONE
TAM

ECOSYSTEM SERVICES



TAMALPAIS LANDS COLLABORATIVE









AREA OF FOCUS FOR MOUNT TAMALPAIS LANDS COLLABORATIVE



ONE
TAM

SCALING SCIENCE

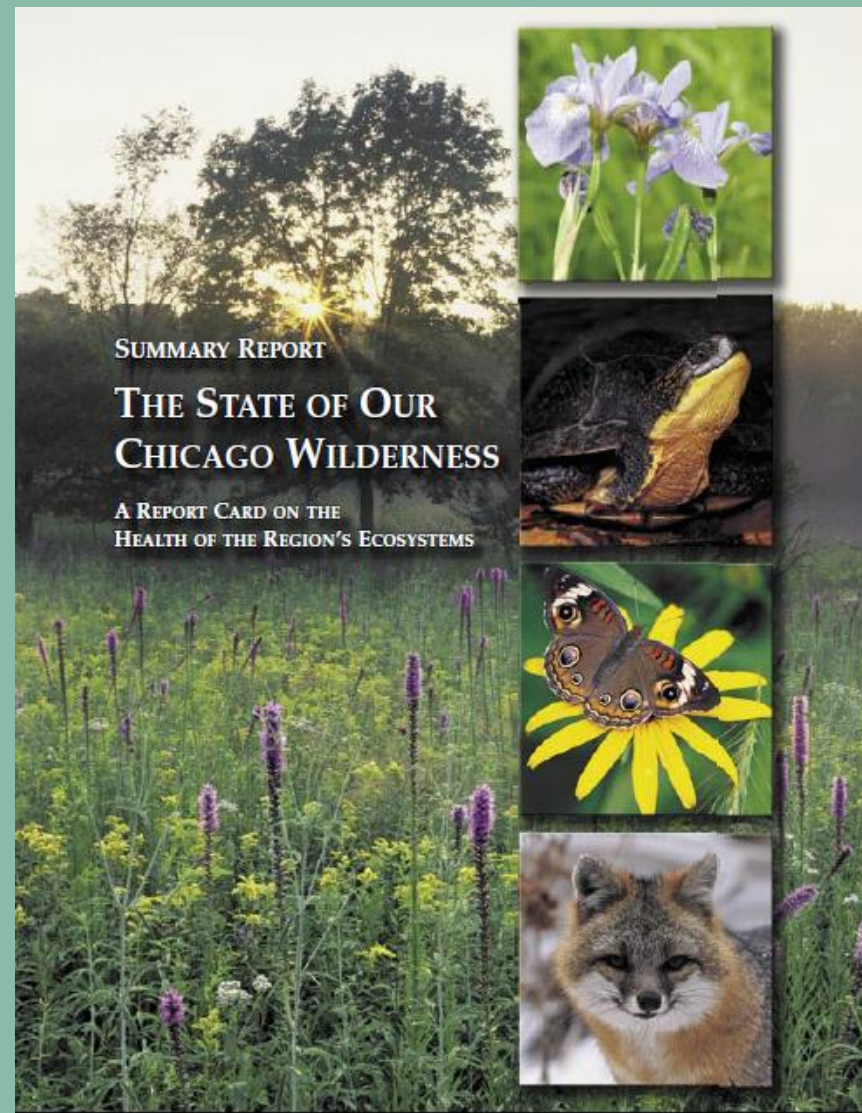
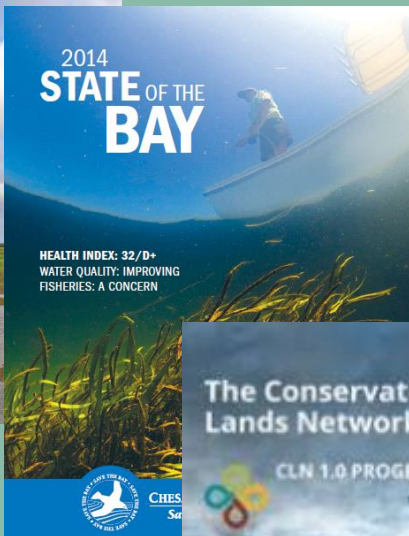


TAMALPAIS LANDS COLLABORATIVE





Coastal Georgia Ecosystem Report Card 2014



ONE
TAM

HEALTHY MOUNTAIN



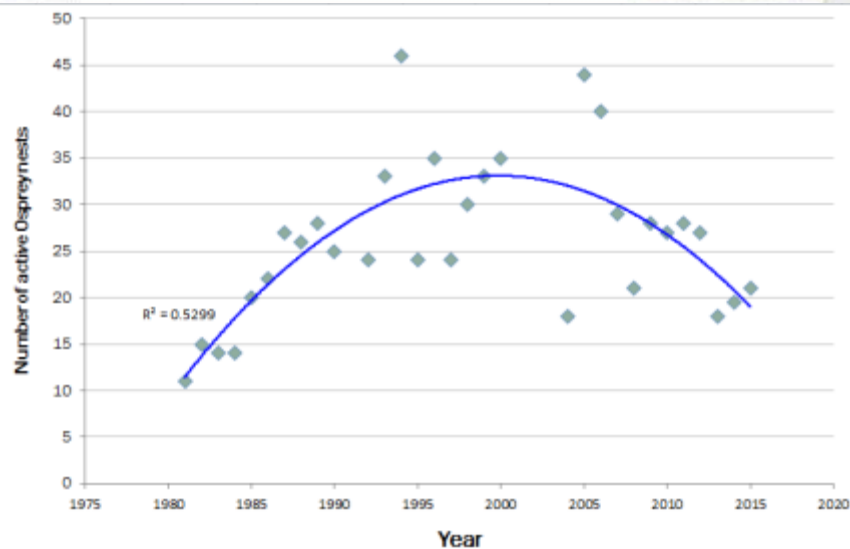
TAMALPAIS LANDS COLLABORATIVE







ONE TAM VEGETATION COMMUNITIES AND WETLANDS



TREND, CONDITION AND CONFIDENCE KEY

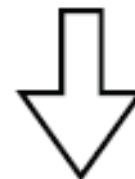
TREND

Improving

Stable

Declining

Unknown



CONDITION

Good

Caution

Significant
Concern

Unknown



CONFIDENCE

High

Moderate

Low



(NO LINE)

EXAMPLE:



Condition: Caution

Trend: Stable

Confidence: Medium

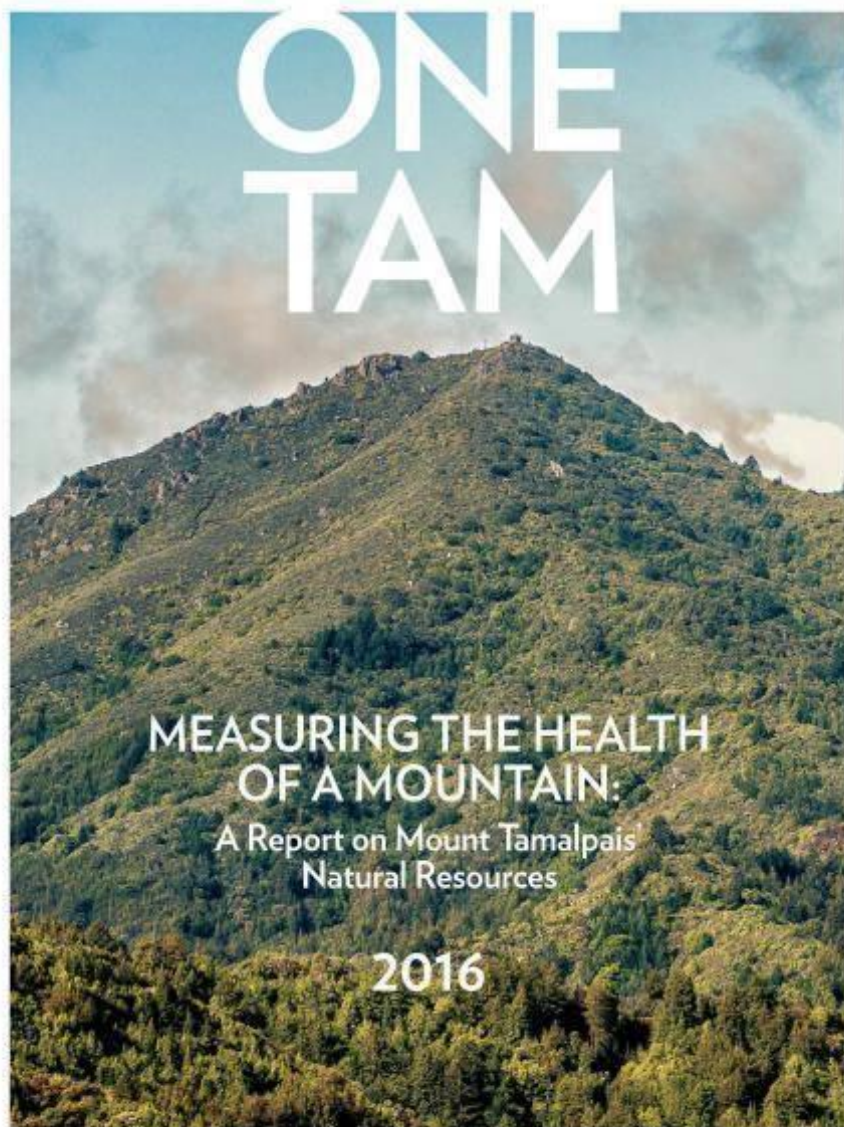
For each indicator:

- Basis for selection
- Desired conditions and goals
- Metrics – condition, trend & confidence assessment
- Thresholds
- Supporting data and analysis
- Stressors
- Data/Analysis Gaps









Is Mt Tam At Peak Health?





Sargent cypress



Mammals



Foothill yellow-legged frog



Grassland birds



Oakwoodland birds



Shrubland birds



Serpentine barrens



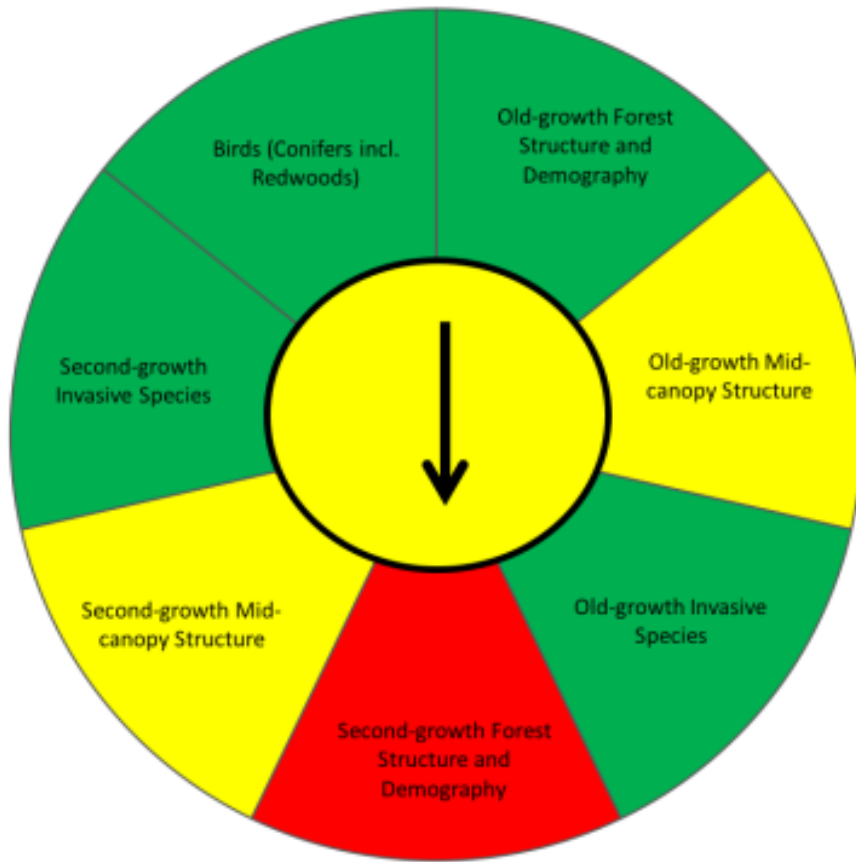
Shrublands



Native grasslands



Coast Redwood Community Condition and Trend





- Approx. 68 plants in 50 yrs.
- Many fire followers & wetland species
- Others on cusp
- Further assess re-introductions & possible assisted migration





MEASURING THE HEALTH OF A MOUNTAIN:

A REPORT ON MT. TAMALPAIS' NATURAL RESOURCES

List of Ecological Health Indicators

Below is a summary of the condition and trend of the ecological health indicators included in the report *Measuring the Health of a Mountain: A Report on Mt. Tamalpais' Natural Resources*. Each indicator was given an overall condition of good, fair, poor, or unknown, and a trend of improving, no change, declining, or unknown. The last column indicates the level of confidence in each assessment.

More details about results below, including the full report, available at onetam.org/peak-health

KEY

CONDITION

GOOD (Green circle with up arrow)
FAIR (Yellow circle with up arrow)
POOR (Red circle with down arrow)
UNKNOWN (Grey circle with question mark)

TREND

Improving (Green arrow pointing up)
No Change (Yellow double arrow)
Declining (Red arrow pointing down)
Unknown (Grey question mark)

HEALTH INDICATOR	CONDITION & TREND	CONFIDENCE
Overall Health of Mt. Tam	FAIR ↑	Moderate
PLANT COMMUNITIES		
Old-growth Coast Redwood Forests	GOOD ↑	High
Second-growth Coast Redwood Forests	FAIR ↑	Moderate
Sargent Cypress	GOOD ↑	Moderate
Open-canopy Oak Woodlands	FAIR ↑	Moderate
Shrublands: Coastal Scrub and Chaparral (Including Serpentine Chaparral)	GOOD ↑	Moderate
Maritime Chaparral	POOR ↓	High
Grasslands	FAIR ↑	Low
Serpentine Barren Community Endemics	FAIR ↑	Moderate
WILDLIFE		
Lagunitas Creek Coho Salmon	POOR ↓	Moderate
Redwood Creek Coho Salmon	POOR ↓	Moderate
Steelhead Trout	POOR ↓	Moderate
Three-spine Stickleback	GOOD ↑	Low
California Red-legged Frog	GOOD ↑	Moderate

FAIR ↓

OAK WOODLANDS: Sycamore 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 create an understory of sparsely, upright, and brittle in Mt. Tam's warm sunny canopy and woodlands, which are in varying health. Sudden Oak Death has killed thousands of coast live oak and black oaks, physically changing these habitats, reducing wildlife local richness, and increasing wildfire risk.

Fire suppression has allowed Douglas fir to expand into these habitats, where they eventually shade out oak and underlying species. Non-native invasive plants like French broom, catalpa, and penny cholla also are becoming increasingly common. **One Tam volunteer stewardship teams need your support to control these threats to the mountain's oak woodlands.**

GOOD ↑

Woodland Birds



Many species such as the Acorn Woodpecker, California Bluebird, Lark Sparrow, Oak Tanager, American Crow, 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 Screech Owl is more abundant and well-represented in riparian wooded thickets on Mt. Tam, perhaps as a result of Wood Park View.

FAIR ↓

REDWOOD FORESTS: Muir Woods, Steep Ravine, Redwood Ridge



- Are fair overall; Muir Woods old-growth forest is in good condition
- Key decrease in disturbance 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 3,000 years. Their thick, woody trunks and ability to regenerate quickly after fires to form old forests and mature old-growth Mt. Tam's redwood forests provide important habitat for the Indigo Bunting, Northern Spotted Owl, and Redwood Canal to name a few threatened and sensitive species.

Most of Mt. Tam's redwood forests are previously logged second-growth stands, which are at fair condition. More information is needed to understand these health trends. Redwoods are fire dependent, and may decline in a future or later future. **One Tam has teamed up with the State's Redwoods League on Fern Whitch—a project to track these climate-resilient tree plants in redwood forests. Use the Redwoods League's smartphone to join it.**

GOOD ↑

Conifer Birds



Wild species that are typically found in the Sierra Nevada, the bird community only pairs the "mountain" in Mt. Tam's Forest Wrenblers, Audubon's Warbler, Pacific Wren, Mountain Warbler, and Golden-crowned Kinglet make up Mt. Tam's thriving redwood forest bird community. One species of concern, the Chorus Warbler, is increasing on Mount Mansfield. Water District lands design have elements of strong and consistent target oak division.

FAIR ↓

GRASSLANDS: Ridgecrest Backwood, Owl Hill/Carson Ridge



- Are threatened by non-native grass invasion and changed the patterns
- Have been reduced statewide to 1% of original area
- Provide habitat statewide for 5% of California's rare plants

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

Non-native species have taken over many of the mountain's grasslands, and the loss of grazing animals and periodic wildfires have altered surrounding shrub and tree species in Bushy Meadows and grassland meadow beds—many of which are declining, only on large patches to be used for large John A. Blodgett 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.

UNKNOWN ?

Grassland Birds



Grassland-associated birds are representing increasing long-term declines, including the San Francisco Bay Area, and all across North America. Invasive species on Mt. Tam include the Grass-cutter 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 Mount Mansfield Water District's lands have been surveyed, and grassland birds are naturally found in such low densities that an analysis of trends is difficult.

ICONIC SPECIES

The indicators included in this brochure were based on the current condition of 10 iconic species on Mt. Tam, and if their condition is in a poor or declining state, it is a concern for the mountain.

GOOD ↑

Northern Spotted Owl Locally threatened Northern Spotted Owl-dependent on diverse, mature forest ecosystems, where they are an important part of the food web. Although their numbers are dramatically decreasing range-wide, increasing shows that Marin County's Northern Spotted Owl populations appear stable.

POOR ↓

Coho Salmon Living in freshwater streams and also as sea, coho salmon are special recreational fish species and ocean health. Mt. Tam's coho have been impacted by changing ocean conditions and historic habitat loss. Coho in Redwood Creek are declining while in Lagunitas Creek, while more stable, are still healthy.

GOOD ↑

California Red-legged Frog Once found statewide and endemic from Mendocino County to Big California, locally threatened California red-legged frogs are being threatened due to water loss, habitat loss, and invasive species. Recent habitat restoration has increased their numbers on Mt. Tam.

GOOD ↑

Sargent Cypress Sargent cypress communities on Mt. Tam have several healthy tree plant species. Unlike many of the mountain's other plant communities, they appear to be diverse and resilient, and may have expanded under future climate change scenarios.

KEY

CONDITION

GOOD (Green circle with up arrow)
FAIR (Yellow circle with up arrow)
POOR (Red circle with down arrow)
UNKNOWN (Grey circle with question mark)

TREND

Improving (Green arrow pointing up)
No Change (Yellow double arrow)
Declining (Red arrow pointing down)
Unknown (Grey question mark)

More findings available online at onetam.org/peak-health



Measuring the health of Mt. Tam

Maintaining a healthy, vibrant and diverse Mt. Tam begins with understanding how key ecological resources are faring, and how we can better care for this iconic and beloved place.

One Tam partners and Bay Area scientists have come together to try to answer the question: **How healthy are Mt. Tam's natural resources?**

EXPLORE



HEALTH OF MT. TAM

The Overall Health of Mt. Tam

Mt. Tam's natural resources are in an overall **Fair** condition and a trend of **No Change**. Some of the mountain's plants and wildlife are thriving, while others are suffering the effects of invasive species, plant disease, changed fire frequencies, and climate change. However, even some of those in decline are at a point where their trajectory can still be improved. The condition and trend of many species or groups like invertebrates and bats remain largely unknown. Learn more through the links to the Wildlife, Plant, and Landscape health indicator assessments above.



WHAT WE KNOW

WHAT WE DID >

WHAT WE DON'T KNOW >

AT A GLANCE >

WORK UNDERWAY >

HOW TO GET INVOLVED >

RESOURCES & DOWNLOADS >



Questions?
Sharon Farrell
sfarrell@parksconservancy.org

